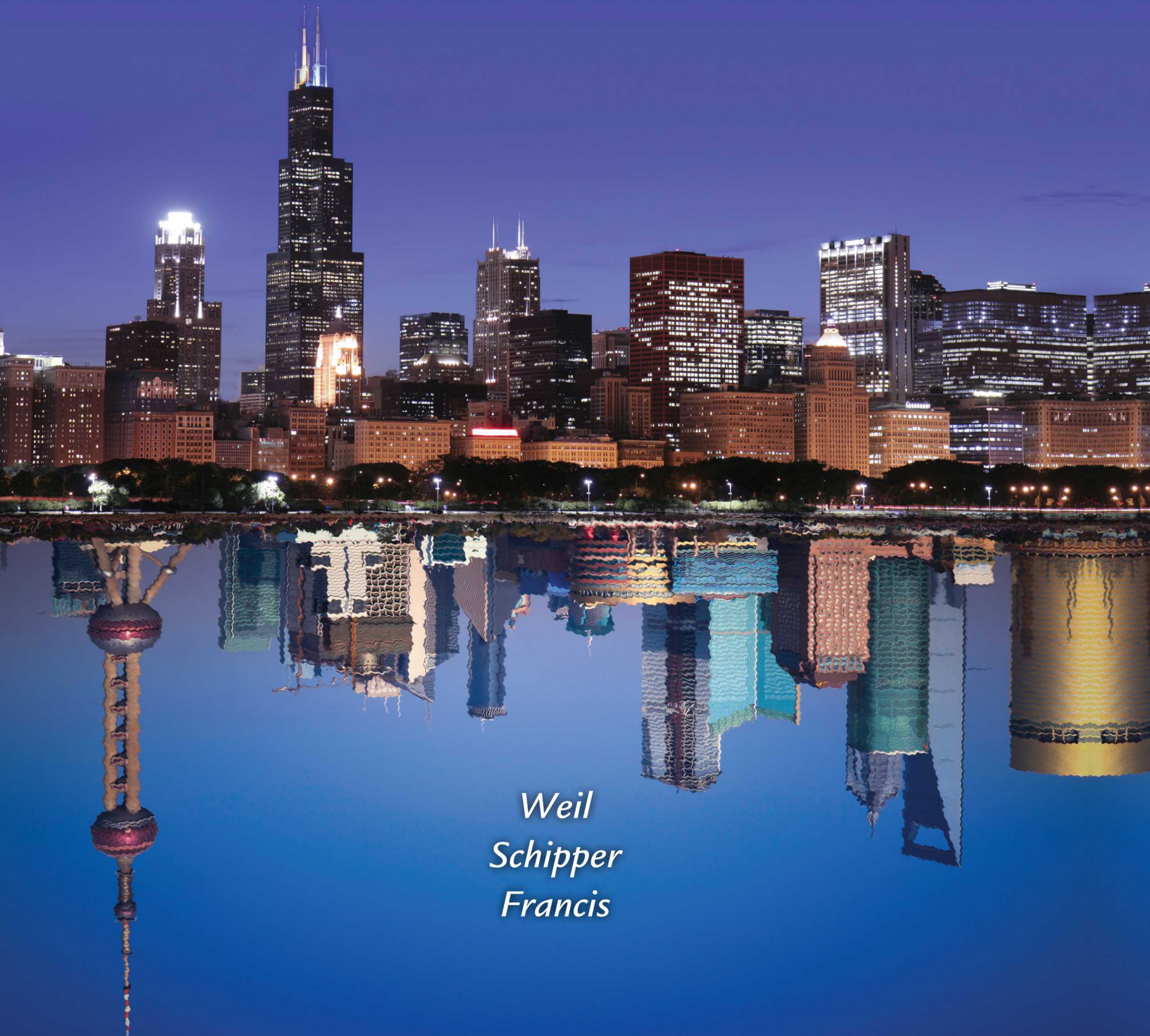


FINANCIAL ACCOUNTING

14e

AN INTRODUCTION TO CONCEPTS, METHODS, AND USES



*Weil
Schipper
Francis*

Differences Between U.S. GAAP and IFRS (Exhibit 17.1, p. 670)

Chapter	Reporting Topic	U.S. GAAP	IFRS
8	Revenue recognition	Must have delivered a product or service in return for net assets capable of sufficiently reliable measurement. Over 200 documents provide industry-specific and transaction-specific guidance.	One general standard and a few documents with industry-specific guidance. For long-term contracts, use percentage-of-completion method if amounts are estimable. Otherwise, use cost-recovery method. Completed contract method not permitted.
9	Inventories and cost of goods sold: lower of cost or market	Measurement of market value uses a combination of replacement cost and net realizable values.	Measurement of market value uses net realizable value.
9	Inventories: cost flow	Specific identification, FIFO, weighted-average, and LIFO cost-flow assumptions permitted.	Specific identification, FIFO, and weighted-average cost-flow assumptions permitted. LIFO not permitted.
10	Property, plant, and equipment: revaluations above acquisition cost	Not permitted.	Permitted under certain conditions.
10	Research and development cost	Recognize as an expense in the period incurred, except for certain software development costs.	Recognize research costs as an expense in the period incurred. Capitalize certain development costs and amortize them over the expected period of benefit.
10	Property, plant, and equipment: impairment loss	If carrying value exceeds undiscounted cash flows value, recognize an impairment loss equal to the excess of carrying value over fair value.	Recognize an impairment loss for the excess of carrying value over recoverable amount. Recoverable amount is larger of the fair value less cost to sell and the value in use. Can subsequently reverse the impairment loss but not above acquisition cost.
10	Intangible assets with finite lives: impairment loss	If undiscounted cash flows exceed carrying value, recognize an impairment loss equal to the excess of carrying value over fair value.	Recognize an impairment loss for the excess of carrying value over recoverable amount. Recoverable amount is the larger of the fair value less cost to sell and the value in use. Can subsequently reverse the impairment loss but not above acquisition cost.
10	Intangible assets, other than goodwill, with indefinite lives: impairment loss	Recognize an impairment loss for the excess of carrying value over fair value.	Recognize an impairment loss for the excess of carrying value over recoverable amount. Recoverable amount is the larger of the fair value less cost to sell and the value in use. Test these assets annually for impairment losses and recoveries of impairment losses.
10	Goodwill: impairment loss	<p>Step 1: Compare the carrying value to the fair value of a reporting unit. If the carrying value exceeds the fair value, proceed to Step 2.</p> <p>Step 2: Allocate the fair value of the reporting unit to assets and liabilities based on their fair values and any excess to goodwill. Recognize an impairment loss on the goodwill if the carrying value exceeds the allocated fair value.</p> <p>Step 3: Test goodwill annually for impairment loss or whenever a goodwill impairment loss is probable. Firms may also apply a qualitative impairment test.</p>	<p>Step 1: Compare the carrying value to the recoverable amount for a cash-generating unit.</p> <p>Step 2: Recognize an impairment loss for any excess of carrying value over recoverable amount of the cash-generating unit. First write down goodwill and then allocate any remaining loss to other assets based on their relative recoverable amounts.</p> <p>Step 3: Test goodwill annually for impairment losses.</p>
12	Contingent obligations (U.S. GAAP) and provisions (IFRS)	Recognize as liabilities if payment is probable (probability usually exceeds 80%). Measure at the most likely amount or at the low end of range if no one estimate is better than any other.	Recognize as liabilities if payment is more likely than not (probability exceeds 50%). Measure at the best estimate of the amount to settle the obligation.
11	Leases	A lease is a capital lease if it satisfies one of four conditions; otherwise, it is an operating lease.	Judgment required based on several indicators to identify the entity that enjoys the benefits and bears the risks of leasing.
15	Convertible bonds	Unless the conversion option can be settled in cash, allocate issue price entirely to bonds and none to conversion option.	Allocate issue price between the bonds and the conversion option.

Summary of Financial Statement Ratios (Exhibit 7.11, p. 244)

Ratio	Numerator	Denominator
Profitability Ratios		
Return on Equity (ROE)	Net Income	Average Shareholders' Equity During the Period
Return on Assets (ROA)	Net Income	Average Total Assets During the Period
Return on Assets, adjusted for financing	Net Income + Interest Expense (net of tax effects)	Average Total Assets During the Period
Profit Margin	Net Income	Sales
Various Expense Ratios	Various Expenses	Sales
Asset Ratio Turnover	Sales	Average Total Assets During the Period
Accounts Receivable Turnover Ratio	Sales	Average Accounts Receivable During the Period
Inventory Turnover Ratio	Cost of Goods Sold	Average Inventory During the Period
Fixed-Asset Turnover Ratio	Sales	Average Fixed Assets During the Period
Financial Leverage Ratio	Average Total Assets During the Period	Average Shareholders' Equity During the Period
Short-Term Liquidity Risk Ratios		
Current Ratio	Current Assets	Current Liabilities
Quick or Acid Test Ratio	Highly Liquid Assets (cash, marketable securities, and accounts receivable) ^a	Current Liabilities
Cash Flow from Operations to Current Liabilities Ratio	Cash Flow from Operations	Average Current Liabilities During the Period
Accounts Payable Turnover Ratio	Purchases ^b	Average Accounts Payable During the Period
Days Accounts Receivable Outstanding	365 days	Accounts Receivable Turnover Ratio
Days Inventories Held	365 days	Inventory Turnover Ratio
Days Accounts Payable Outstanding	365 days	Accounts Payable Turnover Ratio
Long-Term Liquidity Ratios		
Liabilities to Assets Ratio	Liabilities	Assets
Long-Term Debt Ratio	Long-Term Debt	Assets
Debt–Equity Ratio	Long-Term Debt	Shareholders' Equity
Cash Flow from Operations to Total Liabilities Ratio	Cash Flow from Operations	Average Total Liabilities During the Period
Interest Coverage Ratio	Income Before Interest and Income Taxes	Interest Expense

^aThe calculation could exclude receivables for some firms and include inventories for others.

^bPurchases = Cost of Goods Sold + Ending Inventories – Beginning Inventories.

FINANCIAL ACCOUNTING

14e

AN INTRODUCTION TO CONCEPTS, METHODS, AND USES

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to Concepts, Methods, and Uses, 14e**
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Jennifer Francis**

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1 2 3 4 5 6 7 16 15 14 13 12

For Our Students

Whatever be the detail with which you cram your students, the chance of their meeting in after-life exactly that detail is infinitesimal; and if they do meet it, they will probably have forgotten what you taught them about it. The really useful training yields a comprehension of a few general principles with a thorough grounding in the way they apply to a variety of concrete details. In subsequent practice the students will have forgotten your particular details; but they will remember by an unconscious common sense how to apply principles to immediate circumstances.

Alfred North Whitehead
The Aims of Education and Other Essays

WARNING: Study of this book is known to cause thinking, occasionally deep thinking. Typical side effects include mild temporary anxiety followed by profound long-term understanding and satisfaction.

Preface

Over the years, we have come to refer to our book's title by the acronym FACMU—*Financial Accounting: An Introduction to Concepts, Methods, and Uses*. We take *concepts, methods, and uses* to be the central elements in learning and teaching about financial accounting.

The 14th Edition of *FACMU* has the same objectives as the previous editions:

- To help students develop a sufficient understanding of the basic concepts underlying financial reports so that they can apply the concepts to new and different situations.
- To train students in accounting terminology and methods so that they can interpret, analyze, and evaluate financial statements and notes currently published in corporate annual reports.

Most introductory financial accounting textbooks state these, or similar, objectives. Textbooks differ in their relative emphases on concepts, methods, and uses.

1. **Concepts** This book emphasizes the rationale for, and implications of, accounting concepts. To learn accounting, students must develop the ability to conceptualize the transactions that accounting summarizes and the process of summarization. *Without such concepts, students will have difficulty focusing on the relevant issues in new and different situations.*

Accordingly, each chapter identifies important accounting concepts and includes numerical examples illustrating their application. The end-of-chapter material includes numerous short exercises and longer problems to check students' ability to apply the concepts to different situations.

2. **Methods** We place enough emphasis on accounting procedures to enable students to interpret, analyze, and evaluate published financial statements. The text does not emphasize procedures to such an extent that students bog down in detail. All writers of accounting textbooks must decide just how much accounting procedure to include. We believe students learn most effectively by working exercises and problems. Too much emphasis on accounting procedures, however, lulls students into the security of thinking they understand accounting concepts when they do not. We have for many years used the mixture of concepts and procedures in this book and have found it effective in the classroom.

Understanding the accounting implications of an event requires that students construct the journal entry for that event. Throughout this book we use journal entries in describing the nature of accounting events. Moreover, most chapters contain exercises and problems that require the analysis of transactions with debits and credits. *Do not conclude by a glance at this text, however, that it is primarily procedural. We want students to learn concepts; the procedures enhance the learning of concepts.*

3. **Uses** *This book attempts to bridge the gap between the preparation of financial reports and their use in various decision situations.* The chapters consider the effects of alternative accounting principles on the measurement of earnings and financial position and the appropriate interpretations of them. Numerous problems based on financial statement data of actual companies appear at the end of most chapters.

OVERVIEW OF THE 14TH EDITION

WHAT'S NEW IN FACMU 14E

Most important, but easily visible, we have simplified the book. The text pulls back a bit from discussion of advanced accounting topics and simplifies the treatments remaining.

The major visible changes occur at the beginning and end of the book:

- **NEW:** We have split the former **Chapter 2**, which treated record-keeping procedures, into two chapters, now **Chapters 2** and **3**. **Chapter 2** treats balance sheet basics, and **Chapter 3** treats income statement basics.
- **NEW: Chapter 17** now treats issues of organizing and presenting elements of income in a single place. We discuss the following in sequence, with emphasis on why these matter: recurring versus nonrecurring income, operating versus peripheral income, earnings versus other comprehensive income, and errors and accounting changes.

Other important features of the 14th Edition are as follows. These features affect multiple chapters of the text.

- **Integration of International Financial Reporting Standards (IFRS)** We continue to integrate IFRS into the text. We start from the premise that U.S. GAAP and IFRS use the same concepts but sometimes require or permit different methods. At the FACMU level, for MBA students and upperclass undergraduates, the methods are often identical or similar; where they are not, we describe and illustrate the differences. You can easily see the scope of the U.S. GAAP/IFRS details in this book by examining the chart inside the front cover. That chart shows the chapters and topics where the discussion includes both IFRS and U.S. GAAP.
- **Fair values and components of other comprehensive income** As U.S. GAAP and IFRS incorporate more required or permitted fair value measurements, we have broadened our coverage. The fair value option in U.S. GAAP affects accounting for some debt securities and some investments. We discuss these in **Chapters 11, 13, 14, 15,** and **17**, both concepts and methods. Insofar as changes in fair values affect other comprehensive income, we've expanded that discussion as well.
- **Actual financial statements** We have continued the use of actual financial statement excerpts in the chapters and in end-of-chapter assignment materials. We often change the names and dates in the financial statements. You will see that Chapter 1, for example, shows the financial statements for Great Deal and Thames, which are based on the financial statements of Best Buy and Thales, respectively.

The following features affect individual chapters.

- **Treatment of record-keeping cycle in early chapters** Given the success the Duke University authors have had with the record-keeping material they give to their MBA students before the financial accounting class begins, we have reorganized the balance sheet and income statement record-keeping material into *a pair of chapters* that precede most of the conceptual discussions. **Chapter 2** introduces assets, liabilities, shareholders' equity, journal entries, and T-accounts. **Chapter 3** introduces the recording of operating transactions, elementary adjusting entries, closing entries, and preparation of financial statements. **Chapters 2** and **3** accomplish this without overwhelming the student with advanced accounting and economic concepts. The problem material for **Chapter 3** includes the "working backward" problems that have distinguished this text from many of its competitors. The basic record-keeping cycle gives students transactions and then asks them to produce recording entries and adjusting entries, prepare the income statement, supply the closing entries, and finally provide the ending balance sheet and statement of cash flows. In the working backward problems, we give students some of the later items and ask them to derive earlier items. We say one doesn't understand accounting until one can work through the record-keeping cycle backward as well as forward. The typical accounting problem gives facts and asks the students to derive the financial statements. The working backward problems start with some subset of the financial statements and ask the students to derive the underlying transactions.
- **Focus on balance sheet and income statement measurements, formats, and conventions** **Chapter 4** (balance sheet) introduces the asset and liability recognition criteria and measurement bases, including fair value measurement. **Chapter 5** (income statement) continues by describing basic revenue and expense recognition criteria and measurement and timing issues. **Chapter 8** contains a more detailed discussion of revenue recognition. All three chapters highlight classification and display differences that exist across firms, as well as between firms that follow U.S. GAAP and IFRS.

- **Emphasis on the direct method of computing cash flow from operations** Both the Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) have expressed a preference for the direct method of computing cash flow from operations. Students are likely to increasingly encounter the direct method during their professional careers. Thus, we continue our emphasis on the direct method in the 14th Edition. Our students encounter difficulty with the indirect method of computing cash flow from operations when they first study the statement of cash flows. We have found that introducing the direct method early, as we do in **Chapter 1**, helps students to understand the adjustments required to convert net income to cash flow from operations under the indirect method. **Chapter 6** therefore emphasizes the direct method, without deleting material on the indirect method commonly found in practice. **Chapter 16** revisits the statement of cash flows, integrating material on more advanced topics into discussions of both the direct and indirect methods for presenting cash flow from operations. For example, we include transactions for, and income tax effects of, stock option compensation expense, impairment loss, and, employees' exercise of their stock options.
- **Organization of topics involving revenue recognition and working capital** **Chapter 8** treats revenue recognition, receivables, and advances from customers. **Chapter 9** treats other current assets and current liabilities, including inventories, payables, and restructuring liabilities. The decision to bring all the working capital account issues together results from our view that *the accounting for current liabilities has more in common with the accounting for current assets than with the accounting for noncurrent assets*. Consider, for example, the parallels between the allowance method applied to uncollectibles and to warranty costs.
- **IFRS differences from U.S. GAAP for noncurrent assets** **Chapter 10** contrasts the U.S. GAAP and IFRS treatments of noncurrent assets. At the elementary level of this book, the major differences between U.S. GAAP and IFRS in the accounting for noncurrent assets occur in the accounting for development costs and impairments.
- **Organization of noncurrent liability topics** **Chapter 11** treats mortgages, bonds, installment notes, and lease liabilities. Leases are so common in business that we treat them as a basic, not an advanced, topic in liabilities. As this book goes to press, the standard setters have proposed to change the accounting for leases. We have introduced the topics in such a way that the students learn both the existing and proposed accounting treatments. **Chapter 12** treats income taxes, off-balance sheet financing, and defined benefit pension arrangements, each in separate sections allowing the instructor to select one or two of these topics, without doing all three. For example, you can skip the pension material and assign the material on income taxes. We don't expect students to master all this material during their first term in accounting, but many will not take more accounting and find later in their careers that they need to understand the basics of accounting for these more advanced topics. We have included this material, in the FACMU style of concepts, methods, and uses, so that this book can serve as a reference on these topics for our alumni.
- **Separation of investments in marketable securities and derivatives from treatment of the equity method and consolidated statements** **Chapter 13** simplifies our coverage of accounting for derivatives, while **Chapter 14** continues to present material on joint ventures and variable interest entities (U.S. GAAP) and special purpose entities (IFRS). We have expanded this material into two chapters so that we can provide more coverage on derivatives without having a single enormous chapter. As in **Chapter 12**, we have provided some advanced materials to support instructor choice as to which advanced topics to cover and to ensure that our alumni will have this material at the ready when they encounter these issues on the job or in more advanced courses in the MBA curriculum.
- **Summary of the FASB's and IASB's joint projects on the conceptual framework** **Chapter 17** discusses the conceptual frameworks of both the FASB and IASB and the changes under consideration in their joint conceptual framework project.
- **Reporting on transactions of a company, other than with owners that affect owners' equity.** New in this edition, **Chapter 17** brings together into a unified discussion the reporting and disclosure of income statement information, including the nature and reporting of transactions, accounting errors and adjustments, earnings per share, and segment reporting.
- **More complex topics appear on the Web site** We have placed complex material on deferred taxes, foreign currency translation, and general price level adjusted accounting on the text's Web site.

ORGANIZATION

This book comprises four major parts:

- **Part 1:** “Overview of Financial Statements,” consisting of **Chapters 1** through **3**.
- **Part 2:** “Accounting Concepts and Methods,” **Chapters 4** through **7**.
- **Part 3:** “Measuring and Reporting Assets and Equities,” **Chapters 8** through **15**.
- **Part 4:** “Synthesis,” **Chapters 16** and **17**.

In our view, the four parts are tiers, or steps, in the learning process. **Part 1** presents a general overview of the principal financial statements and basic transactions recording and financial statement preparation. **Part 2** discusses the basic accounting model accountants use to generate the principal financial statements. **Part 3** considers the specific accounting principles or methods used in preparing the financial statements. **Part 4** summarizes and integrates the material from the first three parts. **This organization reflects our view that learning takes place most effectively when students begin with a broad picture, then break up that broad picture into smaller pieces until achieving the desired depth, and finally synthesizing so that the relation between the parts and the whole retains its perspective.**

Chapter 1 presents a brief description of the principal activities of a business firm (goal setting and strategy formulation, investing, financing, and operating) and shows how the principal financial statements—the balance sheet, the income statement, and the statement of cash flows—report the results of these activities. We use the business activities and the financial statements of Best Buy and Thales, renamed Great Deal and Thames, to illustrate the important concepts. **Chapter 1** also provides an overview of the financial reporting environment. Many students feel deluged with the multitude of new terms and concepts after reading **Chapter 1**. Later, many students admit that the broad overview helped piece material together as they later explored individual topics at greater length and in greater depth. **Chapters 2** (balance sheet) and **3** (income statement) focus on record-keeping vocabulary and processes. **Chapter 3**, unlike treatments in other texts, integrates the accounting entries for transactions during a period with the related adjusting entries at the end of the period. When textbooks discuss these two types of entries in separate chapters, students often lose sight of the fact that measuring net income and reporting financial position requires both kinds of entries.

Chapters 4 and **5** present the basic accounting model that generates the financial statements. They discuss the elements of financial statements: assets, liabilities, equity, revenue, and expenses. The conceptual frameworks of the FASB and the IASB provide the basis for these discussions, which include fair value measurements for assets and liabilities.

Chapter 6 discusses cash flows. We continue to put coverage of the statement of cash flows early in the text. This placement serves two purposes. First, it elevates the statement to its rightful place among the principal financial statements. Students can thereby integrate the concepts of profitability and cash flow more effectively and begin to understand that one does not necessarily accompany the other. Covering this statement at the end of the course can lead students to think the cash flow statement less important. Placing this chapter early in the book forces the student to cement understanding of the basic accounting model from **Chapters 2, 3, 4,** and **5**. Preparing the statement of cash flows requires the student to work backward from the balance sheet and income statement to reconstruct the transactions that took place. We present the direct method of computing cash flow from operations, without detracting from the importance of understanding the indirect method. The FASB, for more than a decade, and the IASB have expressed a preference for the direct method. Few U.S. companies currently use it, but we think this will change during the careers of students.

Chapters 2 through **6** use the Balance Sheet Equation or changes in the Balance Sheet Equation to motivate understanding of the topics discussed. Each of these chapters includes one or more simple problems that students can work using the balance sheet approach to prepare the principal financial statements. Although these chapters emphasize debit/credit procedures, instructors can use the Balance Sheet Equation approach to communicate the basics of statement preparation.

Chapters 3 through **6** each contain a section on analyzing and interpreting the financial statement introduced in the chapter. This presages the integrated analysis of profitability and risk in **Chapter 7**.

Chapter 7 describes and illustrates tools for analyzing the financial statements. The discussion structures the various financial statement ratios in a multi-level format that, students have

found, reduces the students' need to memorize formulas. Instructors who incorporate annual reports of actual companies throughout their course, as we do with *Great Deal* and *Thames*, will find that analysis of the financial statements of such companies provides an effective synthesis at this point. An **appendix** to **Chapter 7** illustrates procedures for preparing pro forma financial statements. This topic helps cement understanding of the relation among the principal financial statements.

Chapters 8 through **15** discuss the guidance in U.S. GAAP and IFRS for generating the financial statements. Each chapter not only describes and illustrates the application of the guidance but also considers how accounting principles affect the financial statements. This approach reflects the view that students should be able to interpret and analyze published financial statements and to understand the effect of alternative accounting methods on such assessments.

Chapter 16 deepens the exploration of the statement of cash flows by presenting a comprehensive illustration using the transactions in **Chapters 8** to **14**. **Chapter 17** reviews the accounting principles discussed in **Chapters 8** to **15** and discusses reporting issues that standard-setting bodies are currently addressing, particularly those where U.S. GAAP and IFRS diverge.

An **appendix** to the book describes compound interest and present value computations for students not previously exposed to this topic.

The end of the book includes a comprehensive **glossary** of accounting terms. It serves as a reference tool for accounting and other business terms and provides additional descriptions of a few topics, such as *accounting changes* and *inventory profit*, considered only briefly in the text. The companion website for the book includes expanded discussion of certain topics in the text, including income taxes, foreign currency translation, and general price-level account. Go to <http://login.cengage.com>.

RELATED MATERIALS ACCOMPANYING THE TEXTBOOK

The following supplementary materials augment the textbook:

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We don't forget Sidney Davidson. What can we say? He taught us and guided us and wrote with us. We're all the intellectual descendants of William Paton. Thank you.

Finally, Clyde Stickney, who led FACMU efforts for over 35 years, since its inception in 1974. Even in this edition, where his name does not appear as author, he did yeoman work on the entire book. Clyde's special skills involve making sure that we who are inclined to give a "full-core dump," as the computer scientists called it, omit details that MBA students do not need to know, but making sure that we cover thoroughly the things they do. And after 35 years of reading endless manuscript and publisher proof, he has developed a skilled eye at spotting errors. We shall miss him.

RLW
KS
JF

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Overview of Financial Statements

P a r t

1



Introduction to Business Activities and Overview of Financial Statements and the Reporting Process

1. Understand four key activities of business entities: (a) establish goals and strategies, (b) obtain financing, (c) make investments, and (d) conduct operations.
2. Understand the purpose and content of the financial statements: (a) balance sheet, (b) income statement, (c) statement of cash flows, and (d) statement of shareholders' equity.
3. Understand the roles of participants in the financial reporting process, including managers and governing boards, accounting standard setters and regulators, independent external auditors, and financial statement users.
4. Gain an awareness of financial reporting as part of a global system for providing information for resource allocation decisions, including two financial reporting systems (U.S. GAAP and International Financial Reporting Standards).
5. Understand the difference between the cash basis and the accrual basis of accounting, and why the latter provides a better measure of performance.

LEARNING OBJECTIVES

In making resource allocation decisions, investors and creditors depend on reliable and relevant information about financial position, profitability, and risk. Financial reports are a key source of this information. The process of preparing those reports is *financial accounting*, or, more broadly, *financial reporting*. Understanding the basics of the financial reporting process is fundamental to understanding how to use financial reports for resource allocation decisions, such as making investments.

You are about to embark on the study of financial accounting. You will learn the concepts underlying the accounting principles firms use to measure the results of their business activities, the accounting principles themselves, some of the judgments and estimates managers must make to apply accounting principles, and tools for analyzing financial statements. You will learn about two similar—but not identical—financial accounting systems: U.S. GAAP¹ and International Financial Reporting Standards (IFRS). Accounting systems specify the financial accounting principles that firms must use, and the kinds of estimates and judgments that managers must make in applying those principles. We introduce these two systems in this chapter, illustrate them with a firm that uses U.S. GAAP (Great Deal, Inc., hereafter Great Deal) and a firm that uses IFRS (Thames Limited, hereafter Thames), and continue to present both systems throughout the book.²

Our goal is to help you understand the concepts, methods, and uses of financial accounting to enable you to use financial accounting information effectively. As a financial statement user, you will encounter financial reports with a variety of formats and presentations. We show a few of those variations, understanding that you will encounter many more.

As the chapter title suggests, this chapter introduces the concepts, methods, and uses that later chapters discuss in detail. We begin with a description of Great Deal's and Thames's business activities. We next see how firms measure the results of their business activities and report those

¹GAAP refers to generally accepted accounting principles. U.S. GAAP is the authoritative guidance for financial accounting in the United States. We discuss U.S. GAAP and IFRS in more detail throughout the book.

²Financial information presented for Great Deal and Thames Limited is derived from the financial reports of two actual firms that report using U.S. GAAP and IFRS, respectively. That information has been modified for inclusion in this book.

results in their financial statements. Finally, we describe several components of the financial reporting process and introduce U.S. GAAP and IFRS.

OVERVIEW OF BUSINESS ACTIVITIES

The managers of a business³ prepare financial reports to present information about that business's activities to external users. External users include owners of the business, lenders, regulators, and employees. Understanding those financial reports requires an understanding of the activities of the business:

1. Establishing goals and strategies.
2. Obtaining financing.
3. Making investments.
4. Conducting operations.

We illustrate these four business activities using two firms, Great Deal and Thames.

Example 1 Great Deal, based in the United States, operates more than 3,500 retail stores in the United States and around the world. The United States is its largest market. It prepares financial statements using U.S. GAAP. Its retail stores sell consumer electronics, home office products, entertainment software, appliances, and related services.

Example 2 Thames, based in France, is an electronics company that provides information systems and related services to the aerospace, defense, and security sectors. Thames prepares its financial statements using IFRS. It operates around the world. Europe is its largest market.

Although Great Deal and Thames differ in terms of business model, size, and geographical scope, their managers must carry out similar kinds of business activities. Differences in the two firms' business models affect the content of each of the activities.

ESTABLISH CORPORATE GOALS AND STRATEGIES

Goals are the end results toward which the firm directs its energies, and **strategies** are the means for achieving those results. Examples of corporate goals include maximizing the return to the firm's owners, providing a good working environment for employees, and improving the environmental performance of the firm's products and manufacturing processes. Management, under the oversight of the firm's governing board (or boards),⁴ sets the firm's strategies—for example, determining the firm's lines of business and its geographic locations and the strategies for each business unit. Factors that would affect a firm's goals and strategies include the following:

1. Goals and strategies of competitors.
2. Barriers to entry of the industry, such as patents or large investments in buildings.
3. Nature of the demand for the firm's products and services. For example, demand might be increasing, such as for certain pharmaceutical products, or demand might be relatively stable, such as for groceries.
4. Existence and nature of government regulation.

Firms provide extensive information about their corporate goals and strategies. For example, a recent Great Deal financial report indicates that store development, including entering new markets, opening new stores in existing markets, and remodeling/expanding existing stores, plays a role in Great Deal's growth. The report provides quantitative information about store openings and store closings in the past year as well as plans for the coming year. Similarly,

³We use the terms *managers* and *management* to refer to employees who make operating, investing, and financing decisions and apply accounting standards to prepare financial statements. We also use the term *firms* to refer to these same decision makers.

⁴By law, some countries require firms to have two governing boards; other countries require one.

Thames's recent financial report announced a plan to address the difficult business outlook in its main markets by undertaking cost-cutting efforts.

Establishing corporate goals and strategies does not directly affect the firm's cash flows. The other three business activities—carrying out operations, making investments, and obtaining financing—either generate cash or use cash. The statement of cash flows, introduced later in the chapter, describes these cash flows in more detail.

OBTAIN FINANCING

To carry out their plans, firms require **financing**, that is, funds from owners and creditors. Owners provide funds to a firm and in return receive ownership interests. For a corporation, the ownership interests are shares of common stock and the owners are **shareholders** or **stockholders**.⁵ In some cases the common shares trade in active markets such as the New York Stock Exchange and the London Stock Exchange. Firms whose shares trade in active markets are **publicly traded** and subject to special regulations. When the firm raises funds from owners, it has no obligation to repay these funds. Sometimes, a firm's governing board may decide to distribute **dividends** to that firm's shareholders. Dividends are a distribution of assets, often cash, to owners.

Creditors provide funds that the firm must repay in specific amounts at specific dates. *Long-term* creditors require repayment from the borrower over a period of time that exceeds one year. *Short-term* creditors require payment over the next year. One common form of long-term financing is *bonds*. A bond agreement specifies the amount borrowed and the terms of repayment, including the timing and amounts of cash the borrower agrees to pay to the creditors. Another common form of long-term borrowing is bank loans. Banks usually lend for periods between several months and several years. Finally, suppliers of raw materials or merchandise that do not require payment immediately also provide funds—the firm gets raw materials or merchandise now but does not pay cash until later.

Each firm makes financing decisions about the proportion of funds to obtain from owners, long-term creditors, and short-term creditors. Corporate finance courses cover the techniques that firms use to make financing decisions.

MAKE INVESTMENTS

A firm makes investments to obtain the productive capacity to carry out its business activities. **Investing activities** involve acquiring the following:

1. **Land, buildings, and equipment.** These investments provide the capacity to manufacture and sell products and to create and sell services. They are usually long term, in the sense that they provide productive capacity for a number of years.
2. **Patents, licenses, and other contractual rights.** These investments provide rights to use ideas and processes. They are intangible, in the sense that they do not have a physical existence.
3. **Common shares or bonds of other firms.** These investments make a firm an owner or creditor of another firm. Short-term investments in equity shares typically involve partial ownership, while long-term investments in equity interests involve partial or complete ownership of another business.
4. **Inventories.** Firms maintain an inventory of products to sell to customers. For example, Great Deal maintains inventories of consumer electronics, home office products, entertainment software and appliances.
5. **Accounts receivable from customers.** In many businesses, customers do not pay for goods and services immediately. *Accounts receivable* describes the amounts owed to a firm by its customers for short periods, such as 30 days. In extending credit to customers, the firm does not collect cash right away. If the firm did not extend the credit, however, it might not make the sale in the first place.
6. **Cash.** Most firms maintain cash balances (like a corporate checking account) to pay their current bills.

⁵If the business is organized as a partnership, the owners are partners. If the business is organized as a proprietorship, the owner is the proprietor. This book considers corporations, in which the owners are shareholders or stockholders.

Managerial accounting courses and corporate finance courses cover the techniques that firms use to make investment decisions.

CARRY OUT OPERATIONS

Management operates the productive capacity of the firm to generate earnings. **Operating activities** include the following:

1. *Purchasing.* The purchasing department of a retailer, such as Great Deal, acquires items to sell to customers. The purchasing department of a firm with manufacturing operations, such as Thames, acquires raw materials needed for production.
2. *Production.* The production department in a manufacturing firm combines raw materials, labor services, and other manufacturing inputs to produce goods for sale. A service firm combines labor inputs and other inputs to provide services to customers.
3. *Marketing.* The marketing department oversees selling and distributing products and services to customers.
4. *Administration.* Administrative activities include data processing, human resource management, legal services, and other support services.
5. *Research and development.* A firm undertakes research and development with the objective of discovering new knowledge that it can use to create new products, new processes, or new services.

Managerial accounting, marketing, and operations management courses cover the techniques that firms use to make operating decisions.

PRINCIPAL FINANCIAL STATEMENTS

Firms communicate the results of their business activities in the **annual report to shareholders**.⁶ The annual report may contain letters from the firm's management describing the firm's goals, strategies, and accomplishments, as well as descriptions and pictures of the firm's products, facilities, and employees. If the firm's shares trade publicly, it will also file an annual report with a regulator, typically a government agency.⁷ The applicable laws and regulations of the country where the shares trade specify the form and content of the annual report. In the United States, regulatory requirements applicable to publicly traded firms require the inclusion of a **Management's Discussion and Analysis (MD&A)**, in which management discusses operating results, liquidity (sources and uses of cash), capital resources, and reasons for changes in profitability and risk during the past year.

We focus on the four principal financial statements and the supplementary information that firms report, including the following:

1. *Balance sheet or statement of financial position* at a specified time.
2. *Income statement or statement of profit and loss* for a specified time period.
3. *Statement of cash flows.*
4. *Statement of shareholders' equity or statement of changes in shareholders' equity.*
5. *Notes* to the financial statements, including various supporting schedules.

⁶Many firms provide these annual reports on their Web sites, often in the investor relations section. Some securities regulators' Web sites also provide required filings, including annual reports.

⁷The regulator may also require *interim reports*, for example, on a quarterly basis. In the United States, firms whose shares trade publicly file quarterly reports that contain a subset of the information in the annual report. Those quarterly reports appear on the regulator's Web site (www.sec.gov). The U.S. regulator is the Securities and Exchange Commission (SEC).

The following sections of this chapter briefly discuss each of these five items. In describing these items, we refer to the financial statements of Great Deal and Thames. Great Deal's financial statements appear in **Exhibits 1.1–1.4**, and Thames's financial statements appear in **Exhibits 1.5–1.8**. We begin with several observations about conventions and concepts that apply to financial statements in general.

FINANCIAL REPORTING CONVENTIONS

In this section we describe some conventions used in financial statement preparation. These conventions govern the length of time covered by the financial statements (the accounting period), the number of reporting periods included in the financial reports, the monetary amounts, and the terminology and level of detail in the financial statements.

Length of Reporting (Accounting) Period Financial statement presentations can span intervals of any length. The most common accounting period for external reporting is one year, called the **fiscal year**. While many firms use the calendar year as their fiscal year (that is, the fiscal year ends on December 31), some firms select other fiscal year-ends. When the fiscal year ends in June–December of calendar year T, convention describes the financial reports as pertaining to fiscal year T. For example, Thames's financial report for the year ended December 31, 2013, reports Thames's performance for fiscal 2013. When the fiscal year ends in January–May of year T, convention describes the financial reports as pertaining to fiscal year T – 1. For example, Great Deal's financial report for the year ended February 27, 2013, reports Great Deal's performance for fiscal 2012.⁸

Number of Reporting Periods To assist in making comparisons over time, both U.S. GAAP and IFRS require firms to include results for multiple reporting periods in each report. Firms must include two balance sheets describing the beginning and ending balances of the accounts for the current fiscal year and the prior fiscal year. Refer to **Exhibit 1.1**, which shows that Great Deal's fiscal 2012 annual report includes a balance sheet as of February 27, 2013 (the end of fiscal 2012), and a balance sheet as of February 28, 2012 (the end of fiscal 2011). For the income statement, statement of cash flows, and statement of shareholders' equity, SEC rules require statements for the current year and the two prior years; IFRS requires statements for the current year and the prior year.

Monetary Amounts The financial statements report a numerical amount, the **monetary amount**, for each listed item. The financial statements indicate the measuring units, both the numerical expression such as in thousands or in millions, and the currency, such as dollars (\$) or euros (€). A firm typically reports in the currency of the country where it is headquartered or where it conducts most of its business. For example, a firm with headquarters and most of its business activities in England would report its results in pounds sterling (£).

Terminology and Level of Detail U.S. GAAP and IFRS contain broad guidance on what the financial statements must contain, but neither completely specifies the level of detail or the names of accounts. IFRS contains relatively more guidance. For example, IFRS describes the line items that the balance sheet must display and described items that the firm must separately disclose.⁹ U.S. GAAP contains no analog to this IFRS guidance.¹⁰ *You should therefore expect to encounter variation in the ways financial statements display information and variation in the level of detail provided.* In addition, the rules do not always require firms to use specific names for accounts and line items on the financial statements. While practice tends to converge on certain names, such as cash, accounts receivable, and inventories, *you should expect to encounter variation in account titles as well as variation in format and display.*

With these conventions in mind, we turn to a discussion of the financial statements.

⁸Not all firms follow this convention, so use caution in comparing results across firms.

⁹International Accounting Standards Board (IASB), *International Accounting Standard 1*, "Presentation of Financial Statements," revised 2003.

¹⁰As of late 2011, a long-running project underway to improve and converge the U.S. GAAP and IFRS guidance for financial statement presentation was incomplete.

EXHIBIT 1.1

Great Deal, Inc.
Consolidated Balance Sheets
 (amounts in millions of US\$)

	February 27, 2013	February 28, 2012
Assets		
Current Assets		
Cash and cash equivalents	\$ 1,826	\$ 498
Short-term investments	90	11
Receivables	2,020	1,868
Merchandise inventories	5,486	4,753
Other current assets	1,144	1,062
Total current assets	10,566	8,192
Property and Equipment		
Land and buildings	757	755
Leasehold improvements	2,154	2,013
Fixtures and equipment	4,447	4,060
Property under capital lease	95	112
	7,453	6,940
Less: Accumulated depreciation	(3,383)	(2,766)
Net property and equipment	4,070	4,174
Goodwill	2,452	2,203
Tradenames	159	173
Customer relationships	279	322
Equity and other investments	324	395
Other assets	452	367
Total assets	\$18,302	\$15,826
Liabilities and Shareholders' Equity		
Current Liabilities		
Accounts payable	\$ 5,276	\$ 4,997
Unredeemed gift card liabilities	463	479
Accrued compensation and related expenses	544	459
Accrued liabilities	1,681	1,382
Accrued income taxes	316	281
Short-term debt	663	783
Current portion of long-term debt	35	54
Total current liabilities	8,978	8,435
Long-term liabilities	1,256	1,109
Long-term debt	1,104	1,126
Total liabilities	11,338	10,670
Commitments and contingencies	—	—
Shareholders' Equity		
Preferred stock	—	—
Common stock	42	41
Additional paid-in capital	441	205
Retained Earnings	5,797	4,714
Accumulated other comprehensive income	40	(317)
Total Great Deal shareholders' equity	6,320	4,643
Noncontrolling interests	644	513
Total shareholders' equity	6,964	5,156
Total Liabilities and Shareholders' Equity	\$18,302	\$15,826

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BALANCE SHEET

The **balance sheet**, also called the **statement of financial position**, provides information, at a point in time, on the firm's productive resources and the financing used to pay for those resources. **Exhibit 1.1** presents Great Deal's balance sheet as of February 27, 2013, and February 28, 2012. **Exhibit 1.5** presents Thames's balance sheet as of December 31, 2013, and December 31, 2012. These balance sheets present information at the end of each firm's fiscal year. Great Deal's annual report states that its fiscal year ends on February 27 or February 28 of each year; Thames states that its fiscal year ends on December 31. The financial position of

EXHIBIT 1.2

Great Deal, Inc.
Consolidated Statements of Earnings
 (amounts in millions of US\$)

	February 27, 2013	February 28, 2012	February 27, 2011
Revenue	\$49,694	\$45,015	\$40,023
Cost of goods sold	37,534	34,017	30,477
Gross profit	12,160	10,998	9,546
Selling, general, and administrative expenses	9,873	8,984	7,385
Restructuring charges	52	78	0
Goodwill and trade name impairment	0	66	0
Operating income	2,235	1,870	2,161
Other income (expense)			
Investment income and other	54	35	129
Investment impairment	0	(111)	0
Interest expense	(94)	(94)	(62)
Earnings before income tax expense and equity in income (loss) of affiliates	2,195	1,700	2,228
Income tax expense	802	674	815
Equity in income (loss) of affiliates	1	7	(3)
Net earnings including noncontrolling interests	1,394	1,033	1,410
Net earnings attributable to noncontrolling interests	(77)	(30)	(3)
Net earnings attributable to Great Deal, Inc.	<u>\$ 1,317</u>	<u>\$ 1,003</u>	<u>\$ 1,407</u>
Earnings per share attributable to Great Deal, Inc.			
Basic	\$3.16	\$2.43	\$3.20
Diluted	\$3.10	\$2.39	\$3.12
Weighted-average common shares outstanding (in millions)			
Basic	416.8	412.5	439.2
Diluted	427.5	422.9	452.9

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the firm at other times during the year can differ substantially from that depicted on the end-of-year balance sheet.

Concepts of Assets, Liabilities, and Shareholders' Equity The balance sheet lists the firm's assets, liabilities, and shareholders' equity and provides totals and subtotals. Each line item on the balance sheet has a title that indicates the nature of the item and a numerical amount, in units of currency. For example, the first item on Great Deal's balance sheet is Cash and Cash Equivalents of \$1,826 million. The heading of the balance sheet indicates the measuring unit is millions of U.S. dollars. The first item on Thames's balance sheet is Goodwill, net, measured in millions of euros (€); the amount is €2,986.9 million.

Assets are economic resources with the potential to provide future economic benefits to a firm. The firm's investments in items to provide productive capacity are examples of assets. For example, both Great Deal and Thames list property and equipment (Thames calls these "tangible assets, net") among the assets on their balance sheets.¹¹

Liabilities are creditors' claims. Creditors have provided funds, or goods and services, and the firm has an obligation to pay creditors for those goods and services. We describe two examples of liabilities that result from a firm's having previously received benefits (inventories, labor services):

- Both Great Deal and Thames have made purchases but have not yet paid the entire amount owed. Great Deal includes the amount owed to its suppliers in the liability account labeled "Accounts payable." Thames includes the amount in the account "Accounts, notes and other current payables."

¹¹The order in which the assets appear differs between Great Deal's and Thames's balance sheets. We discuss this ordering later in this chapter.

EXHIBIT 1.3

Great Deal, Inc.
Consolidated Statements of Cash Flows
(amounts in millions of US\$)

	February 27, 2013	February 28, 2012	February 27, 2011
Operating Activities			
Net earnings including noncontrolling interests	\$ 1,394	\$ 1,033	\$ 1,410
Adjustments to reconcile net earnings to total cash provided by operating activities:			
Depreciation	838	730	580
Amortization of definite lived intangible assets	88	63	1
Asset impairments	4	177	0
Restructuring charges	52	78	0
Stock-based compensation	118	110	105
Deferred income taxes	(30)	(43)	74
Excess tax benefits from stock-based compensation	(7)	(6)	(24)
Other, net	(4)	12	(7)
	<u>2,453</u>	<u>2,154</u>	<u>2,139</u>
Changes in operating assets, net of acquired assets and liabilities:			
Receivables	(63)	(419)	12
Merchandise inventories	(609)	258	(562)
Other assets	(98)	(175)	42
Accounts payable	141	139	221
Other liabilities	279	(75)	74
Income taxes	103	(5)	99
Total cash provided by operating activities	<u>2,206</u>	<u>1,877</u>	<u>2,025</u>
Investing Activities			
Additions to PPE, net of non-cash expenditures	(615)	(1,303)	(797)
Purchases of investments	(16)	(81)	(8,501)
Sales of investments	56	246	10,935
Acquisitions of businesses, net of cash acquired	(7)	(2,170)	(89)
Change in restricted cash	18	(97)	(85)
Settlement of net investment hedges	40	0	0
Other, net	(16)	(22)	1
Total cash (used in) provided by investing activities	<u>(540)</u>	<u>(3,427)</u>	<u>1,464</u>
Financing Activities			
Repurchase of common stock	0	0	(3,461)
Issuance of common stock	138	83	146
Dividends paid	(234)	(223)	(204)
Repayments of debt	(5,342)	(4,712)	(4,353)
Proceeds from issuance of debt	5,132	5,606	4,486
Acquisition of noncontrolling interests	(34)	(146)	0
Excess tax benefits from stock-based compensation	7	6	24
Other, net	(15)	(23)	(16)
Total cash (used in) provided by financing activities	<u>(348)</u>	<u>591</u>	<u>(3,378)</u>
Effect of exchange rate changes in cash	10	19	122
Increase (decrease) in cash and cash equivalents	<u>1,328</u>	<u>(940)</u>	<u>233</u>
Cash and cash equivalents at beginning of year	498	1,438	1,205
Cash and cash equivalents at end of year	<u>\$ 1,826</u>	<u>\$ 498</u>	<u>\$ 1,438</u>
Supplemental disclosure of cash flow information:			
Income taxes paid	732	766	644
Interest paid	78	83	49

EXHIBIT 1.4

Great Deal, Inc.
Consolidated Statements of Changes in Shareholders' Equity
 (amounts in millions of US\$ except share amounts)

	Common Shares	Common Stock	Additional Paid-In Capital	Retained Earnings	Accumulated Other Comprehensive Income	Subtotal	Non- controlling Interests	Total
Balance at February 28, 2010	481	\$48	\$430	\$5,507	\$216	\$6,201	\$ 35	\$6,236
Net earnings	—	—	—	1,407	—	1,407	3	1,410
Other comprehensive income (loss), net of tax:								
Foreign currency translation adjustments	—	—	—	—	311	311	2	313
Unrealized losses on available for sale investments	—	—	—	—	(25)	(25)	—	(25)
Total comprehensive income	—	—	—	—	—	1,693	5	1,698
Cumulative effect of adopting a new accounting standard related to uncertain tax positions	—	—	—	(13)	—	(13)	—	(13)
Stock options exercised	4	—	93	—	—	93	—	93
Tax benefit from stock options, restricted stock, and employee stock purchase plan	—	—	17	—	—	17	—	17
Issuance of common stock under employee stock purchase plan	1	—	53	—	—	53	—	53
Stock-based compensation	—	—	105	—	—	105	—	105
Common stock dividends, \$0.46 per share	—	—	—	(204)	—	(204)	—	(204)
Repurchase of common stock	(75)	(7)	(690)	(2,764)	—	(3,461)	—	(3,461)
Balance at February 27, 2011	411	41	8	3,933	502	4,484	40	4,524
Net earnings	—	—	—	1,003	—	1,003	30	1,033
Other comprehensive income (loss), net of tax:								
Foreign currency translation adjustments	—	—	—	—	(830)	(830)	(175)	(1,005)
Unrealized losses on available for sale investments	—	—	—	—	(19)	(19)	—	(19)
Reclassification adjustment for impairment loss on available for sale security	—	—	—	—	30	30	—	30
Total comprehensive income	—	—	—	—	—	184	(145)	39
Acquisition of business	—	—	—	—	—	—	666	666
Acquisition of noncontrolling interest	—	—	—	—	—	—	(48)	(48)
Stock options exercised	2	—	34	—	—	34	—	34
Tax benefit from stock options, restricted stock, and employee stock purchase plan	—	—	4	—	—	4	—	4
Issuance of common stock under employee stock purchase plan	1	—	49	—	—	49	—	49
Stock-based compensation	—	—	110	—	—	110	—	110
Common stock dividends, \$0.54 per share	—	—	—	(222)	—	(222)	—	(222)
Balance at February 28, 2012	414	41	205	4,714	(317)	4,643	513	5,156
Net earnings	—	—	—	1,317	—	1,317	77	1,394
Other comprehensive income (loss), net of tax:								
Foreign currency translation adjustments	—	—	—	—	329	329	76	405
Unrealized gains on available for sale investments	—	—	—	—	28	28	—	28
Total comprehensive income	—	—	—	—	—	1,674	153	1,827
Purchase accounting adjustments	—	—	—	—	—	—	(22)	(22)
Stock options exercised	4	1	95	—	—	96	—	96
Tax loss from stock options, restricted stock, and employee stock purchase plan	—	—	(19)	—	—	(19)	—	(19)
Issuance of common stock under employee stock purchase plan	1	—	42	—	—	42	—	42
Stock-based compensation	—	—	118	—	—	118	—	118
Common stock dividends, \$0.56 per share	—	—	—	(234)	—	(234)	—	(234)
Balance at February 27, 2013	419	\$42	\$441	\$5,797	\$ 40	\$6,320	\$644	\$6,964

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- Employees have provided labor services for which Great Deal and Thames have not made full payment. Great Deal includes the amounts owed to employees in the liability account “Accrued compensation and related expenses.” Thames includes them in “Accounts, notes and other current payables.”

EXHIBIT 1.5

Thames Limited
Consolidated Balance Sheets
 (amounts in millions of euros [€] except share amounts)

	December 31, 2013	December 31, 2012
Goodwill	€ 2,986.9	€ 2,793.2
Other intangible assets, net	925.3	1,129.3
Tangible assets, net	1,338.3	1,262.9
Total noncurrent operating assets	5,250.5	5,185.4
Share in net assets of equity affiliates	711.0	692.4
Available for sale investments	101.9	175.4
Loans and other financial assets	171.9	258.8
Total noncurrent financial assets	6,235.3	6,312.0
Fair value of derivatives: interest rate risk management	24.8	13.1
Pension and other employee benefits	66.0	44.0
Deferred tax assets	678.0	433.5
Noncurrent assets	7,004.1	6,802.6
Inventories and work in progress	2,210.8	2,227.4
Construction contracts: assets	2,243.2	2,400.6
Advances to suppliers	342.4	548.2
Accounts, notes and other current receivables	3,934.8	4,064.1
Fair value of derivatives: currency risk management	172.6	292.4
Total current operating assets	8,903.8	9,532.7
Current tax receivables	40.4	13.1
Current accounts with affiliated companies	94.8	65.1
Marketable securities	4.4	22.4
Cash and equivalents	1,960.1	1,499.8
Total current financial assets	2,099.7	1,600.4
Current assets	11,003.5	11,133.1
Total assets	€18,007.6	€17,935.7
Capital, paid-in surplus and other reserves	€ 4,168.3	€ 4,498.9
Cumulative translation adjustment	(283.2)	(399.8)
Treasury shares	(141.5)	(150.2)
Shareholders' equity	3,743.6	3,948.9
Noncontrolling interests	10.2	2.9
Total shareholders' equity and noncontrolling interests	3,753.8	3,951.8
Financial debt: long term	1,651.6	761.3
Pension and other employee benefits	856.7	847.5
Deferred tax liabilities	258.6	268.6
Noncurrent liabilities	2,766.9	1,877.4
Advances received from customers on contracts	3,849.4	3,687.4
Refundable grants	172.8	169.5
Construction contracts: liabilities	882.7	578.4
Reserves for contingencies	1,129.8	961.5
Accounts, notes and other current payables	4,736.0	5,045.9
Fair value of derivatives: currency risk management	100.7	279.5
Total current operating liabilities	10,871.4	10,722.2
Current tax payables	92.2	88.9
Financial debt: short term	326.4	1,136.3
Current accounts with affiliated companies	196.9	159.1
Total current financial liabilities	523.3	1,295.4
Total current liabilities	11,486.9	12,106.5
Total Liabilities and Shareholders' Equity	€18,007.6	€17,935.7

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Shareholders' equity shows the amount of funds owners have provided either by buying shares or by reinvesting (retaining) the net assets generated by earnings. Owners have a claim on the firm's assets because they have provided funds to the firm. The owners' claim is a residual interest in the firm's assets. That is, owners have a claim on assets that are *in excess of* the assets required to meet creditors' claims. Shareholders' equity lists both the amount invested by shareholders for their ownership interests and the amount of retained earnings. Thames combines contributed capital and retained earnings in the account "Capital, paid-in surplus and other reserves"; Thames's total shareholders equity is €3,743.6 million. Great Deal also uses the term *shareholders' equity*. As of February 27, 2013, there were 419 million shares issued

EXHIBIT 1.6

Thames Limited
Consolidated Profit and Loss Account
(amounts in millions of euros [€])

A. Consolidated Profit and Loss Statements	2013	2012
Revenues	€ 12,881.5	€12,664.8
Cost of sales	(10,633.4)	(9,964.5)
Research and development expenses	(550.5)	(440.2)
Marketing and selling expenses	(901.9)	(806.7)
General and administrative expenses	(543.4)	(558.7)
Restructuring costs	(116.1)	(32.5)
Amortization of intangible assets	(84.4)	(109.8)
Income from operations	51.8	752.4
Impairment of noncurrent operating assets	(260.1)	(69.1)
Gain (loss) on disposal of assets and other	(1.0)	35.2
Income of operating activities	(209.3)	718.5
Financial interest on gross debt	(91.6)	(101.4)
Financial income from cash and equivalents	26.0	49.6
Cost of net financial debt	(65.6)	(51.8)
Other financial income (expense)	(44.9)	(49.8)
Other components of pension charge	(105.1)	(11.1)
Income tax	175.3	(103.0)
Share in net income (loss) of equity affiliates	48.0	57.6
Net income (loss)	€ (201.6)	€ 560.4
Of which:		
Net income, Group Share	(201.8)	559.9
Noncontrolling interests	0.2	0.5
Basic earnings per share	€ (1.03)	€ 2.87
Diluted earnings per share	€ (1.03)	€ 2.85
B. Consolidated Statements of Comprehensive Income	2013	2012
Net income (loss)	€ (201.8)	€ 559.9
Translation of the financial statements of foreign subsidiaries	119.1	(263.3)
Foreign investments' hedge, net of tax	(2.5)	2.9
Cash flow hedge, net of tax	51.4	(29.7)
Financial assets available for sale, net of tax	1.5	(0.5)
Total other comprehensive income (loss), net of tax	169.5	(290.6)
Total comprehensive income (loss), for the period	€ (32.3)	€ 269.3

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to shareholders, who had provided total funds to Great Deal of \$483 million (= \$42 + \$441). Great Deal's retained earnings is \$5,797 million, discussed next.

Retained earnings represent the *net assets* (= total assets – total liabilities) a firm derives from its earnings that exceed the dividends it has distributed to shareholders. Management operates the firm's assets with the intent of generating earnings. That is, the firm expects to receive more assets than it consumes in operations. The increase in assets, after claims of creditors, is called Retained Earnings, and it belongs to the firm's owners. As of February 27, 2013, Great Deal's retained earnings is \$5,797 million, meaning that cumulative earnings exceed cumulative dividends by \$5,797 million. As of December 31, 2013, Thames has an *accumulated deficit*, as shown in **Exhibit 1.8**, the Consolidated Statement of Changes in Shareholders Equity and Minority Interests.¹² An accumulated deficit means that cumulative earnings less dividends are negative. The amount of Thames's accumulated deficit at December 31, 2013 is €197.3 million.

An amount of assets equal to retained earnings does not appear on any single line on the balance sheet. Instead, firms use the assets generated by the retention of earnings to acquire various assets including inventories, buildings, equipment, and other assets. Almost all successful firms use a large percentage of the assets they generate by earnings to replace assets and to grow, rather than to pay dividends.

¹²Authoritative guidance uses the term *noncontrolling interest*, not *minority interest*. However, firms sometimes continue to use the latter term in their financial reports.

EXHIBIT 1.7

Thames Limited
Consolidated Statements of Cash Flows
(amounts in millions of euros [€])

	2013	2012
Net income (loss)	€ (201.6)	€ 560.4
Add (deduct):		
Income tax expense (gain)	(175.3)	103.0
Share in net (income) loss of equity affiliates, net of dividends	(21.5)	(29.6)
Depreciation and amortization of tangible and intangible assets	420.8	433.0
Provisions for pensions and other employee benefits	162.6	70.9
Impairment of noncurrent operating assets	260.1	69.1
Gain (loss) on disposals of assets	1.0	(35.2)
Net allowance to restructuring provisions	12.1	(85.9)
Other items	26.6	49.4
Change in working capital requirements and in reserves	924.6	(44.5)
Payment of contributions / pension benefits	(156.2)	(189.7)
Income tax paid (received)	(98.2)	(80.1)
Net cash flows from operating activities	1,155.0	820.8
Capital expenditure	(418.9)	(534.6)
Proceeds from disposal of tangible and intangible assets	5.8	11.7
Acquisitions	(148.0)	(173.2)
Disposals	—	89.1
Change in loans	4.1	(24.7)
Change in current assets with affiliated companies	(32.0)	(6.8)
Decrease (increase) in marketable securities	24.0	(3.3)
Net cash flows from investing activities	(565.0)	(641.8)
Dividends paid	(204.7)	(195.3)
Exercise of stock options	4.6	12.3
Proceeds from sale of treasury shares	17.0	(56.8)
Increase in debt	1,125.2	412.8
Repayment of debt	(1,103.9)	(184.4)
Net cash flows from financing activities	(161.8)	(11.4)
Effect of exchange rate variations	32.1	(131.9)
Total increase (decrease) in cash	460.3	35.7
Cash at beginning of period	1,499.8	1,464.1
Cash at end of period	1,960.1	1,499.8
Supplemental disclosure of cash flow information:		
Interest received	32.5	32.5
Interest paid	82.2	82.2

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Equality of Assets and Liabilities Plus Shareholders' Equity The total of all assets equals the total of all liabilities and all shareholders' equity amounts. This equation holds for both Great Deal and Thames:

	Assets	=	Liabilities ¹³	+	Shareholders' Equity
Great Deal	\$18,302	=	\$11,338	+	\$6,964
Thames	€18,007.6	=	€14,253.8	+	€3,753.8

A firm invests the resources it obtains from financing. The balance sheet views the same resources from two perspectives. First, as the assets the firm currently holds, having acquired them with funds. Second, as the claims of creditors and owners who provided the funds. Thus,

$$\text{Assets} = \text{Liabilities} + \text{Shareholder's Equity}$$

or

$$\begin{aligned} \text{Investing} &= \text{Financing} \\ \text{Resources} &= \text{Sources of Resources} \\ \text{Resources} &= \text{Claims on Resources} \end{aligned}$$

¹³Neither Great Deal nor Thames reports a subtotal for total liabilities. To obtain total liabilities, sum the liability accounts. Thames shows Shareholders' Equity = €3,743.6, and Minority Interest (another component of Shareholders' Equity) = €10.2. Minority interest (noncontrolling interest) is discussed in **Chapter 14**.

EXHIBIT 1.8**Consolidated Statement of Changes in Shareholders' Equity and Minority Interests
(amounts in millions of euros [€] except share amounts)**

	Number of shares outstanding (in 000s)	Share capital	Paid-in surplus	Retained earnings	Cash flow hedge	AFS investments	Cumulative translation adjustment	Treasury shares	Shareholders' equity	Non-controlling interest	Total
Balance at December 31, 2011	195,401	595.0	3,638.2	(173.8)	86.0	4.5	(139.4)	(129.6)	3,880.9	3.3	3,884.2
Net income	—	—	—	559.9	—	—	—	—	559.9	0.5	560.4
Other comprehensive loss	—	—	—	—	(29.7)	(0.5)	(260.4)	—	(290.6)	(0.5)	(291.1)
Total comprehensive income	—	—	—	559.9	(29.7)	(0.5)	(260.4)	—	269.3	—	269.3
Capital increase	391	1.2	9.6	—	—	—	—	—	10.8	—	10.8
Dividends	—	—	—	(195.3)	—	—	—	—	(195.3)	—	(195.3)
Share based payments	—	—	—	27.9	—	—	—	—	27.9	—	27.9
Changes in treasury shares	(811)	—	—	(20.4)	—	—	—	(20.6)	(41.0)	—	(41.0)
Other	—	—	—	(3.7)	—	—	—	—	(3.7)	—	(3.7)
Changes in scope of consolidation	—	—	—	—	—	—	—	—	—	(0.4)	(0.4)
Total transactions with shareholders	(420)	1.2	9.6	(191.5)	—	—	0.0	(20.6)	(201.3)	(0.4)	(201.7)
Balance at December 31, 2012	194,981	596.2	3,647.8	194.6	56.3	4.0	(399.8)	(150.2)	3,948.9	2.9	3,951.8
Net income	—	—	—	(201.8)	—	—	—	—	(201.8)	0.2	(201.6)
Other comprehensive loss	—	—	—	—	51.4	1.5	116.6	—	169.5	0.6	170.1
Total comprehensive income	—	—	—	(201.8)	51.4	1.5	116.6	—	(32.3)	0.8	(31.5)
Capital increase	299	0.9	7.5	—	—	—	—	—	8.4	—	8.4
Dividends	—	—	—	(204.7)	—	—	—	—	(204.7)	—	(204.7)
Share based payments	—	—	—	22.5	—	—	—	—	22.5	—	22.5
Changes in treasury shares	187	—	—	(1.6)	—	—	—	8.7	7.1	—	7.1
Other	—	—	—	(6.3)	—	—	—	—	(6.3)	—	(6.3)
Changes in scope of consolidation	—	—	—	—	—	—	—	—	—	6.5	6.5
Total transactions with shareholders	486	0.9	7.5	(190.1)	—	—	0.0	8.7	(173.0)	6.5	(166.5)
Balance at December 31, 2013	195,467	597.1	3,655.3	(197.3)	107.7	5.5	(283.2)	(141.5)	3,743.6	10.2	3,753.8

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The amounts of individual assets that make up total assets, represented by accounts receivable, inventories, equipment, and other assets, reflect a firm's investment decisions. The mix of liabilities plus shareholders' equity reflects a firm's financing decisions, each measured at the balance sheet date.

Balance Sheet Classification and Aggregation Both U.S. GAAP and IFRS require that balance sheets separate current items from noncurrent items.¹⁴

- *Current assets* include cash and assets that a firm expects to turn into cash, or sell, or consume within one year from the date of the balance sheet. Examples are accounts receivable and inventory.
- *Current liabilities* represent obligations a firm expects to pay within one year. Examples are accounts payable to suppliers and salaries payable to employees.
- *Noncurrent assets* are assets that will be used for several years. Examples include land, buildings, equipment, and patents.
- *Noncurrent liabilities and shareholders' equity* are sources of funds whose suppliers do not expect to receive payment within the next year. Rather, they expect payment sometime after next year.

The line items on the balance sheet represent *aggregated* amounts. For example, the amount shown for the line item labeled "Merchandise inventories" on Great Deal's balance sheet represents all of Great Deal's inventories.

¹⁴Great Deal displays its current assets and current liabilities first. Thames displays its noncurrent assets and noncurrent liabilities first. IFRS, but not U.S. GAAP, permits the display used by Thames.

Balance Sheet Measurement Both U.S. GAAP and IFRS use two bases to measure the monetary amounts at which assets, liabilities, and shareholders' equity appear on the balance sheet:

1. The historical amount, which reflects the acquisition cost of assets or the amount of funds originally obtained from creditors or owners.
2. The current amount, which reflects some measure of current value as of the balance sheet date. The notion of a current amount, or current value, can be applied to assets, to liabilities, or to shareholders' equity.

Some accounting information is reported at *historical cost*, a **historical amount**, and some at *current cost*, a **current amount** (one example of a current amount is *fair value*), depending on the requirements of U.S. GAAP and IFRS. Later chapters discuss and illustrate these measurement bases.

Analysis of the Balance Sheet Firms typically finance current assets with current liabilities and finance noncurrent assets with noncurrent liabilities and shareholders' equity. Current assets such as accounts receivable generally convert into cash within one year. Firms can use this near-term cash flow to pay current liabilities, which require payment within one year. Non-current assets, such as buildings and equipment, generate cash flows over several years. Firms can use these more extended cash inflows to repay long-term liabilities as they come due.

Great Deal's balance sheet as of February 27, 2013, shows the following (in millions of US\$):

Current Assets	\$10,566	Current Liabilities	\$ 8,978
Noncurrent Assets	<u>7,736</u>	Noncurrent Liabilities and Shareholders' Equity.	<u>9,324</u>
Total	<u>\$18,302</u>	Total	<u>\$18,302</u>

Similar information presented in Thames's balance sheet as of December 31, 2013, reveals the following (in millions of euros [€]):

Current Assets	€11,003.5	Current Liabilities	€11,486.9
Noncurrent Assets	<u>7,004.1</u>	Noncurrent Liabilities and Shareholders' Equity.	<u>6,520.7</u>
Total	<u>€18,007.6</u>	Total	<u>€18,007.6</u>

These data show that Thames and Great Deal have raised funds from noncurrent sources (non-current liabilities and shareholders' equity) in amounts that exceed (in the case of Great Deal) or are less than (in the case of Thames) the amount of noncurrent assets.

INCOME STATEMENT

The **income statement** (sometimes called the **statement of profit and loss** by firms applying IFRS), provides information on profitability. The terms **net income**, **earnings**, and **profit** are interchangeable. **Exhibit 1.2** shows Great Deal's income statement for fiscal years 2012, 2011, and 2010. Great Deal refers to its income statement as the Consolidated Statement of Earnings. **Exhibit 1.6** shows Thames's income statement for 2012 and 2013. Thames refers to its income statement as the Consolidated Profit and Loss Account.

The income statement reports a firm's success in generating earnings during a given reporting period.¹⁵ Net income is equal to revenues minus expenses, adjusted for any gains or losses. (We ignore gains and losses in this chapter.) The income statement reports the sources and amounts of a firm's revenues and the nature and amounts of its expenses. A firm strives to generate more revenues than expenses. Net income indicates a firm's accomplishments (revenues)

¹⁵An income statement can report for a period of any length: a year, a quarter, or a month. In all cases, the reporting period is the time period between two successive balance sheets, and the time period over which the firm measures net income.

relative to the efforts required (expenses) in pursuing its operating activities. When expenses for a period exceed revenues for that period, the result is a **net loss**.

Revenues (also called **sales** or **sales revenue**) measure the inflows of assets from selling goods and providing services to customers. In exchange for providing goods and services, firms receive assets (either cash or promises to pay cash, Accounts Receivable). The amount of revenue generated is equal to the net assets received. Great Deal reports revenue of \$49,694 million for fiscal 2012. Thames reports revenue of €12,881.5 million for fiscal 2013.

Expenses measure the outflow of assets incurred in generating revenues. *Cost of goods sold* or *cost of sales* (an expense) measures the cost of inventories sold to customers. For a service firm, cost of sales measures the cost of providing services. *Selling and administrative expenses* measure the cost of selling and administrative services received during the period. An *expense* means that an asset decreases or a liability increases. The amount of the expense is equal to the asset decrease or the liability increase.

Classification of Revenues and Expenses Firms classify revenues and expenses in different ways and apply different levels of aggregation. For example, Thames reports expenses for research and development of €550.5 million in 2013. Some firms might include this expense in another line item. Thames's income statement classifies some expenses by the department that carried out the activities (for example, marketing and selling expenses) and some expenses by their nature (for example, income taxes).

Relation Between the Income Statement and the Balance Sheet The income statement links the balance sheet at the beginning of the period with the balance sheet at the end of the period. The balance sheet amount for retained earnings represents the sum of all prior earnings (or losses) of a firm in excess of dividends.¹⁶ Net income (or net loss) for the current period helps explain the change in retained earnings between the beginning and the end of the period. For example, Great Deal's income for fiscal 2012, labeled on the income statement "Net earnings attributable to Great Deal, Inc." was \$1,317 million. **Exhibit 1.4** shows that Great Deal paid cash dividends of \$234 million to shareholders in fiscal 2012. We can use this information to analyze the change in Great Deal's retained earnings (in millions of US\$):

Retained Earnings, February 28, 2012	\$4,714
Add Net Income for Fiscal 2012	1,317
Subtract Dividends Declared and Paid During Fiscal 2012	(234)
Retained Earnings, February 27, 2013	<u>\$5,797</u>

STATEMENT OF CASH FLOWS

The **statement of cash flows** reports information about cash generated from (or used by) operating, investing, and financing activities during the period. It shows where the firm obtains or generates cash and where it spends or uses cash. If a firm is to continue operating successfully, it must generate more cash than it spends. A firm generates cash from operations when it collects more cash from customers than it spends on operating activities. While firms can borrow cash from creditors, future operations must generate cash to repay these loans.

Exhibit 1.3 presents the statements of cash flows for Great Deal for fiscal years 2012, 2011 and 2010. **Exhibit 1.7** shows this information for Thames for fiscal years 2013 and 2012. These statements have three sections, describing operating, investing, and financing activities that generate or use cash.

Operating Activities Most firms expect to collect more cash from customers than they pay to suppliers, employees, and others in carrying out operating activities. For many firms, operating activities provide the largest source of cash. Both Great Deal and Thames generated significant cash flows from operating activities in the years presented. For example, Thames's

¹⁶Other items can also affect retained earnings. Later chapters discuss some of these and others are beyond the scope of this textbook.

cash provided by operating activities in 2013 was €1,155.0 million. Great Deal's cash provided by operating activities in 2012 was \$2,206 million.¹⁷

Investing Activities Firms acquire buildings, equipment, and other noncurrent assets to maintain or expand their productive capacity. These acquisitions, referred to as **capital expenditures**, use cash. A firm can obtain the cash needed for capital expenditures from selling existing assets, from operating activities, and from financing activities. Great Deal's cash paid for additions to property and equipment was \$615 million in fiscal 2012. Thames's capital expenditures in 2013 was €418.9 million.

Financing Activities Firms obtain financing to support operating and investing activities by issuing debt or common shares. The firm uses cash to pay dividends and to repay or retire existing debt financing, such as repaying long-term debt. For example, Great Deal's statement of cash flows shows that in fiscal 2012 it used \$5,342 million cash to repay long-term debt, it borrowed \$5,132 by issuing debt, and it paid \$234 million in cash dividends. Thames borrowed €1,125.2 million, it repaid €1,103.9 million, and it paid cash dividends of €204.7 million.

Relation of the Statement of Cash Flows to the Balance Sheet and Income Statement The statement of cash flows explains the change in cash between the beginning and the end of the period. It also displays the changes in cash from operating, investing, and financing activities. The following table analyzes the changes in cash for Great Deal (for fiscal 2012) and for Thames (for fiscal 2013). Numbers in parentheses () are subtracted, indicating a net use of cash.

Changes in Cash for Great Deal (fiscal 2012) and Thames (fiscal 2013)

	Great Deal	Thames
Cash at the Start of Fiscal 2012 or 2013	\$ 498	€1,499.8
Cash Flow from Operations During the Year	2,206	1,155.0
Cash Flow from Investing During the Year	(540)	(565)
Cash Flow from Financing During the Year	(348)	(161.8)
Adjustment for Exchange Rate Differences ¹⁸	10	32.1
Cash at the End of Fiscal 2012 or 2013	<u>\$1,826</u>	<u>€1,960.1</u>

In addition to sources and uses of cash, the statement of cash flows shows the relation between net income and cash flow from operations. Cash flow from operations exceeds net income for each of the three years shown for Great Deal. Cash flow from operations is positive in fiscal 2013 for Thames, even though it reported a loss for that year, and cash flow from operations exceeded net income for fiscal 2012.¹⁹

STATEMENT OF SHAREHOLDERS' EQUITY

The fourth financial statement presents changes in shareholders' equity. Firms use various titles for the **statement of shareholders' equity**. For example, Great Deal's statement, in **Exhibit 1.4**, is called Consolidated Statements of Changes in Shareholders' Equity, while Thames's statement, in **Exhibit 1.8**, is called Consolidated Statement of Changes in Shareholders' Equity and Minority Interests. This statement displays components of shareholders' equity, including common shares and retained earnings, and changes in those components. For example, Great Deal's retained earnings changed between February 28, 2012, and February 27, 2013, because Great Deal earned net income (an increase of \$1,317 million) and paid cash dividends (a decrease of \$234 million).

¹⁷Both of these statements begin with net income and make adjustments to net income to calculate cash flow from operations. **Chapter 6** discusses these adjustments.

¹⁸Both Great Deal and Thames operate in several countries, implying that their activities involve multiple currencies. Thames reports a €32.1 million effect of exchange rate changes and includes that amount in its statement of cash flows. Great Deal reports the effects of exchange rate changes as \$10 million. This book does not consider the accounting effects of different currencies or of changes in exchange rates among currencies.

¹⁹**Chapter 6** discusses reasons for the difference between net income and cash flow from operations.

SUPPORTING SCHEDULES AND NOTES

The financial statements present aggregated information, for example, the total amount of land, buildings, and equipment. Financial reports provide more detail for some of the items reported in the financial statements. They provide additional explanatory material to help the user understand the information in the financial statements. The additional material appears in **schedules** and notes.

The **notes** to the financial statements describe the accounting guidance that the firm uses to prepare those financial statements. The notes also provide information that elaborates on, or *disaggregates*, items presented in the financial statements. Understanding a firm's balance sheet, income statement, statement of cash flows, and statement of changes in shareholders' equity requires understanding the notes.

SUMMARY: PRINCIPAL FINANCIAL STATEMENTS

The financial statements provide information about a firm's financial position (balance sheet), its profitability (income statement), its cash-generating activity (statement of cash flows), and its changes in shareholders' equity. The balance sheet reports amounts of assets, liabilities, and shareholders' equity at the balance sheet date. The income statement reports the outcome of using assets to generate earnings during a reporting period and helps explain the change in retained earnings on the balance sheet between the beginning and end of the period. The statement of cash flows reports the cash inflows and outflows from operating, investing, and financing activities and explains the change in cash on the balance sheet between the beginning and end of the period. The statement of shareholders' equity reports the reasons why the components of shareholders' equity increased or decreased during the reporting period. Users should read the financial statements in conjunction with the supporting notes and schedules, which provide additional information to help users understand the financial statements.

► PROBLEM 1.1 FOR SELF-STUDY

Preparing a balance sheet and an income statement. The following information is based on the annual report of Sargent AG, a German multinational firm. Amounts are reported in millions of euros (€).

	September 30	
	2013	2012
Balance Sheet Items		
Accounts Payable	€ 8,382	€ 8,443
Property and Equipment (net of accumulated depreciation)	10,555	12,072
Cash and Cash Equivalents	4,005	10,214
Common Stock	8,823	8,335
Intangible Assets	17,120	13,074
Other Noncurrent Assets	3,371	4,370
Long-Term Investment Securities	12,577	7,998
Inventories	12,930	12,790
Long-Term Debt	9,860	13,122
Other Noncurrent Liabilities	8,174	9,547
Other Shareholders' Equity Items	351	858
Accounts Receivable	14,620	15,148
Other Current Assets	16,377	11,862
Other Current Liabilities	33,098	28,939
Retained Earnings	20,453	16,702
Current Income Taxes Payable	2,414	1,582

(continued)

	September 30
	2013
Income Statement Items	
Cost of Sales	€51,572
Income Tax Expense	1,192
Other (Nonoperating) Expense	144
Sales	72,448
Research & Development Expenses	3,399
Selling, General, and Administrative Expenses	12,103

- a. Prepare a comparative balance sheet as of September 30, 2013 (fiscal 2013), and September 30, 2012 (fiscal 2012) in the format used in **Exhibit 1.1**. Classify the balance sheet items into the following categories: current assets, noncurrent assets, current liabilities, noncurrent liabilities, and shareholders' equity. Refer to the **Glossary** at the back of the book if you have difficulty with any of the accounts. For each year, verify that assets equal liabilities plus shareholders' equity on your balance sheet.
- b. Prepare an income statement for the year ending September 30, 2013. Classify income statement items into revenues and expenses.
- c. Based only on the information given here, did this firm pay cash dividends to its shareholders during the year ending September 30, 2013? If yes, what is the amount?

Solutions to self-study problems appear at the end of each chapter.

FINANCIAL REPORTING PROCESS

This section discusses participants in the **financial reporting process**:

1. Managers and governing boards of reporting entities.
2. Accounting standard setters and regulatory bodies.
3. Independent external auditors.
4. Users of financial statements.

This section also discusses three concepts and conventions that underpin the financial reporting process:

1. The distinction between recognition and realization.
2. Materiality.
3. The accounting period.

MANAGERS AND GOVERNING BOARDS OF REPORTING ENTITIES

Firms receive funds from owners with the expectation that managers will use the funds to increase shareholder value. **Managers** are agents of the shareholders and have responsibility for safeguarding and properly using the firm's resources. Managers establish internal controls to ensure the proper recording of transactions and the appropriate measurement and reporting of the results of those transactions. Shareholders elect a **governing board**, sometimes called a *board of directors*. The governing board is responsible for selecting, compensating, and overseeing managers; for establishing dividend policy; and for making decisions on major issues such as acquisitions of other firms and divestitures of lines of business. Some governing boards, including the boards of publicly traded U.S. firms, have a special committee charged with oversight of financial reporting.

Managers are responsible for preparing the firm's financial reports. If the firm's shares trade publicly, laws and regulations specify the accounting system the firm must follow (for example, U.S. GAAP or IFRS). Management is responsible for understanding the transactions, events, and arrangements that it reports in the firm's financial statements and for properly applying accounting standards.

ACCOUNTING STANDARD SETTERS AND REGULATORY BODIES

Firms apply accounting standards to prepare their financial reports. This book considers two systems of accounting standards, U.S. GAAP and IFRS. This section discusses these two sets of standards and their regulatory regimes.

U.S. GAAP In the United States the **Securities and Exchange Commission (SEC)**, an agency of the federal government, has the authority to establish accounting standards. The SEC is also the enforcement agency for U.S. securities laws. These laws apply to firms that access the public debt and equity markets of the United States. The SEC enforces the application of required accounting standards for **U.S. SEC registrants** as well as **non-U.S. SEC registrants** (also called **foreign private issuers**). A U.S. SEC registrant is a firm incorporated in the United States that lists and trades its securities in the United States. A non-U.S. SEC registrant is a firm incorporated under non-U.S. laws that has filed the necessary documents with the SEC to list and trade its securities in the United States.

Although it occasionally issues authoritative accounting guidance, the SEC has largely delegated the task of setting U.S. financial accounting standards to the **Financial Accounting Standards Board (FASB)**, a private-sector body with seven voting members. FASB members work full time for the FASB and sever all relations with their previous employers. As the FASB considers a financial reporting issue, its due-process procedures ensure that it receives input from constituencies, including preparers of financial reports, auditors, and financial statement users.²⁰

Common terminology includes the pronouncements of the FASB in the compilation of accounting rules, procedures, and practices known as **generally accepted accounting principles (GAAP)**. The applicable accounting guidance for preparing financial reports of U.S. firms is **U.S. GAAP**. The applicable guidance includes, as well, writings of the SEC, consensuses of the Emerging Issues Task Force (a committee that operates under the oversight of the FASB), and some pronouncements of the American Institute of Certified Public Accountants (AICPA, a professional association). From its inception in 1973 until 2009, the FASB issued its major pronouncements in the form of *Statements of Financial Accounting Standards (SFAS)*, with both a number (for example, *SFAS 95*) and a title (for example, “Statement of Cash Flows”).

In 2009, the FASB completed a codification project that organized all of U.S. GAAP by topic (for example, revenues). The *FASB Accounting Standards Codification* is now the source of U.S. GAAP and can be accessed on the FASB’s Web site. Authoritative guidance is referred to in terms of its codification section (or ASC for *Accounting Standards Codification*); for example, Inventory is in FASB ASC 330; Revenue is in ASC 605; and Research and Development is in ASC 730. The FASB issues new authoritative guidance in the form of *Accounting Standards Updates (ASU)* that are amendments to the Accounting Standards Codification.

FASB board members make standard-setting decisions guided by a **conceptual framework** that addresses the following issues:²¹

1. *Objective of financial reporting.* The conceptual framework establishes the objective of financial reporting as providing information to current and potential investors, creditors, and others to assist them in making resource allocation decisions.²²
2. *Qualitative characteristics of accounting information.* The conceptual framework establishes two qualitative characteristics of financial information that enable the information to meet the objective of financial reporting. The two characteristics are relevance and representational faithfulness:
 - **Relevance.** The information should be pertinent to the decisions made by users of financial statements. This means that the information should have the capacity to affect their resource allocation decisions.
 - **Representational faithfulness.** The information should represent what it is supposed to represent. This means that the information should correspond to the phenomenon being reported, and it should be reasonably complete and free from bias and error.

²⁰ Additional information is available on the FASB’s Web site (www.fasb.org).

²¹ The FASB’s conceptual framework is in *Statements of Financial Accounting Concepts*, available on the FASB’s Web site.

²² With one exception, a method of accounting for inventories and cost of goods sold, the accounting methods permitted or required by U.S. GAAP differ from the methods required for calculating taxable income in the United States. With the exception of inventories, you should assume there will be significant differences between tax accounting methods and financial accounting methods under U.S. GAAP and IFRS.

The conceptual framework also establishes certain features of financial information that enhance the ability of that information to meet the objective of financial reporting.

- **Comparability.** The information should facilitate comparisons across firms and over time. Accounting information is comparable if firms account for similar events and transactions the same way.
 - **Verifiability.** Information is verifiable if knowledgeable and independent observers of that information reach consensus that a specified depiction of an item is a faithful representation of that item. Information can be verified in several ways, including, for example, direct observation, such as counting the amount of cash or inventory.
 - **Timeliness and understandability.** In order to be useful for resource allocation decisions, information must be available to decision makers in time to be capable of influencing their decisions. Also, decision makers must be able to understand that information. Financial reports are prepared with the assumptions that users have reasonable business knowledge and analyze the reports diligently.
3. *Elements of financial statements.* The conceptual framework defines assets, liabilities, revenues, expenses, and other items. An item can appear in the financial statements only if it meets these definitions. Items that do not meet these definitions may be disclosed in the notes.
 4. *Recognition and measurement principles.* The conceptual framework defines **recognition** as the depiction of an item in words and numbers in the financial statements with the amount included in the totals. For example, the amount payable to suppliers is a recognized item that appears as a liability on the balance sheet, and its amount is part of total liabilities. Other items in financial reports are not recognized in the financial statements but, if significant, appear as **disclosures** in the notes to the financial statements. The conceptual framework specifies criteria that an item must meet in order for it to be recognized in the financial statements. It also describes various ways to measure recognized items.

The conceptual framework guides the FASB in setting accounting standards. The conceptual framework is not a rigorous, analytical structure from which the FASB can logically deduce acceptable accounting methods, however.²³

International Financial Reporting Standards (IFRS) At one time, accounting was a largely jurisdiction-specific activity. This meant that *each* country developed its own distinct accounting standards. As a result, firms based in different countries applied different standards in their financial reports, impeding comparisons of firms by investors and creditors. The globalization of capital markets has increased the need for comparable financial statements across countries.

The **International Accounting Standards Board (IASB)** is an independent accounting standard-setting entity with voting members from several countries. (As of 2011, there were 15 voting members; this number is subject to change.) Standards set by the IASB are **International Financial Reporting Standards (IFRS)**. The IASB's conceptual framework is similar to the FASB's conceptual framework and is used for similar purposes. The IASB began operating in 2001.²⁴ More than 100 countries require or permit firms to use IFRS, or a set of standards based on or adapted from IFRS. Each of these countries has its own regulatory arrangements for enforcing the application of IFRS. These enforcement arrangements differ considerably across countries.

In 2007 the U.S. SEC adopted rules that permit non-U.S. firms that list and trade their securities in the United States (non-U.S. SEC registrants) to apply IFRS in their financial reports filed with the SEC without any reconciliation to U.S. GAAP. Prior to this rule change, non-U.S. SEC registrants could use any set of accounting standards to prepare their financial reports, but they had to reconcile those reported numbers to the numbers that they would have reported had they prepared the financial statements using U.S. GAAP. The main effect of the 2007 rule change is to create *two* sets of acceptable financial reporting systems in the

²³Chapter 17 discusses the FASB's conceptual framework more fully.

²⁴The standards set by its predecessor body, the International Accounting Standards Committee (IASC), are called *International Accounting Standards (IAS)*, and IFRS includes them.

United States, specifically, U.S. GAAP for U.S. SEC registrants and IFRS for non-U.S. SEC registrants.²⁵

The FASB and IASB have committed to converge their standards. The goal of the **convergence** process is to eliminate differences between U.S. GAAP and IFRS and to improve the resulting standards. The intention is produce a single set of high-quality financial reporting standards. In addition, a separate project is under way to converge, complete, and improve the conceptual frameworks.²⁶

INDEPENDENT AUDITORS

Regulatory bodies require firms whose securities trade publicly to obtain an audit of their financial reports by an independent external auditor.²⁷ Even if the securities do not trade publicly, financing sources such as banks may require that the firm obtain an independent audit of its financial reports. An audit involves the following:

1. An assessment of the capability of a firm's accounting system to accumulate, measure, and synthesize transactional data.
2. An assessment of the operational effectiveness of the accounting system.
3. A determination of whether the financial report complies with the requirements of the applicable authoritative guidance.

The auditor obtains evidence for the first assessment by studying the procedures and internal controls built into the accounting system. The auditor obtains evidence for the second assessment by examining a sample of actual transactions. The auditor obtains evidence for the third assessment through a combination of audit procedures. The auditor's conclusions appear in the **audit opinion**, part of the financial report.

Concerns over the quality of financial reporting and auditing have led to government initiatives in the United States. For example, the **Sarbanes-Oxley Act** of 2002 established the **Public Company Accounting Oversight Board (PCAOB)**, which is responsible for monitoring the quality of audits of SEC registrants. This Act requires the PCAOB to register firms conducting independent audits; establish acceptable auditing, quality control, and independence standards; and provide for periodic inspections of registered auditors. In addition, for larger firms whose shares trade in the United States, the Sarbanes-Oxley Act requires the independent auditor to provide an assessment of the effectiveness of a firm's internal control system for financial reporting.

USERS OF FINANCIAL STATEMENTS

Standard setters and securities regulators intend that financial reports provide information that helps decision makers allocate resources (for example, lend funds or buy shares) and evaluate the results of their decisions. Financial reporting is not intended to measure firm value or to provide *all* the information decision makers may need to make resource allocation decisions. Financial reporting is intended to provide information that is useful in helping decision makers assess the amount, timing, and uncertainty of future cash flows.

Users of financial statements must have reasonable business knowledge and reasonable knowledge of the kinds of transactions that firms engage in. They must also have reasonable knowledge of the financial accounting guidance that firms follow to prepare financial reports, and reasonable understanding of the judgments and estimates required to apply those principles.

²⁵Non-U.S. SEC registrants could also choose to apply U.S. GAAP. Or they could apply some other accounting standards (not IFRS and not U.S. GAAP) and reconcile the resulting numbers to U.S. GAAP. As this book goes to press, the SEC has not decided whether to permit or require U.S. SEC registrants to apply IFRS.

²⁶Specific information about convergence activities appears on the FASB's Web site (www.fasb.org) and on the IASB's Web site (www.ifrs.org). **Chapter 17** summarizes some of the differences between U.S. GAAP and IFRS.

²⁷Employees of a firm may also conduct audits (called *internal audits*). The employees' knowledge and familiarity with the activities of their firm enhance the quality of the audit work and increase the likelihood that the audit will generate suggestions for improving operations.

BASIC ACCOUNTING CONVENTIONS AND CONCEPTS

Recognition and **realization** are two fundamental accounting concepts. We have previously described recognized items as being depicted in words and numbers on the face of the financial statements, with their amounts included in the totals. Items must meet certain conditions in order for them to be recognized.²⁸ Realization refers to converting a noncash item to cash. An example of a realized event is collecting cash on an account receivable.

Accounting conventions recognize many accounting items (that is, include them in the financial statements) before the firm realizes them (that is, converts them to cash). To illustrate, suppose a firm ships an item for \$1,000 on account, payable in 30 days, to a creditworthy customer. The firm *recognizes* revenue when it ships the goods but *realizes* revenue when it collects the cash.

Materiality captures the notion that financial reports need not include items that are so small as to be meaningless to users. Immaterial items do not appear in the financial reports. No precise quantitative materiality threshold exists, so financial statement preparers must apply judgment to decide whether a given item is immaterial.

The **accounting period convention** refers to the length of financial reporting periods. Most business activities do not divide into distinguishable pieces. For example, a firm acquires a plant and uses it in manufacturing products for 30 years. A firm purchases delivery equipment and uses it to transport merchandise to customers for five years. Because there is no natural stopping point in business activities, the convention is to prepare financial statements for periods of specified length. This approach facilitates timely comparisons and analyses among firms.

An accounting period (also called a **reporting period**) is the time between two successive balance sheet dates. Balance sheets prepared at the end of the day on December 31 of one year and at the end of the day on December 31 of the next year bound a calendar-year accounting period. The December 31 balance sheet is also the beginning balance sheet for the next year. Balance sheets prepared at the end of the day on November 30 and at the end of the day on December 31 bound a one-month accounting period—the month of December.

Some firms use the calendar year as the accounting period, while others use a **natural business year** that coincides with changes in the level of operating activities. For example, firms often establish their year-end as the point in time when inventories are at their lowest level. Retailers, like Great Deal, use a year-end close to the end of January or February, the natural end of the holiday sales season. The ending date of a natural business year is therefore associated with the activities of the particular firm's business.

Firms may prepare *interim reports* for periods shorter than a year. Preparing interim reports does not eliminate the need to prepare an annual report. Firms with publicly traded securities in the United States must prepare and file with the SEC quarterly reports as well as annual reports. Firms file quarterly reports on SEC form 10-Q (the 10-Q report) and file annual reports using SEC form 10-K (the 10-K report). Some firms use the 10-K report as their annual report to shareholders. Other firms incorporate the 10-K report into their annual report. Still others prepare a separate annual report to shareholders in addition to the 10-K report.

ACCOUNTING METHODS FOR MEASURING PERFORMANCE

Many operating activities start in one accounting period and finish in another. For example, a firm may acquire a building in one period and use it in operations for 30 years. Firms may purchase merchandise in one accounting period, pay for it in a second, sell it in a third, and collect cash from customers in a fourth. Cash collection can precede the sale of merchandise, as occurs when customers make advance payments, or follow it, as occurs with sales made on account. Measuring performance for a specific accounting period requires measuring the amount of

²⁸For example, **Chapter 4** discusses the recognition criteria for items to be included as assets and liabilities on the balance sheet. **Chapter 8** discusses the criteria for recognizing revenues on the income statement.

revenues and expenses from operating activities that span more than one accounting period. The following are two approaches to measuring operating performance:

1. The cash basis of accounting.
2. The accrual basis of accounting.

CASH BASIS OF ACCOUNTING

Under the **cash basis of accounting**, a firm measures performance from selling goods and providing services as it receives cash from customers and makes cash expenditures to providers of goods and services. To understand performance measurement under the cash basis of accounting, consider the following information.

Example 3 Joan Adam opens an art supply store (Adam-Art Supply) on January 1, 2013. The financing of the store consists of €150,000 in cash, provided by Joan in exchange for all the common stock of the firm. The firm rents space on January 1 and pays two months' rent of €14,000 in advance. During January it acquires merchandise costing €140,000, paying €86,000 in cash and acquiring the rest (€54,000) on account for payment in February. Sales to customers during January total €140,000, of which €114,000 is for cash and €26,000 is on account for collection in February and March. The cost of the merchandise sold during January was €42,000. The firm paid €25,000 in salaries.

Using the cash basis of accounting, the firm records sales as it receives cash. Income is cash receipts less cash disbursements for goods and services. Adam-Art Supply made €140,000 in total sales during January, but it records performance equal to cash receipts of €114,000. It will record the remaining €26,000 as performance when customers pay the amounts owed in later months. The firm acquires merchandise costing €140,000 during January but pays €86,000 cash to suppliers. Under cash-basis accounting, the performance measure subtracts only the cash paid from cash receipts. The firm also subtracts January's cash expenditures for salaries (€25,000) and rent (€14,000), even though it paid the rent for both January and February. Cash expenditures for merchandise and services (€125,000 = €86,000 + €25,000 + €14,000) exceeded cash receipts from customers (€114,000) during January by €11,000:

Cash Inflows	
Cash Receipts from Customers	€ 114,000
Total Cash Inflows	114,000
Cash Outflows	
Cash Paid for Rent	(14,000)
Cash Paid for Merchandise	(86,000)
Cash Paid for Salaries	(25,000)
Total Cash Outflows	(125,000)
Net Cash Flow	<u>€ (11,000)</u>

As a basis for measuring performance for a particular accounting period, the cash basis of accounting has three weaknesses.

1. The cash basis does not match the cost of the efforts required to generate inflows with the inflows themselves. Cash outflows of one period can relate to operating activities whose cash inflows occur in preceding or succeeding periods. For example, the store rental payment of €14,000 provides rental services for both January and February. Yet the cash basis subtracts the full amount in measuring performance during January and none for February. As a result, February's performance will look better than January's for no reason except the timing of cash payments for rent.

The cash basis does a better job of matching the cost of the efforts required in generating inflows with the inflows themselves over a longer period than over a shorter period. For example, if Adam-Art Supply calculates cash-basis performance over *two* months, January and February, the €14,000 cost of rental services exactly matches the period over which the firm receives the benefits. Delaying performance measurement is not a good solution, however, because users of financial statements want timely information and because of the

reasons given in the description of the accounting period convention—business activities do not divide neatly into discrete projects and discrete periods.

2. The cash basis separates the recognition of revenue from the process of earning those revenues. A firm should recognize revenues when it earns them by delivering goods and services to customers. Delivery often occurs before the firm collects cash from customers. Waiting to recognize revenues until the firm collects cash results in reporting the effects of operating activities one or more periods *after* the critical revenue-generating activity—the customer’s purchase of goods and service—has occurred. For example, sales to customers during January by Adam-Art Supply were €140,000. Under the cash basis, the firm will not recognize €26,000 of this amount until it collects the cash in February or later.
3. Performance measured using the cash basis is sensitive to the timing of cash expenditures. For example, the cash-basis measure reduces the performance for Adam-Art Supply in January by the entire €14,000 cash payment for rent, even though the firm will benefit from the results of those expenditures for two months in the future. A delay of even a few days in cash expenditures near the end of the accounting period will increase earnings for that period.

ACCURAL BASIS OF ACCOUNTING

The **accrual basis of accounting** recognizes revenue when a firm sells goods (manufacturing and retailing firms) or renders services (service firms). And it recognizes expenses in the period when the firm recognizes the revenues that the costs helped produce. Thus accrual accounting attempts to match expenses with revenues. When the usage of an asset’s future benefits does not match with particular revenues, the firm recognizes those costs as expenses in the period when the firm uses the benefits.

Example 4 Under the accrual basis of accounting, Adam-Art Supply recognizes, for January 2013, the entire €140,000 of sales during January as revenue, even though it has received only €114,000 in cash by the end of January. The firm reasonably expects to collect the remaining accounts receivable of €26,000 in February or soon thereafter. The sale of the goods, rather than the collection of cash from customers, triggers the recognition of revenue. The merchandise sold during January cost €42,000. Recognizing this amount as an expense (cost of goods sold) matches the cost of the merchandise sold with revenue from sales of those goods. Of the advance rental payment of €14,000, only €7,000 applies to the cost of benefits consumed during January. The remaining rental of €7,000 purchases benefits for the month of February and will therefore appear on the January 31 balance sheet as an asset. Unlike the cost of merchandise sold, January’s salaries and rent expenses do not match January revenues. These costs become expenses of January to the extent that the firm consumed salary and rent services during the month. Using the accrual basis of accounting, Adam-Art would report January net income of €66,000:

Sales Revenue	€140,000
Cost of Goods Sold	(42,000)
Rent Expense	(7,000)
Salaries Expense	(25,000)
Net Income	<u>€ 66,000</u>

The accrual basis of accounting illustrates the **matching convention**: it matches expenses with their related revenues by subtracting their amount in measuring performance. The accrual basis focuses on revenues and expenses in measuring performance. This measure of performance is independent of whether the firm has collected cash for the inflows from generating revenues or spent cash for the outflows from the expenses.

The accrual basis of accounting provides a better measure of January operating performance for Adam-Art Supply than does the cash basis, for two reasons.

1. Revenues more accurately reflect the results of sales activity during January than does cash received from customers during that period.
2. Expenses more closely match reported revenues than expenditures match receipts.

The accrual basis also provides a superior measure of performance for future periods because activities of future periods will bear their share of the costs of rent and other services the firm will consume.

Most firms use the accrual basis of accounting. From this point on, all discussions assume use of the accrual basis.

► PROBLEM 1.2 FOR SELF-STUDY

Cash versus accrual basis of accounting. Thompson Hardware Store commences operations on January 1, 2013, when Jacob Thompson invests \$30,000 for all of the common stock of the firm. The firm rents a building on January 1 and pays two months' rent in advance in the amount of \$2,000. On January 1 it also pays the \$1,200 premium for property and liability insurance coverage for the year ending December 31, 2013. The firm purchases \$28,000 of merchandise inventory on account on January 2 and pays \$10,000 of this amount on January 25. On January 31 the cost of unsold merchandise is \$15,000. During January the firm makes cash sales to customers totaling \$20,000 and sales on account totaling \$9,000. The firm collects \$2,000 from these credit sales by the end of January. The firm pays other costs during January as follows: utilities, \$400; salaries, \$650; and taxes, \$350. What are Thompson Hardware Store's revenues, expenses, and income for January, assuming (1) the accrual basis of accounting and (2) the cash basis of accounting?

SUMMARY

This chapter shows how business activities relate to the financial statements. The chapter provides a broad overview of the four basic financial statements. Later chapters examine the concepts and procedures underlying each statement. This chapter also describes the financial reporting process and introduces U.S. GAAP and IFRS.

Now we turn to the study of financial accounting. To comprehend the concepts and procedures in the book, you should study the numerical examples presented in each chapter and prepare solutions to several problems, including the self-study problems.

SOLUTIONS TO SELF-STUDY PROBLEMS

SUGGESTED SOLUTION TO PROBLEM 1.1 FOR SELF-STUDY

(Preparing a balance sheet and an income statement using data of Sargent AG)

- a. Balance sheet for years ended September 30, 2013, and September 30, 2012.

	September 30	
	2013	2012
Assets		
Cash and Cash Equivalents	€ 4,005	€10,214
Accounts Receivable	14,620	15,148
Inventories	12,930	12,790

(continued)

	September 30	
	2013	2012
Other Current Assets	16,377	11,862
Total Current Assets	47,932	50,014
Property and Equipment (net of accumulated depreciation)	10,555	12,072
Intangible Assets	17,120	13,074
Long-Term Investment Securities	12,577	7,998
Other Noncurrent Assets	3,371	4,370
Total Noncurrent Assets	43,623	37,514
Total Assets	<u>€91,555</u>	<u>€87,528</u>
Liabilities and Shareholders' Equity		
Accounts Payable	€ 8,382	€ 8,443
Current Income Taxes Payable	2,414	1,582
Other Current Liabilities	33,098	28,939
Total Current Liabilities	43,894	38,964
Long-Term Debt	9,860	13,122
Other Noncurrent Liabilities	8,174	9,547
Total Noncurrent Liabilities	18,034	22,669
Total Liabilities	61,928	61,633
Common Stock	8,823	8,335
Retained Earnings	20,453	16,702
Other Shareholders' Equity Items	351	858
Total Shareholders' Equity	29,627	25,895
Total Liabilities and Shareholders' Equity	<u>€91,555</u>	<u>€87,528</u>

$$\begin{aligned} \text{Assets} &= \text{Liabilities} + \text{Shareholders' Equity} \\ \text{Fiscal 2013: } &€91,555 \text{ million} = €61,928 \text{ million} + €29,627 \text{ million} \\ \text{Fiscal 2012: } &€87,528 \text{ million} = €61,633 \text{ million} + €25,895 \text{ million} \end{aligned}$$

b. Income statement for year ended September 30, 2013:

Sales	€72,448
Cost of Sales	(51,572)
Research and Development Expenses	(3,399)
Selling, General, and Administrative Expenses	(12,103)
Operating Profit	5,374
Other (Nonoperating) Expense	(144)
Earnings Before Income Taxes	5,230
Income Tax Expense	(1,192)
Net Income	<u>€ 4,038</u>

- c. Yes.** The change in Retained Earnings is €3,751 million, and Net Income is €4,038 million. Based on this information only, dividends are €287 million (= €4,038 – €3,751).

SUGGESTED SOLUTION TO PROBLEM 1.2 FOR SELF-STUDY

(Thompson Hardware Store: cash versus accrual basis of accounting)

Calculation of revenues, expenses, and income for January 2013 under the cash basis and accrual basis of accounting:

	Cash Basis	Accrual Basis
Revenues	<u>\$22,000</u>	<u>\$29,000</u>
Expenses:		
Rent	\$ 2,000	\$ 1,000
Insurance	1,200	100
Costs of Inventory	10,000	13,000
Utilities	400	400
Salaries	650	650
Taxes	<u>350</u>	<u>350</u>
Total Expenses	<u>\$14,600</u>	<u>\$15,500</u>
Net Income	<u>\$ 7,400</u>	<u>\$13,500</u>

KEY TERMS AND CONCEPTS

Goals	U.S. SEC registrant
Strategies	Non-U.S. SEC registrant, foreign private issuer
Financing	Financial Accounting Standards Board (FASB)
Shareholders, stockholders	U.S. GAAP (generally accepted accounting principles)
Publicly traded	<i>Statements of Financial Accounting Standards (SFAS)</i>
Dividends	<i>Accounting Standards Codification</i>
Creditors	Conceptual framework
Investing activities	Relevance
Operating activities	Representational faithfulness
Annual report to shareholders	Comparability
Management's Discussion and Analysis (MD&A)	Verifiability
Fiscal year	Timeliness
Monetary amount	Understandability
Balance sheet or statement of financial position	Recognition
Assets	Disclosure
Liabilities	International Accounting Standards Board (IASB)
Shareholders' equity	International Financial Reporting Standards (IFRS)
Retained earnings	Convergence
Historical amount	Audit opinion
Current amount	Sarbanes-Oxley Act
Income statement or statement of profit and loss	Public Company Accounting Oversight Board (PCAOB)
Net income, earnings, profit	Realization
Net loss	Materiality
Revenues, sales, sales revenue	Accounting period convention, reporting period
Expenses	Natural business year
Statement of cash flows	Cash basis of accounting
Capital expenditures	Accrual basis of accounting
Statement of shareholders' equity	Matching convention
Schedules and notes	
Financial reporting process	
Managers	
Governing board	
Securities and Exchange Commission (SEC)	

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

1. Review the meaning of the terms and concepts listed in Key Terms and Concepts.
2. The chapter describes four activities common to all entities: setting goals and strategies, financing activities, investing activities, and operating activities. How would these four activities likely differ for a charitable organization versus a business firm?
3. “The photographic analogy for a balance sheet is a snapshot, and for the income statement and the statement of cash flows it is a motion picture.” Explain.
4. What is involved in an audit by an independent external auditor?
5. Who prepares a firm’s financial statements?
6. In what sense can suppliers of raw materials, merchandise, or labor services (employees) also be sources of financing for firms?
7. In what sense are a firm’s accounts receivable a source of financing for that firm’s customers?
8. Investing activities pertain to the acquisition of productive capacity to enable a firm to carry out its activities. Examples of this capacity include (1) land, buildings, and equipment and (2) patents and licenses. How are these two kinds of capacity the same, and how are they different?
9. When will a firm’s fiscal year differ from a calendar year?
10. Financial statements include amounts in units of currency. What is the most common determinant of a firm’s choice of currency for financial reporting?
11. Assets and liabilities appear on balance sheets as either current or noncurrent. What is the difference between a current item and a noncurrent item? Why would users of financial statements likely be interested in this distinction?
12. The measurement basis for reporting items on a firm’s balance sheet can be either historical amounts or current amounts. What is the difference between these two measurement bases?
13. How does an income statement connect two successive balance sheets? How does a statement of cash flows connect two successive balance sheets?
14. What is the role of the following participants in the financial reporting process: the U.S. Securities and Exchange Commission (SEC); the Financial Accounting Standards Board (FASB); the International Accounting Standards Board (IASB)?
15. This chapter introduces both U.S. GAAP and International Financial Reporting Standards (IFRS). Which of these systems may U.S. firms use, and which may non-U.S. firms that list and trade their securities in the United States use?
16. What is the purpose of the FASB’s and IASB’s conceptual frameworks?
17. What is the advantage of the accrual basis of accounting, relative to the cash basis of accounting, for measuring performance?

EXERCISES

18. **Understanding the balance sheet.** Refer to **Exhibit 1.9**, which contains balance sheet information from the financial report of Palmer Coldgate, a U.S. consumer products manufacturer. This firm reports all amounts in millions of U.S. dollars (\$). Answer the following questions that pertain to the information in this exhibit.
 - a. What is the firm’s largest asset, and what is the asset’s carrying value on the balance sheet?
 - b. What is the total amount of the firm’s noncurrent assets?
 - c. What is the firm’s largest liability, and what is the liability’s carrying value on the balance sheet?
 - d. By how much do the firm’s current assets differ from its current liabilities?
 - e. Has the firm been profitable since its inception? How do you know?

EXHIBIT 1.9

**Palmer Coldgate
Consolidated Balance Sheet**

As of year end	2013
ASSETS	
Current Assets	
Cash and cash equivalents	\$ 428.7
Receivables (net of allowances of \$50.6 and \$46.4, respectively)	1,680.7
Inventories	1,171.0
Other current assets	<u>338.1</u>
Total current assets	3,618.5
Property, plant, and equipment, net.	3,015.2
Goodwill, net	2,272.0
Other intangible assets, net	844.8
Other assets	<u>361.5</u>
Total assets	<u>\$10,112.0</u>
LIABILITIES AND SHAREHOLDERS' EQUITY	
Current Liabilities	
Notes and loans payable.	\$ 155.9
Current portion of long-term debt	138.1
Accounts payable	1,066.8
Accrued income taxes	262.7
Other accruals	<u>1,539.2</u>
Total current liabilities	3,162.7
Long-term debt	3,221.9
Deferred income taxes	264.1
Other liabilities	<u>1,177.1</u>
Total liabilities	7,825.8
Commitments and contingent liabilities	—
Shareholders' Equity	
Preference stock	197.5
Common stock, \$1 par value (1,000,000,000 shares authorized, 732,853,180 shares issued)	732.9
Additional paid-in capital.	1,517.7
Retained earnings	10,627.5
Accumulated other comprehensive income	<u>(1,666.8)</u>
	11,408.8
Unearned compensation.	(218.9)
Treasury stock, at cost.	<u>(8,903.7)</u>
Total shareholders' equity	<u>2,286.2</u>
Total liabilities and shareholders' equity	<u>\$10,112.0</u>

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- f. What fraction of its assets does the firm finance with liabilities?
 - g. Verify that the firm's assets equal the sum of liabilities plus shareholders' equity.
- 19. Understanding the income statement.** Refer to **Exhibit 1.10**, which contains income statement information that is based on the financial report of Capcion, an Austrian paper and packaging manufacturer. Capcion reports all amounts in thousands of euros (€). Answer the following questions that pertain to the information in this exhibit.
- a. What is Capcion's largest expense on its income statement, and what is the amount?
 - b. What is Capcion's second largest expense on its income statement, and what is the amount?

EXHIBIT 1.10**Capcion
Consolidated Income Statement**

(amounts in thousands of euros [€])	Year ended Dec. 31, 2013
Sales	€ 1,736,959.2
Cost of sales	(1,331,292.1)
Gross margin	405,667.1
Other operating income	10,746.7
Selling and distribution expenses	(172,033.4)
Administrative expenses	(74,204.0)
Other operating expenses	(758.2)
Operating profit	169,418.2
Financial expenses	(9,082.9)
Financial income	14,534.1
Share of profit (loss) of associated companies	377.9
Other income (expenses)—net	(4,383.4)
Profit before tax	170,863.9
Income tax expense	(54,289.9)
Profit for the year	€ 116,574.0

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- c. What is the ratio of Capcion's gross margin to sales (this ratio is the gross margin percentage)?
 - d. What amount does Capcion report as operating profit for 2013? What amount does it report as profit before tax? What explains the difference between the two?
 - e. What is Capcion's effective tax rate for the year? (The effective tax rate is the ratio of income tax expense to profit before tax.)
 - f. Did Capcion generate profit for the year, or incur a loss? How much?
- 20. Understanding the statement of cash flows.** Information based on and adapted from the statement of cash flows of Seller Redbud, a U.S. retailer, appears in **Exhibit 1.11**. This firm reports all amounts in thousands of U.S. dollars (\$). Answer the following questions that pertain to the information in this exhibit.
- a. Did Seller Redbud generate cash inflows or outflows from operating activities in the year presented, and in what amount?
 - b. Did Seller Redbud generate cash inflows or outflows from investing activities in the year presented, and in what amount?
 - c. Did Seller Redbud generate cash inflows or outflows from financing activities in the year presented, and in what amount?
 - d. What was Seller Redbud's net cash flow for the year presented?
 - e. What was the change in the cash balance between the beginning and end of the year presented? What caused this change?
- 21. Balance sheet relations.** The balance sheet of EuroTel, a European Union communications firm, shows current assets of €20,000 million, current liabilities of €15,849 million, shareholders' equity of €17,154 million, and noncurrent assets of €29,402 million. What is the amount of noncurrent liabilities on EuroTel's balance sheet?
- 22. Balance sheet relations.** The balance sheet of GoldRan, a South African mining company, shows current assets of R6,085.1, noncurrent assets of R49,329.8, noncurrent liabilities of R13,948.4, and current liabilities of R4,360.1. GoldRan reports in millions of South African rand (R). What is the amount of GoldRan's shareholders' equity?
- 23. Income statement relations.** The income statement of GrandRider, a U.K. automotive manufacturer, reported revenues of £7,435, cost of sales of £6,003, other operating expenses of £918, a loss of £2 on the sale of a business, and net financing income of £221. Tax expense

EXHIBIT 1.11

**Seller Redbud
Consolidated Statement of Cash Flows**

(in thousands of US\$)	Year ending January 31, 2013
Cash Flows from Operating Activities:	
Net earnings	\$ 562,808
Adjustments to reconcile net earnings to net cash provided by operating activities:	
Depreciation	157,770
Amortization of bond premium	1,538
Stock-based compensation	43,755
Tax benefit from stock-based compensation	2,719
Deferred income taxes	2,315
(Increase) decrease in assets, net of effect of acquisition:	
Merchandise inventories	(96,673)
Trading investment securities	(3,020)
Other current assets	(16,217)
Other assets	529
(Decrease) increase in liabilities, net of effect of acquisition:	
Accounts payable	(31,764)
Accrued expenses and other current liabilities	15,774
Merchandise credit and gift card liabilities	24,430
Income taxes payable	(74,530)
Deferred rent and other liabilities	25,102
Net cash provided by operating activities	<u>614,536</u>
Cash Flows from Investing Activities:	
Purchase of held-to-maturity investment securities	—
Redemption of held-to-maturity investment securities	494,526
Purchase of available-for-sale investment securities	(1,495,155)
Redemption of available-for-sale investment securities	1,546,430
Capital expenditures	(358,210)
Payment for acquisition, net of cash acquired	(85,893)
Net cash provided by (used in) investing activities	<u>101,698</u>
Cash Flows from Financing Activities:	
Proceeds from exercise of stock options	22,672
Excess tax benefit from stock-based compensation	5,990
Repurchase of common stock, including fees	(734,193)
Payment of deferred purchase price for acquisition	—
Net cash used in financing activities	<u>(705,531)</u>
Net increase (decrease) in cash and cash equivalents	10,703
Cash and cash equivalents:	
Beginning of period	<u>213,381</u>
End of period	<u>\$ 224,084</u>

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for the year was £133. GrandRider reports in millions of pounds sterling (£). Compute net income or net loss for GrandRider.

- 24. Income statement relations.** The income statement of AutoCo, a U.S. automotive manufacturer, reported revenues of \$207,349, cost of sales of \$164,682, other operating expenses, including income taxes, of \$50,335, and net financing income, after taxes, of \$5,690. Amounts are in millions of U.S. dollars (\$). Compute net income or loss for AutoCo.
- 25. Retained earnings relations.** The balance sheet of Veldt, a South African firm, showed a balance in retained earnings of R5,872.4 at the end of 2013 and R4,640.9 at the end of

2012. Net income for the year was R2,362.5 million. All amounts are in millions of South African rand (R). Compute the amount of dividends declared during the year.

- 26. Retained earnings relations.** The balance sheet of Delvico, an Indian firm, showed retained earnings of Rs26,575 at the start of a year and Rs70,463 at the end of that year. The firm declared dividends during the year of Rs3,544. All amounts are in millions of Indian rupees (Rs). Compute net income for the year.
- 27. Cash flow relations.** The statement of cash flows for BargainPurchase, a retailer, showed a net cash inflow from operations of \$4,125, a net cash outflow for investing of \$6,195, and a net cash inflow for financing of \$3,707. The balance sheet showed a beginning-of-year balance in cash of \$813. All amounts are in millions of U.S. dollars (\$). Compute the amount of cash on the balance sheet at the end of the year.
- 28. Cash flow relations.** The statement of cash flows for Buenco, a firm in Argentina, showed a net cash inflow from operations of Ps427,182 and a net cash outflow for financing of Ps21,806. The comparative balance sheets showed a beginning balance in cash of Ps32,673 and an ending balance in cash of Ps101,198. All amounts are in millions of pesos (Ps). Compute net cash provided or used by investing activities.
- 29. Preparation of simple balance sheet; current and noncurrent classifications.** Kenton Limited began retail operations on January 1, 2013. On that date it issued 10,000 shares of common stock for £50,000. On January 31, Kenton used £48,000 of the proceeds to rent a store, paying in advance for the next two years. Kenton also purchased £12,000 of merchandise on credit, agreeing to pay the supplier within 30 days. Kenton applies IFRS. Prepare, in good format, Kenton's balance sheet as of January 31, 2013.
- 30. Preparation of simple balance sheet; current and noncurrent classifications.** Heckle Group began operations as an engineering consulting firm, on June 1, 2013. On that date it issued 100,000 shares of common stock for €920,000. During June, Heckle used €600,000 of the proceeds to purchase office equipment. It acquired a patent for €120,000, agreeing to pay the seller within 30 days. On June 30 Heckle signed a bank loan for €400,000, bearing interest at 8% per year and payable in full on June 30, 2016. Prepare, in good format, Heckle's balance sheet as of June 30, 2013.
- 31. Accrual versus cash basis of accounting.** The following information is based on the financial statements of Hewston, a large manufacturing firm. Annual revenues are \$66,387 million and net expenses (including income taxes) are \$62,313 million. During the year, the firm collected \$65,995 million in cash from customers and had cash outflows associated with payments to suppliers and vendors of \$56,411 million.
- Calculate net income and net cash flow for the year.
 - How can cash collected from customers be less than revenues?
 - How can cash payments to suppliers and vendors be less than expenses?
- 32. Accrual versus cash basis of accounting.** Consider the following information reported by DairyLamb, a New Zealand firm; all figures are in millions of New Zealand dollars (\$). The firm reported revenues of \$13,882, cost of goods sold of \$11,671, interest and other expenses of \$2,113, and tax expense of \$67. It also reported \$13,894 in cash receipts from customers, \$102 in miscellaneous cash receipts, \$5,947 in cash payments to employees and creditors, \$6,261 in cash payments for milk, \$402 in cash payments for interest, and \$64 in cash payments for taxes. Calculate net income and its net cash flow.

PROBLEMS

- 33. Balance sheet relations.** Selected balance sheet amounts for ComputerCo, a manufacturer located in Singapore, appear next. All amounts are in millions of Singapore dollars (\$). Compute the missing amounts.

	2013	2012
Total Assets	\$199,824	?
Noncurrent Liabilities	7,010	?

(continued)

	2013	2012
Noncurrent Assets	?	\$ 17,368
Total Liabilities and Shareholders' Equity	?	?
Current Liabilities	139,941	126,853
Shareholders' Equity	?	53,721
Total Liabilities.	?	?
Current Assets	170,879	170,234

34. Balance sheet relations. Selected balance sheet amounts for SinoTwelve, a Chinese manufacturer, appear next. All amounts are in thousands of U.S. dollars (\$). Compute the missing amounts.

	2013	2012
Total Assets	?	\$5,450,838
Current Liabilities	\$4,488,461	3,527,504
Current Assets	?	3,062,449
Total Liabilities and Shareholders' Equity	7,199,847	?
Noncurrent Liabilities	1,098,123	?
Shareholders' Equity	?	1,134,276
Noncurrent Assets	2,494,481	?
Total Liabilities.	?	?

35. Income statement relations. Selected income statement information for EastonHome, a U.S. consumer products manufacturer, appears next. All amounts are in millions of U.S. dollars (\$). Compute the missing amounts.

	2013	2012	2011
Sales.	\$13,790	?	\$11,397
Cost of Goods Sold	?	\$5,536	5,192
Selling and Administrative Expenses	4,973	4,355	3,921
Other (Income) Expense.	121	186	69
Interest Expense, net.	157	159	136
Income Tax Expense	759	648	728
Net Income	1,738	1,354	?

36. Income statement relations. Selected income statement information for YankeeFashion, a U.S. clothing retailer, appears next. All amounts are in millions of U.S. dollars (\$). Compute the missing amounts.

	2013	2012	2011
Net Revenues	\$4,295.4	\$3,746.3	\$3,305.4
Cost of Goods Sold	1,959.2	1,723.9	1,620.9
Selling and Administrative Expenses	1,663.4	1,476.9	1,377.6
Other (Income) Expense.	34.0	?	2.7
Interest (Income) Expense, net.	?	(1.2)	6.4
Income Tax Expense	242.4	194.9	107.4
Net Income	400.9	308.0	?

37. Statement of cash flows relations. The following information is based on data reported in the statement of cash flows for AB Brown, a Swedish firm. All amounts are in millions of Swedish kronor (SEK).

	2013	2012	2011
Inflows of Cash			
Proceeds from Borrowings	SEK15,587	SEK 1,290	SEK 657
Sale of Common Stock	94	124	174
Revenues, Net of Expenses, from Operations	19,210	18,489	16,669
Sale of Property and Equipment.	152	185	362
Sale of Short-Term Investments.	3,499	6,180	6,375
Other Financing Activities	406	58	—
Other Investing Activities	—	663	—
Outflows of Cash			
Acquisition of Property and Equipment.	4,319	3,827	3,365
Acquisition of Businesses.	26,292	18,078	1,210
Repayment of Borrowings.	1,291	9,510	2,784
Dividends Paid	8,132	7,343	4,133
Other Financing Activities	—	—	288
Other Investing Activities	573	—	1,131

Prepare a statement of cash flows for AB Brown for the three years presented using the format in **Exhibit 1.3**. Set cash flow from operations equal to revenues, net of expenses, from operations. The balance in cash at the beginning of 2011 was SEK30,412. AB Brown classifies changes in short-term investments as investing activities.

- 38. Statement of cash flows relations.** Selected data from the statement of cash flows for Jackson Corporation for the years ended October 31, 2013, 2012, and 2011 appear as follows (amounts in millions of US\$):

	2013	2012	2011
Inflows of Cash			
Proceeds from Long-Term Borrowings	\$ 836	\$ 5,096	\$ 3,190
Revenues from Operations Increasing Cash	19,536	19,083	17,233
Issue of Common Stock	67	37	3
Sale of Property, Plant, and Equipment.	332	401	220
Other Investing Transactions.	71	0	268
Total Inflows.	<u>\$20,842</u>	<u>\$24,617</u>	<u>\$20,914</u>
Outflows of Cash			
Acquisition of Property, Plant, and Equipment.	\$ 3,678	\$ 3,640	\$ 1,881
Expenses for Operations Decreasing Cash	16,394	18,541	18,344
Repayments of Long-Term Debt	766	922	687
Other Investing Activities	0	1,501	0
Total Outflows.	<u>\$20,838</u>	<u>\$24,604</u>	<u>\$20,912</u>

Prepare a statement of cash flows for each of the three years 2013, 2012 and 2011 using the format in **Exhibit 1.3**. Set cash flow from operations equal to revenues providing cash minus expenses using cash. The balance in cash at October 31, 2010, was \$102 million.

- 39. Preparing a balance sheet and income statement.** The accounting records of JetAway Airlines reveal the following. The fiscal year ends on September 30 and amounts are in thousands of US\$:

Balance Sheet Items	September 30	
	2013	2012
Accounts Payable	\$ 157,415	\$ 156,755
Accounts Receivable	88,799	73,448
Cash	378,511	418,819
Common Stock	352,943	449,934
Current Maturities of Long-Term Debt	11,996	7,873
Inventories	50,035	65,152
Long-Term Debt	623,309	871,717
Other Current Assets	56,810	73,586
Other Current Liabilities	681,242	795,838
Other Noncurrent Assets	4,231	12,942
Other Noncurrent Liabilities	844,116	984,142
Property, Plant, and Equipment (net)	4,137,610	5,008,166
Retained Earnings	2,044,975	2,385,854

Income Statement Items	For the Year Ended September 30, 2013
Fuel Expense	\$ 892,415
Interest Expense	22,883
Interest Income	14,918
Maintenance Expense	767,606
Other Operating Expenses	1,938,753
Sales Revenue	4,735,587
Salaries and Benefits Expense	1,455,237

- a. Prepare a comparative balance sheet for JetAway Airlines as of September 30, 2013, and September 30, 2012, in the format used in **Exhibit 1.1**. Classify each balance sheet item into one of the following categories: current assets, noncurrent assets, current liabilities, noncurrent liabilities, and shareholders' equity.
 - b. Prepare an income statement for JetAway Airlines for the year ended September 30, 2013.
 - c. Prepare a schedule explaining the change in retained earnings between September 30, 2012, and September 30, 2013. JetAway declared and paid dividends during fiscal 2013.
- 40. Cash versus accrual accounting.** Jack Block opens a tax and bookkeeping services business, Block's Tax and Bookkeeping Services, on July 1, 2013. He invests \$40,000 for all the common stock of the business, and the firm borrows \$20,000 from the local bank, promising to repay the loan on December 31, 2013, along with interest at 8% per year, or approximately \$133 per month ($= [0.08 \times \$20,000]/12$ months). The firm rents space on July 1 and pays \$6,000 for three months rent in advance, and leases office equipment for the year, prepaying \$12,000 for six months rent. The firm hires an office assistant whom it will pay \$72,000 per year with payments every two months, issuing the first paycheck on August 31. Finally, the firm pays cash for office supplies during July costing \$370; a physical count at the end of July shows that \$280 of office supplies are on hand. During July, Block's Tax and Bookkeeping Services performs services and bills customers for \$44,000. On July 31, 2013, customers had paid \$13,000 of the amount owed.
- a. What is income for Block's Tax and Bookkeeping Services for July 2013:
 - (1) Applying cash-basis accounting.
 - (2) Applying accrual accounting.

- b. How much cash on hand does Block's Tax and Bookkeeping Services have as of July 31, 2013? Why is the amount of cash on hand not a good representation of the firm's performance during July?
41. **Cash versus accrual accounting.** Dina Richards opens a high-end stationery store, Stationery Plus, on November 1, 2013. She finances the store by investing \$80,000 in cash in exchange for all the common stock of the firm. She also obtains a bank loan for \$100,000, which she promises to repay in four equal installments of \$25,000 at the end of each of the next four months, beginning December 31. The interest rate on the loan's outstanding amount owed is 12% per year (or 1% per month); interest is to be paid along with each principal repayment. The store rents space, paying \$9,000 for six months' rent, and acquires goods costing \$40,000. The supplier agrees to allow Stationery Plus to pay half (\$20,000) immediately and half on December 15. To attract customers, the firm allows customers 40 days to pay for their purchases. Stationery Plus's other monthly costs are \$10,000 in salaries and \$480 in utilities and insurance, all paid in cash at the end of every month. During November total sales to customers were \$56,000; Stationery Plus had collected \$23,000 by the end of November; it collected the remainder by December 15. During December total sales to customers were \$62,000; the firm had collected \$34,000 by the end of December. So far, no customers have failed to pay the amount owed within 40 days. During December Stationery Plus acquired more merchandise costing \$55,000, paying half immediately and agreeing to pay half in January. During November, Stationery Plus sold goods for which it had paid \$29,000, and during December, Stationery Plus sold goods for which it had paid \$33,600.
- a. What is income for Stationery Plus for November 2013:
- (1) Applying cash-basis accounting.
 - (2) Applying accrual accounting.
- b. What is income for Stationery Plus for December 2013:
- (1) Applying cash-basis accounting.
 - (2) Applying accrual accounting.
42. **Relations between net income and cash flows.** The ABC Company starts the year in fine shape. The firm makes widgets—just what the customer wants. It makes them for \$0.75 each and sells them for \$1.00. The ABC Company keeps an inventory equal to shipments of the past 30 days, pays its bills promptly, and collects cash from customers within 30 days after the sale. The sales manager predicts a steady increase in sales of 500 widgets each month beginning in February. It looks like a great year, and it begins that way.

January 1	Cash, \$875; receivables, \$1,000; inventory, \$750
January	In January the firm sells, on account for \$1,000, 1,000 widgets costing \$750. Net income for the month is \$250. The firm collects receivables outstanding at the beginning of the month. Production equals 1,000 units at a total cost of \$750. The books at the end of January show the following:
February 1	Cash, \$1,125; receivables, \$1,000; inventory, \$750
February	This month's sales jump, as predicted, to 1,500 units. With a corresponding step-up in production to maintain the 30-day inventory, ABC Company makes 2,000 units at a cost of \$1,500. It collects all receivables from January sales. Net income so far is \$625. Now the books look like this:
March 1	Cash, \$625; receivables, \$1,500; inventory, \$1,125
March	March sales are even better, increasing to 2,000 units. Collections are on time. Production, to adhere to the inventory policy, is 2,500 units. Operating results for the month show net income of \$500. Net income to date is \$1,125. The books show the following:
April 1	Cash, \$250; receivables, \$2,000; inventory, \$1,500
April	In April, sales jump another 500 units to 2,500, and the manager of ABC Company shakes the sales manager's hand. Customers are paying right on

time. Production increases to 3,000 units, and the month's business nets \$625 for a net income to date of \$1,750. The manager of ABC Company takes off for Miami before the accountant issues a report. Suddenly a phone call comes from the treasurer: "Come home! We need cash!"

May 1 Cash, \$0; receivables, \$2,500; inventory, \$1,875

- a. Prepare an analysis that explains what happened to ABC Company. (*Hint:* Compute the amount of cash receipts and cash disbursements for each month during the period January 1 to May 1.)
 - b. How can a firm show increasing net income but a decreasing amount of cash?
 - c. What insights does this problem provide about the need for all three financial statements—balance sheet, income statement, and statement of cash flows?
 - d. What actions would you suggest that ABC Company take to deal with its cash flow problem?
- 43. Balance sheet and income statement relations.** (Prepared by Professor Wesley T. Andrews Jr. and reproduced, with adaptation, by permission.)

Once upon a time many, many years ago, a feudal landlord lived in a small province of central Europe. The landlord, called the Red-Bearded Baron, lived in a castle high on a hill. This benevolent fellow took responsibility for the well-being of many peasants who occupied the lands surrounding his castle. Each spring as the snow began to melt, the Baron would decide how to provide for all his serf dependents during the coming year.

One spring the Baron was thinking about the wheat crop of the coming growing season. "I believe that 30 acres of my land, being worth five bushels of wheat per acre, will produce enough wheat for next winter," he mused, "but who should do the farming? I believe I'll give Ivan the Indefatigable and Igor the Immutable the task of growing the wheat." Whereupon he summoned Ivan and Igor, two gentry noted for their hard work and not overly active minds, for an audience.

"Ivan, you will farm on the 20-acre plot of ground, and Igor will farm the 10-acre plot," the Baron began. "I will give Ivan 20 bushels of wheat for seed and 20 pounds of fertilizer. (Twenty pounds of fertilizer are worth two bushels of wheat.) Igor will get 10 bushels of wheat for seed and 10 pounds of fertilizer. I will give each of you an ox to pull a plow, but you will have to make arrangements with Feyador, the Plowmaker, for two plows. The oxen, incidentally, are only three years old and have never been used for farming, so they should have a good 10 years of farming ahead of them. Take good care of them, because an ox is worth 40 bushels of wheat. Come back next fall and return the oxen and the plows along with your harvest." Ivan and Igor bowed and withdrew from the Great Hall, taking with them the things provided by the Baron.

The summer came and went. After the harvest Ivan and Igor returned to the Great Hall to account to their master for the things given them in the spring. Ivan, pouring 223 bushels of wheat onto the floor, said, "My Lord, I present you with a slightly used ox, a plow broken beyond repair, and 223 bushels of wheat. I, unfortunately, owe Feyador, the Plowmaker, three bushels of wheat for the plow I got from him last spring. And, as you might expect, I used all the fertilizer and seed you gave me last spring. You will also remember, my Lord, that you took 20 bushels of my harvest for your own personal use."

Igor, who had been given 10 acres of land, 10 bushels of wheat, and 10 pounds of fertilizer, spoke next. "Here, my Lord, is a partially used-up ox, the plow for which I gave Feyador, the Plowmaker, three bushels of wheat from my harvest, and 105 bushels of wheat. I, too, used all my seed and fertilizer last spring. Also, my Lord, you took 30 bushels of wheat several days ago for your own table. I believe the plow is good for two more seasons."

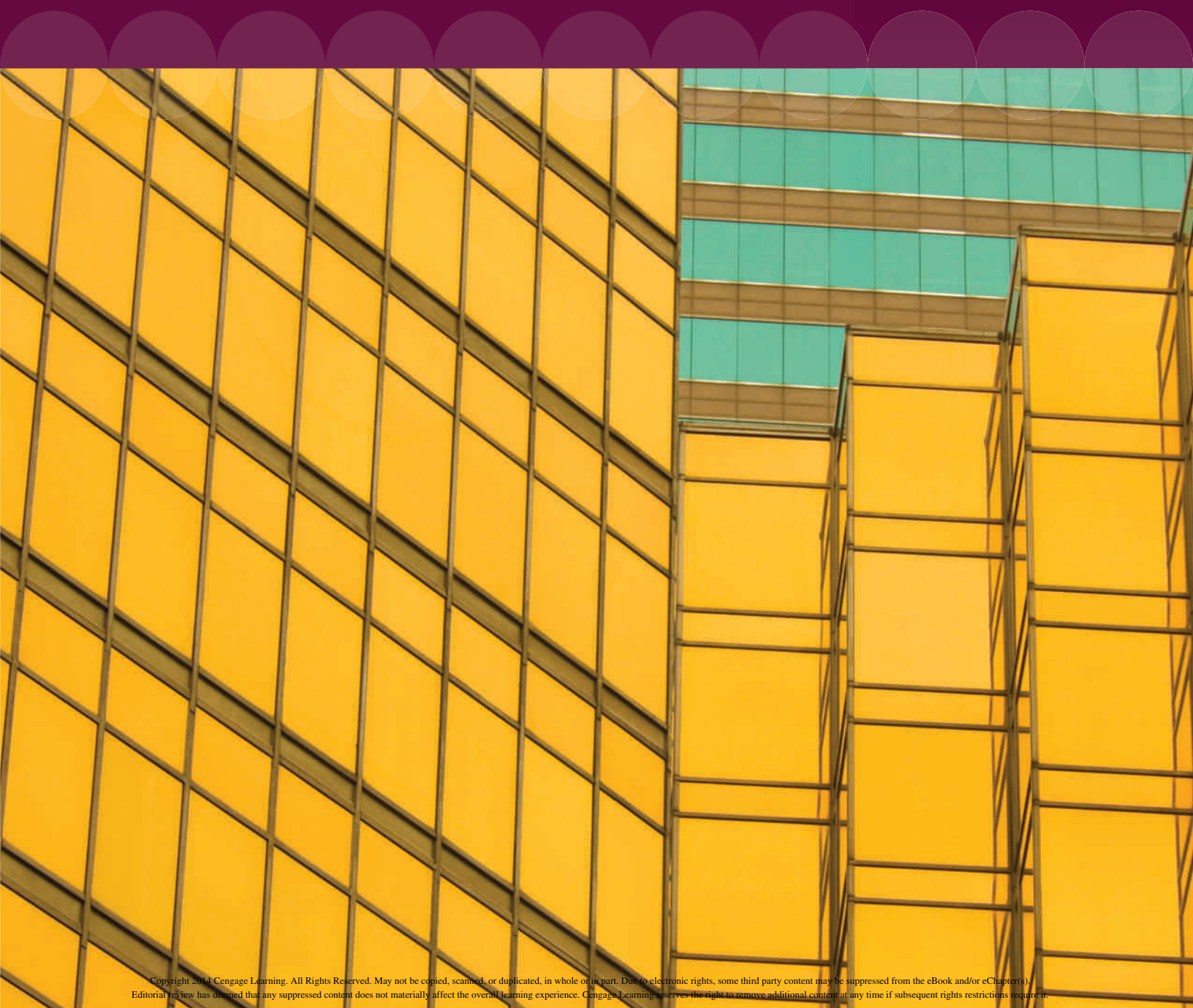
"Knaves, you did well," said the Red-Bearded Baron. Blessed with this benediction, the two serfs departed. After the servants had taken their leave, the Red-Bearded Baron, watching the two hungry oxen slowly eating the wheat piled on the floor, began to contemplate what had happened. "Yes," he thought, "they did well, but I wonder which one did better?"

- a. What measuring unit should the Red-Bearded Baron use to measure financial position and operating performance?
- b. Prepare a balance sheet for Ivan and for Igor at both the beginning and the end of the period.
- c. Prepare an income statement for Ivan and for Igor for the period.
- d. Prepare a schedule reconciling the change in owner's equity between the beginning and the end of the period.
- e. Did Ivan or Igor perform better during the period? Explain.

Accounting Concepts and Methods

P a r t

2



The Basics of Record Keeping and Financial Statement Preparation: Balance Sheet

1. Learn the conventions for recording transactions, including the dual nature of transactions and the use of T-accounts and journal entries.
2. Understand how the recording of transactions is the foundation for preparing financial statements.

LEARNING OBJECTIVES

Businesses engage in transactions with customers, suppliers, employees, governmental entities, and others. This chapter demonstrates how the accountant records transactions and prepares financial statements. This chapter focuses on record-keeping procedures, while the rest of this book focuses on accounting principles and judgments, which form the core of financial accounting. Record-keeping procedures organize and present transactions in a standardized manner that guides the user in understanding and interpreting financial statements.

You may think, “I don’t intend to be an accountant. Why do I need to learn record-keeping procedures?” Understanding both the recording of transactions and the preparation of financial statements helps you develop two skills: (1) the ability to communicate the results of transactions, and (2) the ability to understand how transactions affect the financial statements and how the financial statements reflect the transactions. We adopt a user perspective throughout this text, which means we focus on how a user of financial statements can best understand and analyze financial reports. *You will limit your ability to analyze financial statements if you do not understand how the statements reflect both the record-keeping process and management’s choices of accounting principles and its professional judgments.*

This chapter considers three record-keeping concepts:

1. The dual nature (duality) of transactions and events.
2. The use of T-accounts and journal entries for recording the duality of a transaction or event.
3. The preparation of a simple balance sheet.

Because each of these concepts relies on common record-keeping terminology, we begin with an overview of key terms and their definitions. Subsequent chapters describe the terms in more detail.

ACCOUNTS

COMMON TERMINOLOGY

Accounting relies on a system of accounts to record transactions. The name or title of each **account** describes the nature of the items in the account. Common accounts include Cash, Buildings, and Equipment. The amount in each account appears on a line of a balance sheet or income statement. A detailed system of accounts allows the preparer of financial statements to decompose, or *disaggregate*, each transaction to convey information about the effects of the transaction. For example, separate information on Cash, Accounts Receivable, and Inventories conveys more information than combining all transactions affecting these three accounts into a single account

called Current Assets. The accounts also group the effects of similar transactions that occur during the reporting period. For example, if a firm sells one million copies of a piece of software during a year, little benefit would result from reporting the individual effect of *each* of the one million transactions. The accounting process combines, or *aggregates*, the effects of similar transactions for financial reporting.

Accounting does not prescribe a list of accounts that firms must use. Management's flexibility to choose account names results from the complexity and differing nature of businesses, proprietary information considerations,¹ and the amount of space that a long list of accounts would require. Although firms need this flexibility, following conventional naming practices increases the understandability of financial statements to knowledgeable users who apply their common understanding of the account titles. We believe that you will increase your effectiveness as a user of financial statements if you also follow conventions—by choosing account titles that are descriptive and unambiguous, by using identical (or similar) account titles for identical (or similar) items, and as your accounting vocabulary grows, by selecting titles that others commonly use to describe the item.

The word *accounts* refers to items on both the balance sheet, discussed in this chapter, and the income statement, discussed later. Balance sheet accounts are **permanent accounts** in the sense that they remain open, with nonzero balances, at the end of the reporting period. In contrast, income statement accounts, discussed in the next chapter, are **temporary accounts** in the sense that they start a period with a zero balance, accumulate information during the reporting period, and have a zero balance at the end of the reporting period. As a result, a balance sheet account shows an amount at the end of a period of time, such as a month, or quarter, or year, whereas an income statement account shows the amount for a period of time.² The recording of transactions during a period causes amounts in accounts to increase and decrease. For balance sheet accounts, the total additions during the period increase the (beginning) balance carried forward from the previous balance sheet date, and the total subtractions decrease this balance.

Chapter 1 taught that the balance sheet is one of the principal financial statements. The balance sheet shows the **assets** of a firm and the sources of financing for those assets—the **liabilities** and **shareholders' equity**, which have a claim on the assets. The next section describes several typical balance sheet accounts.

THE BALANCE SHEET

COMMON TERMINOLOGY

Typical Asset Accounts This section discusses several typical asset accounts.

Cash: Coins and currency, bank checks and money orders, bank deposits against which the firm can draw checks, and time deposits, usually savings accounts and certificates of deposit. Although money orders are claims against individuals or institutions, they are treated as *cash*.

Marketable Securities: Government bonds or corporate stocks and bonds that the firm will hold for a relatively short time. The word *marketable* implies that the firm can readily buy and sell them, perhaps through an exchange such as the New York Stock Exchange or the London Stock Exchange.

Accounts Receivable: Amounts due from customers from the sale of goods or services on account. Accounts Receivable describes the total amount of cash owed by (that is, receivable from) customers. The reporting entity maintains a separate record for each customer and follows up with customers who have not paid within the agreed-upon period of time.

¹All else equal, a user of financial statements would prefer to have more disaggregated data, since a user can always aggregate data (but cannot do the reverse). Readers of a firm's financial statements include, however, competitors, so accounting guidance provides some amount of flexibility to combine information in ways that mask competitively sensitive (that is, proprietary) information. Authoritative guidance nevertheless requires disaggregated information in some instances. For example, both U.S. GAAP and IFRS require the disclosure of segment information, which details resources (assets) and results of operations (income or loss) by segment. (The **Glossary** defines both *segment* and *segment reporting*.)

²The closing process, discussed in **Chapter 3**, ensures that each income statement account has a zero balance at the end of the reporting period and that the amounts that had been in the income statement accounts get transferred to the balance sheet account, Retained Earnings, at the end of the period.

Notes Receivable: Amounts due from customers or from others to whom a firm has made loans or extended credit. The customer or other borrower puts the claim into writing in a formal note, which distinguishes the claim from an account receivable.

Interest Receivable: Interest on assets such as promissory notes or bonds, which the borrower owes to the reporting entity because of the passage of time, but the reporting entity has not collected.

Inventory: Goods available for sale, partially completed goods, and materials used in the manufacture of products. (Outside the United States, common usage refers to inventories as *stocks*.³) *Merchandise Inventory* reflects goods on hand purchased for resale, such as canned goods on grocery store shelves or suits on the racks of a clothing store. *Raw Materials Inventory* includes materials as yet unused for manufacturing products. *Work-in-Process Inventory* includes partially completed manufactured products. *Finished Goods Inventory* is completed but unsold manufactured products.

Advances to Suppliers: Payments the firm has made in advance to a supplier for goods (such as raw materials) or services (such as for Web advertising that has not yet run) that it will receive at a later date.

Prepaid Rent: Rent paid in advance for the future use of land, buildings, equipment, and other resources; a particular form of Advances to Suppliers.

Prepaid Insurance: Insurance premiums paid for future coverage; a particular form of Advances to Suppliers.

Investments in Securities: Bonds or shares of common or preferred stock that the firm plans to hold for more than one year.

Land: Land used in operations or occupied by buildings used in operations.

Buildings: Factory buildings, store buildings, warehouses, and other buildings.

Equipment: Lathes, machine tools, boilers, computers, cranes, conveyors, automobiles, and so forth.

Furniture and Fixtures: Desks, tables, chairs, showcases, and other selling and office equipment.

Accumulated Depreciation: The cumulative amount of the acquisition cost of long-term assets (such as buildings and equipment) that the firm has allocated to production costs or to current and prior period expenses. The amount in this account is subtracted from the cost of the long-term asset to which it relates, to measure the *carrying value* (sometimes called the *book value* or *net book value*) of the asset.

Patents: Rights granted for varying numbers of years (depending on the country that issues the patent) to exclude others from manufacturing, using, or selling certain processes or devices. The accounting treatment of a cost to acquire a patent depends on whether the firm applies U.S. GAAP or IFRS. Both U.S. GAAP and IFRS require that the firm recognize as an asset the cost to purchase a patent from an external third party. Under U.S. GAAP, firms expense the research and development costs incurred to develop a patentable process or device. IFRS requires firms to expense research costs as incurred but, under some circumstances, to recognize development costs as an asset.⁴

Goodwill: When one firm acquires another firm, it measures the identifiable assets acquired and liabilities assumed at their current fair values. If the purchase price exceeds the sum of the fair values of the identifiable assets less the identifiable liabilities, the excess is *goodwill*. Goodwill is an asset that includes intangibles that the acquiring firm cannot separately identify, such as customer loyalty. These desirable attributes cause the buyer to pay more for the acquired firm than the sum of the fair values of all the other assets, less liabilities, identified in the acquisition.⁵

Typical Liability Accounts

This section describes typical liability accounts.

Accounts Payable: Amounts owed for goods or services acquired under an informal credit agreement. The firm typically pays these liabilities within one or two months after the balance sheet date. (The same items appear as Accounts Receivable on the creditor's balance sheet.)

Notes Payable: The face amount of promissory notes that the firm gives in connection with loans from a bank or with the purchase of goods or services. (The same items appear as Notes Receivable on the creditor's [lender's] balance sheet.) Most Accounts Payable, Accounts

³Do not confuse the use of *stocks* to describe inventory with the term *common stock*, which refers to a component of shareholders' equity.

⁴Chapter 9 discusses the treatment of internally developed and externally purchased patents in more detail.

⁵Chapter 4 describes fair values in detail.

Receivable, Notes Payable, and Notes Receivable are current items, due within a year of the balance sheet date. Similar items due more than one year after the balance sheet date could have the same account titles, but would appear in the noncurrent assets or noncurrent liabilities sections of the balance sheet.

Interest Payable: Interest on obligations that has accrued or accumulated but that the firm has not yet paid as of the balance sheet. (The same item appears as Interest Receivable on the creditor's balance sheet.) Firms often include this item with the preceding one in an account called *Notes and Interest Payable*.

Income Taxes Payable: The estimated liability for income taxes, accumulated and unpaid, based on the taxable income of the business.

Advances from Customers: An obligation incurred when a firm receives payments in advance for goods or services it will furnish to customers in the future. This is a nonmonetary liability, because the firm has an obligation to deliver goods or services, not to return the cash. Even so, the firm records this liability as the amount of cash received.⁶

Advances from Tenants, or Rent Received in Advance: Another example of a nonmonetary liability that is an advance from a customer. For example, a tenant may prepay for its rented office space for several months in advance. The owner of the office space cannot include in income the amounts paid by the tenant for future months until the owner provides rental services. Meanwhile the advance payment results in a liability payable in services—the use of the building. (On the balance sheet of the tenant, the same amount appears as an asset an advance, often called Prepaid Rent.)

Mortgage Payable: A form of long-term promissory note, or loan, where the borrower has pledged specific pieces of property as security for payment. If the borrower does not pay the loan or interest according to the agreement, the lender can require the sale of the property to generate cash to repay the loan.

Bonds Payable: A form of long-term loan. The borrower has signed a formal written contract called an *indenture*. The borrower usually raises the funds from a number of lenders, each of whom receives written evidence of its share of the loan.

Deferred Income Taxes: Income tax amounts that are delayed beyond the current accounting period.⁷

Typical Shareholders' Equity Accounts This section describes typical shareholders' equity accounts.

Common Stock (at par): The amount of cash or other assets received equal to the par or stated value of a firm's principal class of voting stock; part of contributed capital.

Additional Paid-In Capital: The amount of cash or other assets received at the time of the issuance of stock in excess of the stock's par value or stated value. Some firms use the title Capital Contributed in Excess of Par (or Stated) Value. Accountants and analysts often refer to the sum of the amounts in this account and the Common Stock at par account as *contributed capital*, because the sum of these two items represents the cash and other assets directly provided by shareholders to a firm. The distinction between this account and the preceding one often matters in law, but not in economics: the owners have contributed assets, usually cash, and that's all that matters in most business analyses.

Preferred Stock: The amount of cash or other assets received for shares of a class of a firm's stock that has some preference relative to common stock. Common forms of preference include a higher dividend or a higher priority in terms of asset distribution in the event the firm liquidates. Preferred stock, if a company has it, is part of contributed capital.

Retained Earnings: Net assets (defined as all assets minus all liabilities) increase as a firm generates earnings in excess of cash (or other assets) distributed as dividends. When a firm earns income, it generates new net assets. The firm can distribute these assets or keep them for various uses. Retained Earnings is the balance sheet account that shows the amount of net assets a firm has generated from earnings, but has not distributed to owners as dividends. Retained earnings are not assets, but are the source of the financing of the assets retained.

Accumulated Other Comprehensive Income: An account that accumulates changes in net assets that are not included in net income.

⁶Chapter 8 discusses this account in more detail.

⁷Chapter 12 discusses this item, which appears on the balance sheets of most corporations.

A TYPICAL BALANCE SHEET

The balance sheet groups individual accounts by type (asset, liability, or shareholders' equity) and lists these accounts with their balances as of a specific date. The date of the balance sheet appears at the top of the balance sheet. The asset and liability categories further group individual accounts by the expected timing of cash receipts (for assets) or cash payments (for liabilities). Common terminology describes items whose cash receipts or payments the firm expects will occur within one year as **current assets** or **current liabilities**, respectively. If the firm expects to collect or pay more than one year after the balance sheet date, the balance sheet classifies these as **noncurrent assets** and **noncurrent liabilities**, respectively.⁸

The balance sheet begins with a list of assets and then lists liabilities and shareholders' equity. **Exhibit 2.1** shows the balance sheet for Toothpaste Soap Company ("Toothpaste") for

EXHIBIT 2.1

Toothpaste Soap Company Balance Sheet

As of December 31,	Year 7	Year 6
ASSETS		
Current Assets		
Cash and cash equivalents	\$ 428.7	\$ 489.5
Receivables (net of allowances of \$50.6 and \$46.4, respectively) . . .	1,680.7	1,523.2
Inventories	1,171.0	1,008.4
Other current assets	338.1	279.9
Total current assets	3,618.5	3,301.0
Property, plant, and equipment, net.	3,015.2	2,696.1
Goodwill, net	2,272.0	2,081.8
Other intangible assets, net	844.8	831.1
Other assets	361.5	228.0
Total assets	<u>\$10,112.0</u>	<u>\$9,138.0</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current Liabilities		
Notes and loans payable.	\$ 155.9	\$ 174.1
Current portion of long-term debt	138.1	776.7
Accounts payable	1,066.8	1,039.7
Accrued income taxes	262.7	161.5
Other accruals	1,539.2	1,317.1
Total current liabilities	3,162.7	3,469.1
Long-term debt	3,221.9	2,720.4
Deferred income taxes	264.1	309.9
Other liabilities	1,177.1	1,227.7
Total liabilities	7,825.8	7,727.1
Commitments and contingent liabilities	—	—
Shareholders' Equity		
Preference stock	197.5	222.7
Common stock, \$1 par value (1,000,000,000 shares authorized, 732,853,180 shares issued)	732.9	732.9
Additional paid-in capital.	1,517.7	1,218.1
Retained earnings	10,627.5	9,643.7
Accumulated other comprehensive income	(1,666.8)	(2,081.2)
	11,408.8	9,736.2
Unearned compensation.	(218.9)	(251.4)
Treasury stock, at cost.	(8,903.7)	(8,073.9)
Total shareholders' equity.	2,286.2	1,410.9
Total liabilities and shareholders' equity	<u>\$10,112.0</u>	<u>\$9,138.0</u>

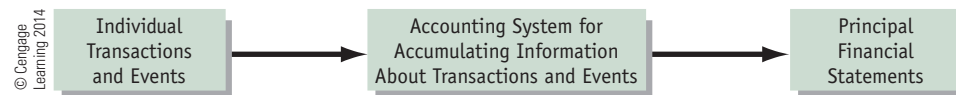
⁸Chapter 4 describes the balance sheet classifications in more detail.

the fiscal year ended December 31, Year 7.⁹ Toothpaste is a leading consumer products company that operates in two principal segments: (1) oral, personal, and home care (including products such as toothpaste, soaps, and shampoo), and (2) pet nutrition.

Both U.S. GAAP and IFRS require firms to report balance sheet accounts for the prior year in addition to the current year. Toothpaste reports the results for the prior year in the rightmost column (the column labeled Year 6), and the results for the current year in the column to the left of this one (the column labeled Year 7).¹⁰ The lists of asset, liability, and shareholders' equity accounts include many of the accounts described earlier, as well as a few (such as treasury stock) described in later chapters. Under U.S. GAAP, assets and liabilities appear in order of decreasing closeness-to-cash; many firms that report under IFRS reverse this ordering.

DUAL EFFECT OF TRANSACTIONS

Firms engage in transactions, or exchanges, with other entities and individuals. For example, firms acquire merchandise from suppliers, pay employees for labor services, sell merchandise to customers, pay taxes to governments, and so on. In addition, other events not involving exchanges occur during a period. For example, firms consume the services of buildings and equipment as they use them in operations and incur an obligation to pay interest on outstanding loans. Accountants record the effects of *each* of these transactions and events as they occur, and then *accumulate* the effects of all transactions and events for presentation in the financial statements.



The **balance sheet equation** provides the analytical framework that we use throughout this book to understand the effects of transactions and events on the financial statements. This equation captures the financial statement effects of operating, investing, and financing transactions—three key activities of business firms. It shows the equality of assets with liabilities plus shareholders' equity:

$$\text{Assets} = \text{Liabilities} + \text{Shareholders' Equity}$$

This equation requires that an entity's assets exactly balance, or offset, an equal amount of financing provided by creditors and owners of the corporation. Total liabilities plus shareholders' equity shows the sources of all the firm's financing, and the assets show how the firm holds or has invested those funds. The balance sheet equation maintains this equality by reporting the financial statement effects of each event and transaction in a dual manner, called the **dual effect of transactions**. Any single event or transaction will have one of the following four effects or some combination of these effects:

1. It increases an asset and increases either a liability or shareholders' equity.
2. It decreases an asset and decreases either a liability or shareholders' equity.
3. It increases one asset and decreases another asset.
4. It increases one liability or shareholders' equity and decreases another liability or shareholders' equity.

To understand the dual effects of various transactions on the balance sheet equation, consider the following transactions for Miller Corporation (Miller) during January as it prepares to open for business on February 1:

- (1) On January 1, Miller issues 10,000 shares of \$10 par value common stock for \$100,000 cash.
- (2) On January 5, Miller pays \$12,000 cash to rent equipment for one year. In this transaction, Miller's asset is prepaid rent, not the equipment itself.
- (3) On January 15, Miller purchases merchandise inventory costing \$15,000 from a supplier, agreeing to pay later.

⁹We have adapted this balance sheet from the published financial statements of the Colgate Palmolive Company.

¹⁰Firms do not use the same ordering for showing the current year's results and the prior year's results. Some firms order the columns oldest to most recent, while others order most recent to oldest.

- (4) On January 21, it pays the supplier in (3) \$8,000 of the amount due.
- (5) On January 25, the supplier in (3) accepts 700 shares of Miller common stock at par value in settlement of the \$7,000 amount still owed.
- (6) On January 31, Miller pays \$600 cash for a one-year insurance premium for coverage beginning February 1.
- (7) On January 31, Miller receives \$3,000 from a customer for merchandise Miller will deliver during February.
- (8) On January 31, Miller purchases a building for \$40,000 and finances this purchase by signing a note payable with a local bank. Miller promises to repay the note in full in three years and to pay interest at 10% per year.

Exhibit 2.2 illustrates the dual effect of these transactions on the balance sheet equation. After each transaction, assets equal liabilities plus shareholders' equity.

Each transaction has at least two effects. For example, in transaction (1) Miller issues common stock to shareholders and receives cash. In transaction (2) Miller makes a cash expenditure and receives the right to use equipment. In transaction (3) Miller promises to make a future cash payment to a supplier and receives merchandise inventory. These and other transactions recorded in the accounting system result from exchanges. The accounting records reflect effects on assets, liabilities, and shareholders equity arising from these exchanges.

The recording of each transaction maintains the balance sheet equality. Transactions (1), (3), (7), and (8) increase assets and increase either a liability or shareholders' equity.

EXHIBIT 2.2**Miller Corporation****Illustration of Dual Effect of Transactions on Balance Sheet Equation**

Transaction	Assets	=	Liabilities	+	Shareholders' Equity
(1) On January 1, Miller Corporation issues 10,000 shares of \$10 par value common stock for \$100,000 cash (an increase in an asset and shareholders' equity).	+ \$100,000	=	\$ 0	+	+ \$100,000
Subtotal	\$100,000	=	\$ 0	+	\$100,000
(2) On January 5, the firm pays \$12,000 cash to rent some equipment (an increase in one asset and a decrease in another asset).	+ 12,000 − 12,000	=		+	
Subtotal	\$100,000	=	\$ 0	+	\$100,000
(3) On January 15, the firm purchases merchandise inventory costing \$15,000 from a supplier on account (an increase in an asset and a liability).	+ 15,000	=	+ 15,000	+	
Subtotal	\$115,000	=	\$15,000	+	\$100,000
(4) On January 21, the firm pays the supplier in (3) \$8,000 of the amount due (a decrease in an asset and a liability).	− 8,000	=	− 8,000	+	
Subtotal	\$107,000	=	\$ 7,000	+	\$100,000
(5) On January 25, the supplier in (3) accepts 700 shares of Miller common stock in settlement of the \$7,000 still owed (an increase in shareholders' equity and a decrease in a liability).		=	− 7,000	+	+ 7,000
Subtotal	\$107,000	=	\$ 0	+	\$107,000
(6) On January 31, the firm pays \$600 cash for a one-year insurance premium for coverage beginning February 1 (an increase in one asset and a decrease in another asset).	+ 600 − 600	=		+	
Subtotal	\$107,000	=	\$ 0	+	\$107,000
(7) On January 31, the firm receives \$3,000 from a customer for merchandise Miller will deliver during February (an increase in an asset and a liability).	+ 3,000	=	+ 3,000	+	
Subtotal—January 31	\$110,000	=	\$ 3,000	+	\$107,000
(8) On January 31, the firm purchases a building for \$40,000, financed by a note payable with a local bank (an increase in an asset and a liability).	+ 40,000	=	+ 40,000	+	
Total—January 31	<u>\$150,000</u>	=	<u>\$43,000</u>	+	<u>\$107,000</u>

Transaction (4) decreases assets and a liability. Transactions (2) and (6) increase one asset and decrease another asset. Transaction (5) increases shareholders' equity and decreases a liability.

PROBLEM 2.1 FOR SELF-STUDY

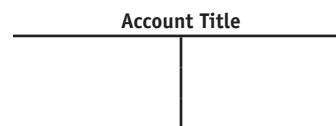
Dual effect of transactions on balance sheet equation. Using the format in Exhibit 2.2, indicate the effects of each of the following transactions of Gaines Corporation on the balance sheet equation.

1. The firm issues 20,000 shares of £10 par value common stock for £12 cash per share.
2. The firm issues £100,000 principal amount of bonds for £100,000 cash.
3. The firm acquires, with £220,000 in cash, land costing £40,000 and a building costing £180,000.
4. The firm acquires, on account, equipment costing £25,000 and merchandise inventory costing £12,000. ("On account" means that the firm agrees to pay later for the equipment and inventory.)
5. The firm signs an agreement to rent equipment from its owner and pays £1,500 rental in advance.
6. The firm pays £28,000 to the suppliers in 4.

T-ACCOUNTS

Although Exhibit 2.2 illustrates the dual effect of individual transactions, it does not provide a process for preparing a balance sheet. Specifically, the exhibit does not describe how much of the total assets of \$150,000 at the end of the period (January 31 for Miller Corporation) represents cash, how much represents inventory, how much represents equipment, and so on. A disaggregated display of balance sheet items provides users of financial statements with information about the sources of a firm's financing and how management has invested the cash and other assets received from shareholders and creditors in specific assets. For example, Exhibit 2.1 shows that as of December 31, Year 7, Toothpaste has invested over \$1 billion in inventories. To move to a disaggregated reporting format, we introduce the use of T-accounts for accumulating information about how transactions and events during a period affect specific asset, liability, and shareholders' equity accounts.

A **T-account** is a device or convention for organizing and accumulating the accounting entries of transactions that affect an *individual* account, such as cash, accounts receivable, bonds payable, or additional paid-in capital. As the name implies, the T-account looks like the letter T, with a horizontal line bisected by a vertical line. Conventionally, the name of the specific individual account title appears on the horizontal line.



Increases and Decreases to the T-Account One side of the space formed by the vertical line records increases in the account, and the other side records decreases. Which side records increases and which side records decreases differs depending on whether the T-account represents an asset, liability, or shareholders' equity account. Long-standing custom follows three rules:

1. Increases in assets appear on the left side, and decreases in assets appear on the right side of T-accounts.
2. Increases in liabilities appear on the right side, and decreases in liabilities appear on the left side of T-accounts.

3. Increases in shareholders' equity appear on the right side, and decreases in shareholders' equity appear on the left side of T-accounts.

This custom reflects the fact that in the balance sheet equation, assets appear to the left of the equal sign, while liabilities and shareholders' equity appear to the right side. Following this format, asset balances appear on the left side of T-accounts; liability and shareholders' equity balances appear on the right side.¹¹

The net amount or balance in an account results from summing the amounts recorded on the left side and right side of the account and netting the two sums. As we noted previously, the balance in an asset account typically appears as an amount on the left side, whereas liability and shareholders' equity accounts typically have net balances on the right side. The balance in an account at the end of one reporting period is that account's opening balance at the start of the next reporting period. By convention, the first line in the T-account reports the beginning or opening balance, and the last line reports the ending or closing balance. Thus, the following equation describes a typical asset account with a left side balance:

$$\begin{array}{l}
 \text{Beginning Balance in Asset Account (left side)} \\
 + \text{ Sum of the transactions affecting the left side of the Asset Account} \\
 - \text{ Sum of the transactions affecting the right side of the Asset Account} \\
 \hline
 = \text{ Ending Balance in Asset Account (left side)}
 \end{array}$$

For a typical liability or equity account, the T-account equation is as follows:

$$\begin{array}{l}
 \text{Beginning Balance in Liability or Shareholders' Equity Account (right side)} \\
 + \text{ Sum of the transactions affecting the right side of the Liability or Shareholders' Equity Account} \\
 - \text{ Sum of the transactions affecting the left side of the Liability or Shareholders' Equity Account} \\
 \hline
 = \text{ Ending Balance in Liability or Shareholders' Equity Account (right side)}
 \end{array}$$

The equality of the amounts recorded on the left and right for any transaction provides a powerful check for the accuracy of record keeping. *If you analyze a transaction and get unequal amounts for left and right amounts, you will know you have erred.*

Debit and Credit Accountants use two abbreviations: debit (Dr.) and credit (Cr.). **Debit**, used as a verb, means “record an entry on the left side of an account.” Used as a noun or an adjective, it means “an entry on the left side of an account.” (Many use the word **charge** to mean *debit*, as either a verb or a noun.) **Credit**, used as a verb, means “record an entry on the right side of an account.” Used as a noun or an adjective, it means “an entry on the right side of an account.” Combining these terms with the three rules for T-accounts, we see the following:

- A debit or charge indicates (1) an increase in an asset, or (2) a decrease in a liability, or (3) a decrease in a shareholders' equity item.
- A credit indicates (1) a decrease in an asset, or (2) an increase in a liability, or (3) an increase in a shareholders' equity item.

Maintaining the equality of the balance sheet equation requires that the amounts debited to various accounts for each transaction equal the amounts credited to various accounts. As a result, the sum of balances in accounts with debit balances at the end of each period must equal the sum of balances in accounts with credit balances. “Debits equal credits” applies to each individual transaction and to the balance sheet as a whole.

Summary of Account Terminology and Procedure The following T-accounts summarize the conventional use of the account form and the terms *debit* and *credit*.

¹¹As we describe in a subsequent section of this chapter, some accounts that appear in the asset section of the balance sheet accumulate subtractions from an asset. These are **contra accounts**, the general term for accounts that accumulate subtractions from another account. An increase in a contra-asset account appears on the right side, not the left side. A contra-asset account appears on the asset side of the balance sheet as a subtraction from an asset, not among the liability or shareholders' equity accounts. Contra-liability and contra-equity accounts also exist; in subsequent chapters, we discuss these contra accounts as they arise.

Asset Account		Liability Account		Shareholders' Equity Account	
Beginning Balance			Beginning Balance		Beginning Balance
Increases +	Decreases -	Decreases -	Increases +	Decreases -	Increases +
Dr.	Cr.	Dr.	Cr.	Dr.	Cr.
Ending Balance			Ending Balance		Ending Balance

REFLECTING THE DUAL EFFECT OF TRANSACTIONS IN T-ACCOUNTS

To show how the dual effect of transactions changes the T-accounts, **Exhibit 2.3** records the transactions of Miller Corporation for January using separate T-accounts for each balance sheet item. The numbers in parentheses refer to the eight January transactions. The data in **Exhibit 2.3** show that Miller Corporation's total assets of \$150,000 as of January 31 comprise \$82,400 in cash, \$15,000 in merchandise inventory, \$600 in prepaid insurance (advances *to* the insurance provider), \$12,000 in prepaid rent (advances *to* landlords), and \$40,000 in building. Total liabilities plus shareholders' equity of \$150,000 comprises \$3,000 of advances from customers, \$40,000 in notes payable, and \$107,000 of common stock.

EXHIBIT 2.3

Miller Corporation Individual T-Accounts Showing Transactions

Cash (Asset)				Accounts Payable (Liability)			
Increases (Dr.)		Decreases (Dr.)		Decreases (Dr.)		Increases (Cr.)	
(1) 100,000		12,000	(2)	(4) 8,000		15,000	(3)
(7) 3,000		8,000	(4)	(5) 7,000			
		600	(6)			0	Balance
Balance 82,400							

Merchandise Inventory (Asset)				Advances from Customer (Liability)			
Increases (Dr.)		Decreases (Cr.)		Decreases (Dr.)		Increases (Cr.)	
(3) 15,000						3,000	(7)
Balance 15,000						3,000	Balance

Prepaid Insurance (Asset)				Note Payable (Liability)			
Increases (Dr.)		Decreases (Cr.)		Decreases (Dr.)		Increases (Cr.)	
(6) 600						40,000	(8)
Balance 600						40,000	Balance

Prepaid Rent (Asset)				Common Stock (Shareholders' Equity)			
Increases (Dr.)		Decreases (Dr.)		Decreases (Dr.)		Increases (Cr.)	
(2) 12,000						100,000	(1)
Balance 12,000						7,000	(5)
						107,000	Balance

Buildings (Asset)				Retained Earnings (Shareholders' Equity)			
Increases (Dr.)		Decreases (Cr.)		Decreases (Dr.)		Increases (Cr.)	
(8) 40,000						0	Balance
Balance 40,000							

One can prepare the balance sheet using the amounts shown as balances in the T-accounts. The balance sheet of Miller Corporation after the eight transactions of January appears in **Exhibit 2.4**.

► PROBLEM 2.2 FOR SELF-STUDY

T-accounts for various transactions. Set up T-accounts for the following accounts:

Cash	Bonds Payable
Merchandise Inventory	Land
Prepaid Rent	Buildings
Equipment	Common Stock—Par Value
Accounts Payable	Additional Paid-In Capital

Indicate whether each account is an asset, a liability, or a shareholders' equity item. Enter in the T-accounts the transactions of Gaines Corporation in **Problem 2.1 for Self-Study**.

JOURNAL ENTRIES

The preceding section illustrated the use of T-accounts to do the following:

1. Record the effects of transactions on individual balance sheet accounts.
2. Sum the effects of all transactions affecting a particular account during a period, obtain an ending balance in that account, and then prepare a balance sheet.

EXHIBIT 2.4

Miller Corporation Balance Sheet January 31

ASSETS	
Current Assets	
Cash	\$ 82,400
Merchandise Inventory	15,000
Prepaid Insurance	600
Prepaid Rent	<u>12,000</u>
Total Current Assets	\$110,000
Property, Plant, and Equipment	
Buildings	<u>40,000</u>
Total Assets	<u>\$150,000</u>
LIABILITIES AND SHAREHOLDERS' EQUITY	
Current Liabilities	
Advances from Customer	\$ 3,000
Noncurrent Liabilities	
Note Payable	<u>40,000</u>
Total Liabilities	\$ 43,000
Shareholders' Equity	
Common Stock	\$107,000
Retained Earnings	—
Total Liabilities and Shareholders' Equity	<u>\$150,000</u>

T-accounts are a useful pedagogical device to understand how individual transactions flow to and accumulate within various accounts, and they provide the information needed to prepare a balance sheet. If the resulting balance sheet does not balance, however, then it becomes necessary to retrace the recording of every transaction to find the error. Tracking down the error using T-accounts can be awkward and time consuming because the effects of each transaction spread across two or more T-accounts.

To address this problem, we introduce a step that precedes the recording of transactions in T-accounts: the journal entry. A **journal entry** uses a standardized format to indicate the accounts and amounts affected by each transaction. Each journal entry reflects equal debits and credits to various accounts. The accountant transfers the amounts from the journal entry to the appropriate T-accounts. Assuming proper recording in the T-accounts and summing all entries in the T-accounts, the resulting balance sheet will balance (that is, total assets will equal the sum of total liabilities plus shareholders' equity). Journal entries formalize the reasoning that supports entering the results of transactions directly in the T-accounts.¹²

The standard format of a journal entry is as follows:

Account Title.	Amount	
Account Title.		Amount

The journal entry indicates the dual effect of a transaction on both the accounts and the balances in accounts. By convention, the first line of the journal entry is the debit line, and the second (indented) line of the journal entry is the credit line.

Account Debited	Amount Debited	
Account Credited		Amount Credited

The recording of journal entries follows the same rules for increases and decreases in asset, liability, and shareholders' equity accounts as illustrated earlier for entries in T-accounts:

1. Debits increase an asset account, or decrease a liability or shareholders' equity account.
2. Credits decrease an asset account, or increase a liability or shareholders' equity account.

Journal entries may have multiple debit lines or multiple credit lines, or both. The dual effect rule requires that the sum of the amounts debited equals the sum of the amounts credited so that the journal entry balances. Ensuring that all individual journal entries balance simultaneously guarantees that total assets equal the sum of total liabilities plus total shareholders' equity.

Journal entries generally include the date of the transaction and an explanation for the transaction(s) journalized. Often they include an identifying number as well. In this book we sometimes show you how journal entries affect the balance sheet equation. This equation is not part of the journal entries made in the accounting records, but it helps explain the transaction.¹³ Thus, the standard format for journal entries in the early chapters of this book is as follows:

¹²We sometimes use T-accounts, sometimes use journal entries, and sometimes use both to illustrate the effects of transactions in this book. They are both pedagogical devices to assist your understanding of the effects of transactions. Firms initially record transactions in journal entries in a *general journal* and then periodically post (that is, record) the entries to accounts in the *general ledger*. The use of T-accounts mimics the use of **posting** to the general ledger.

¹³Another approach that is sometimes used, for pedagogical purposes, is to include abbreviations for assets (A), liabilities (L) and shareholders' equity (SE) to describe the type of account affected by each portion of the journal entry. For example, the acquisition of equipment in exchange for a promise to pay the equipment supplier in the future would be journalized (recorded) as follows:

Equipment (A)	Amount Debited	
Notes Payable (L)		Amount Credited

(#)	Date			
	Account Debited		Amount	
	Account Credited			Amount

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)

Journal entry explanation.

Later chapters omit the box with the accounting equation. We use the column labeled “(Class.)” to indicate the classification of the shareholders’ equity account that the transaction affects.

The journal entries for the eight transactions of Miller Corporation appear next.

(1)	January 1			
	Cash	100,000		
	Common Stock			100,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+100,000				+100,000	ContriCap

Issue 10,000 shares of \$10 par value common stock for cash. The issuance of common stock increases the *contributed capital*, specifically, common stock.

(2)	January 5			
	Prepaid Rent	12,000		
	Cash			12,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+12,000					
-12,000					

Pay annual rent of \$12,000 for use of equipment.

(3)	January 15			
	Merchandise Inventory	15,000		
	Accounts Payable			15,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+15,000		+15,000			

Purchase merchandise inventory costing \$15,000 on account.

(4)	January 21			
	Accounts Payable	8,000		
	Cash			8,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-8,000		-8,000			

Pay liabilities of \$8,000 with cash.

(5) January 25

Accounts Payable	7,000	
Common Stock		7,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		-7,000		+7,000	ContriCap

Issue 700 shares of \$10 par value common stock in settlement of \$7,000 accounts payable.

(6) January 31

Prepaid Insurance (or Advances to Insurance Company)	600	
Cash		600

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+6,000					
-6,000					

Pay one-year insurance premium of \$600 in advance.

(7) January 31

Cash	3,000	
Advances from Customers		3,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+3,000		+3,000			

Receive \$3,000 from customer for merchandise to be delivered in February.

(8) January 31

Buildings	40,000	
Note Payable		40,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+40,000		+40,000			

Purchase building costing \$40,000, financed by note payable from local bank.

► PROBLEM 2.3 FOR SELF-STUDY

Journal entries for various transactions. Prepare journal entries for each of the six transactions of Gaines Corporation in **Problem 2.1 for Self-Study**.

► PROBLEM 2.4 FOR SELF-STUDY

Journal entries, T-accounts, and balance sheet preparation. Electronics Appliance Corporation begins operations on September 1 and engages in the following transactions during September:

(continued)

- (1) September 1: Issues 4,000 shares of \$10 par value common stock for \$12 cash per share.
- (2) September 2: Gives 600 shares of \$10 par value common stock to acquire a patent from another firm. The two entities agree on a price of \$7,200 for the patent.
- (3) September 5: Pays \$10,000 as two months' rent in advance on a factory building that it leases for the three years beginning October 1. Monthly rental payments are \$5,000.
- (4) September 12: Purchases raw materials on account for \$6,100.
- (5) September 15: Receives a check for \$900 from a customer as a deposit on a special order for equipment that Electronics plans to manufacture. The contract price is \$4,800.
- (6) September 20: Acquires office equipment with a list price of \$950. After deducting a discount of \$25 for prompt payment, it issues a check in full payment.
- (7) September 28: Issues a cash advance totaling \$200 to three new employees who will begin work on October 1.
- (8) September 30: Purchases factory equipment costing \$27,500. It issues a check for \$5,000 and assumes a long-term note payable for the balance.
- (9) September 30: Pays \$450 for the labor costs of installing the new equipment in (8).
 - a. Prepare journal entries for each of the nine transactions.
 - b. Set up T-accounts and enter each of the nine transactions. Note that all account balances are zero at the beginning of September.
 - c. Prepare a balance sheet for Electronics Appliance Corporation as of September 30.

SUMMARY

Recording the effects of each transaction in a dual manner in the accounts maintains the balance sheet equation: assets = liabilities + shareholders' equity. The format of a journal entry to record a transaction is as follows:

Debit Account (Asset Increases and Liability and Shareholders' Equity Decreases)	Debit Amount
Credit Account (Asset Decreases and Liability and Shareholders' Equity Increases)	Credit Amount

T-accounts provide an alternative way of organizing the recording of transactions. They are also convenient devices for collecting the records of a series of transactions that affect a single account during a period. Like journal entries, T-accounts reflect the dual effect of transactions as shown by the following T-account format:

Asset Account	Liability (or Shareholders' Equity) Account																
<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px 5px;">Beg. Bal.</td> <td style="width: 50%; padding: 2px 5px;"></td> </tr> <tr> <td style="padding: 2px 5px;">Increases</td> <td style="padding: 2px 5px;">Decreases</td> </tr> <tr> <td style="padding: 2px 5px;">Dr.</td> <td style="padding: 2px 5px;">Cr.</td> </tr> <tr> <td style="border-top: 1px solid black; padding: 2px 5px;">End. Bal.</td> <td style="border-top: 1px solid black; padding: 2px 5px;"></td> </tr> </table>	Beg. Bal.		Increases	Decreases	Dr.	Cr.	End. Bal.		<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; padding: 2px 5px;"></td> <td style="width: 50%; padding: 2px 5px;">Beg. Bal.</td> </tr> <tr> <td style="padding: 2px 5px;">Decreases</td> <td style="padding: 2px 5px;">Increases</td> </tr> <tr> <td style="padding: 2px 5px;">Dr.</td> <td style="padding: 2px 5px;">Cr.</td> </tr> <tr> <td style="border-top: 1px solid black; padding: 2px 5px;"></td> <td style="border-top: 1px solid black; padding: 2px 5px;">End. Bal.</td> </tr> </table>		Beg. Bal.	Decreases	Increases	Dr.	Cr.		End. Bal.
Beg. Bal.																	
Increases	Decreases																
Dr.	Cr.																
End. Bal.																	
	Beg. Bal.																
Decreases	Increases																
Dr.	Cr.																
	End. Bal.																

The record-keeping process for the balance sheet generally involves the following steps:

1. Recording each transaction in a file or other record in the form of a journal entry.
2. Posting the amounts from the journal entries to individual balance sheet accounts in a general ledger. T-accounts are useful devices for textbook illustrations and end-of-chapter problems to accumulate the effects of transactions on balance sheet.

SOLUTIONS TO SELF-STUDY PROBLEMS

SUGGESTED SOLUTION TO PROBLEM 2.1 FOR SELF-STUDY

(Gaines Corporation; dual effects of transactions on balance sheet equation)

Transaction	Assets	=	Liabilities	+	Shareholders' Equity
1. The firm issues 20,000 shares of £10 par value common stock for £12 cash per share	+£240,000	=	0	+	+£240,000
2. The firm issues £100,000 principal amount of bonds for £100,000 cash.	+100,000	=	+100,000	+	0
3. The firm acquires, with £220,000 cash, land costing £40,000 and a building costing £180,000	+220,000 -220,000	=	0	+	0
4. The firm acquires, on account, equipment costing £25,000 and merchandise inventory costing £12,000	+37,000	=	+37,000	+	0
5. The firm signs an agreement to rent equipment from its owner and pays £1,500 rental in advance	+1,500 -1,500	=	0	+	0
6. The firm pays £28,000 to the suppliers in 4.	-28,000	=	-28,000		
Totals	<u>£349,000</u>	=	<u>£109,000</u>	+	<u>£240,000</u>

SUGGESTED SOLUTION TO PROBLEM 2.2 FOR SELF-STUDY

(Gaines Corporation; T-accounts for various transactions)

Cash (Asset) <hr/> (1) 240,000 | 220,000 (3) (2) 100,000 | 1,500 (5) | 28,000 (6)	Merchandise Inventory (Asset) <hr/> (4) 12,000 |	Prepaid Rent (Asset) <hr/> (5) 1,500 |
Land (Asset) <hr/> (3) 40,000 |	Buildings (Asset) <hr/> (3) 180,000 |	Equipment (Asset) <hr/> (4) 25,000 |
Accounts Payable (Liability) <hr/> (6) 28,000 | 37,000 (4)	Bonds Payable (Liability) <hr/> | 100,000 (2)	Common Value (Shareholders' Equity) <hr/> | 200,000 (1)
Additional Paid-In Capital (Shareholders' Equity) <hr/> | 40,000 (1)		

SUGGESTED SOLUTION TO PROBLEM 2.3 FOR SELF-STUDY

(Gaines Corporation; journal entries for various transactions)

(1)	Cash	240,000	
	Common Stock		200,000
	Additional Paid-In Capital		40,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+240,000				+200,000	ContriCap
				+40,000	ContriCap

Issue 20,000 shares of £10 par value common stock for £12 cash per share.

(2)	Cash	100,000	
	Bonds Payable		100,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+100,000		+100,000			

Issue £100,000 principal amount of bonds for £100,000 cash.

(3)	Land	40,000	
	Building	180,000	
	Cash		220,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+40,000					
+180,000					
-220,000					

Acquire for £220,000 land costing £40,000 and a building costing £180,000.

(4)	Equipment	25,000	
	Merchandise Inventory	12,000	
	Accounts Payable		37,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+25,000		+37,000			
+12,000					

Purchase equipment costing £25,000 and merchandise inventory costing £12,000 on account.

(5)	Prepaid Rent	1,500	
	Cash		1,500

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+1,500					
-1,500					

Pay £1,500 as advance rental on equipment.

(6)	Accounts Payable	28,000	
	Cash		28,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-28,000		-28,000			

Pay £28,000 to the supplier in (4).

SUGGESTED SOLUTION TO PROBLEM 2.4 FOR SELF-STUDY

(Electronics Appliance Corporation; journal entries, T-accounts, and balance sheet preparation)

a. Journal entries for the nine transactions follow:

(1)	Sept. 1		
	Cash	48,000	
	Common Stock		40,000
	Additional Paid-In Capital		8,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+48,000				+40,000	ContriCap
				+8,000	ContriCap

Issue 4,000 shares of \$10 par value common stock for \$12 cash per share.

(2)	Sept. 2		
	Patent	7,200	
	Common Stock		6,000
	Additional Paid-In Capital		1,200

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+7,200				+6,000	ContriCap
				+1,200	ContriCap

Issue 600 shares of \$10 par value common stock in the acquisition of a patent; the market value of the shares is \$12/share.

(3)	Sept. 5		
	Prepaid Rent or Advances to Landlord	10,000	
	Cash		10,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-10,000					
+10,000					

Prepay rent for October and November on factory building.

(4)	Sept. 12		
	Raw Materials Inventory	6,100	
	Accounts Payable		6,100

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+6,100		+6,100			

Purchase raw materials costing \$6,100 on account.

(5) Sept. 15

Cash	900	
Advances from Customers		900

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+900		+900			

Receive an advance of \$900 from a customer as a deposit on equipment to be manufactured in the future.

(6) Sept. 20

Equipment	925	
Cash		925

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+925					
-925					

Acquire equipment with a list price of \$950 for \$925 after taking a discount for prompt payment.

(7) Sept. 28

Advances to Employees	200	
Cash		200

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+200					
-200					

Give cash advances of \$200 to employees beginning work on Oct. 1.

(8) Sept. 30

Equipment	27,500	
Cash		5,000
Note Payable		22,500

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+27,500		+22,500			
-5,000					

Acquire equipment for \$5,000 cash and assume a \$22,500 note payable for the balance of the purchase price.

(9) Sept. 30

Equipment	450	
Cash		450

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+450					
-450					

Pay installation cost of \$450 on equipment acquired in (8).

- b. **Exhibit 2.5** presents T-accounts for Electronics Appliance Corporation and shows the recording of the nine entries in the accounts. The letters *A*, *L*, and *SE* after the account titles indicate the balance sheet category of the accounts.
- c. **Exhibit 2.6** presents a balance sheet as of September 30.

EXHIBIT 2.5
Electronics Appliance Corporation
T-Accounts and Transactions During September
(Problem 2.4 for Self-Study)

Cash (A)		Advances to Employees (A)		Raw Materials Inventory (A)	
(1)	48,000	(7)	200	(4)	6,100
(5)	900				
✓	<u>32,325</u>	✓	<u>200</u>	✓	<u>6,100</u>
Prepaid Rent (A)		Equipment (A)		Patent (A)	
(3)	10,000	(6)	925	(2)	7,200
		(8)	27,500		
		(9)	450		
✓	<u>10,000</u>	✓	<u>28,875</u>	✓	<u>7,200</u>
Accounts Payable (L)		Advances from Customers (L)		Note Payable (L)	
	6,100 (4)		900 (5)		22,500 (8)
	<u>6,100</u> ✓		<u>900</u> ✓		<u>22,500</u> ✓
Common Stock (SE)		Additional Paid-In Capital (SE)			
	40,000 (1)		8,000 (1)		
	6,000 (2)		1,200 (2)		
	<u>46,000</u> ✓		<u>9,200</u> ✓		

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EXHIBIT 2.6
Electronics Appliance Corporation
Balance Sheet
September 30
(Problem 2.4 for Self-Study)
ASSETS**Current Assets**

Cash	\$32,325
Advances to Employees	200
Raw Materials Inventory	6,100
Prepaid Rent	<u>10,000</u>
Total Current Assets	\$48,625

Property, Plant, and Equipment

Equipment	\$28,875
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Intangibles

Patent	<u>7,200</u>
Total Assets	<u>\$84,700</u>

LIABILITIES AND SHAREHOLDERS' EQUITY**Current Liabilities**

Accounts Payable	\$ 6,100
Advances from Customers	<u>900</u>
Total Current Liabilities	\$ 7,000

Long-Term Debt

Note Payable	<u>22,500</u>
Total Liabilities	\$29,500

Shareholders' Equity

Common Stock, \$10 Par Value	\$46,000
Additional Paid-In Capital	<u>9,200</u>
Total Shareholders' Equity	<u>\$55,200</u>
Total Liabilities and Shareholders' Equity	<u>\$84,700</u>

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KEY TERMS AND CONCEPTS

Account	Dual effect of transactions
Permanent accounts	T-account
Temporary accounts	Contra account
Asset	Debit
Liability	Charge
Shareholders' equity	Credit
Current and noncurrent assets and liabilities	Journal entry
Balance sheet equation	Posting

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

1. Review the meaning of the terms and concepts listed in Key Terms and Concepts.
2. Why does every accounting transaction have two effects?
3. What is the relation between a T-account and a journal entry?
4. What distinguishes noncurrent assets from current assets?
5. What is the purpose of using contra accounts? What is the alternative to using them?

EXERCISES

6. **Dual effects on balance sheet equation.** Fresh Foods Group, a European food retailer that operates supermarkets in seven countries, engaged in the following three transactions during 2013: (1) purchased and received inventory costing €678 million on account from various suppliers; (2) returned inventory costing €45 million because of damage that occurred during shipment; (3) paid the various suppliers the total amount due. Indicate the effects of each of these three transactions on the balance sheet equation. Fresh Foods Group applies IFRS and reports its results in millions of euros (€).
7. **Dual effects on balance sheet equation.** Cement Plus, a firm specializing in building materials, engaged in the following four transactions during 2014: (1) purchased and received inventory costing \$14,300 million, of which \$12,000 million was on account with the rest paid in cash; (2) purchased a machine for \$3,000 million with cash; (3) issued 2,000 shares of common stock for \$6,500 million in cash; (4) issued shares of common stock to its suppliers for the remaining amount due on purchases of inventory. Indicate the effects of each of these four transactions on the balance sheet equation. Cement Plus applies U.S. GAAP financial reporting standards and reports its results in millions of U.S. dollars (\$).
8. **Balance sheet classification.** GAAP classifies items on the balance sheet in one of the following ways:
 - Asset (A)
 - Liability (L)
 - Shareholders' equity (SE)
 - Item that would not appear on the balance sheet as conventionally prepared under GAAP. (N/A)

Using the abbreviations, indicate the appropriate classification of each of the following items. If you can find no basis in the chapter for giving an answer, then speculate.

- a. Salaries payable
- b. Retained earnings
- c. Notes receivable

- d. Unfilled customers' orders
 - e. Land
 - f. Interest payable
 - g. Work-in-process inventory
 - h. Mortgage payable
 - i. Organization costs
 - j. Advances by customers
 - k. Advances to employees
 - l. Patents
 - m. Good credit standing
 - n. Common stock
9. **Balance sheet classification.** GAAP classifies items on the balance sheet in one of the following ways:
- Asset (A)
 - Liability (L)
 - Shareholders' equity (SE)
 - Item that would not appear on the balance sheet as conventionally prepared under GAAP. (N/A)

Using the abbreviations, indicate the appropriate classification of each of the following items. If you can find no basis in the chapter for giving an answer, then speculate.

- a. Preferred stock
- b. Furniture and fixtures
- c. Potential liability under lawsuit (case has not yet gone to trial); attorneys estimate 40% chance of losing a material amount.
- d. Prepaid rent
- e. Capital contributed in excess of par value
- f. Cash on hand
- g. Goodwill
- h. Estimated liability under warranty contract
- i. Raw materials inventory
- j. Rental fees received in advance
- k. Bonds payable
- l. Prepaid insurance
- m. Income taxes payable
- n. Treasury stock

PROBLEMS

10. **Dual effects of transactions on balance sheet equation and journal entries.** Assume that during Year 15, Bullseye Corporation, a U.S. retailer, engages in the following six transactions. Bullseye Corporation applies U.S. GAAP and reports its results in millions of U.S. dollars (\$). Do not be concerned that after these transactions, the balance in the Cash account is negative. The firm will deal with that issue in transactions not shown here.
- (1) The firm issues 20 million shares of \$0.0833 par value common stock for a total of \$960 million cash.
 - (2) It purchases merchandise costing \$1,500 million on account.
 - (3) The firm acquires a new store location, consisting of a building costing \$3,200 million and land costing \$930 million. It pays cash to the owner of the property.
 - (4) The firm purchases fixtures for the new store costing \$860 million, on account.
 - (5) The firm pays the merchandise supplier in transaction (2) the amount due.
 - (6) The firm pays the supplier of the fixtures in transaction (4) half of the amount due in cash. The firm pays the other half by issuing 8.6 million common shares to the

supplier. At the time of this transaction, Bullseye Corporation's shares traded at \$50 per share in the market.

- a. Indicate the effects of these six transactions on the balance sheet equation using this format:

Transaction Number	Assets	=	Liabilities	+	Shareholders' Equity
(1)	<u>+\$960</u>		\$0		<u>+\$960</u>
Subtotal	\$960	=	\$0	+	\$960

- b. Give the journal entries for each of the six transactions.

11. Dual effects of transactions on balance sheet equation and journal entries. Assume that during Year 14, Inheritance Brands, a U.S. manufacturer and distributor, engaged in the following five transactions. Inheritance Brands applies U.S. GAAP and reports its results in millions of U.S. dollars (\$). You may round to one significant digit after the decimal point.

- (1) The firm issues 10 million shares of \$3.125 par value common stock for \$55 cash per share.
- (2) At the end of Year 14, the firm acquires land costing \$250 million and a building costing \$900 million. It pays for the purchase by giving \$400 million in cash and promising to pay the remainder in Year 15. It signed a note payable for the remainder.
- (3) The firm pays \$30 million cash for a one-year insurance policy on the land and building. The policy period begins at the start of Year 15.
- (4) The firm acquires merchandise inventory costing \$400 million on account from various suppliers.
- (5) The firm pays cash to the suppliers in transaction (4) for its purchases on account.

- a. Indicate the effects of these five transactions on the balance sheet equation using this format:

Transaction Number	Assets	=	Liabilities	+	Shareholders' Equity
(1)	<u>+\$550</u>		\$0		<u>+\$550</u>
Subtotal	\$550	=	\$0	+	\$550

- b. Give the journal entries for each of the five transactions.

12. Journal entries for various transactions. Express the following transactions of Winkle Grocery Store, Inc., in journal entry form. If an entry is not required, indicate the reason. You may omit explanations for the journal entries. The store:

- (1) Receives \$30,000 from John Winkle in return for 1,000 shares of the firm's \$30 par value common stock.
- (2) Gives a 60-day, 8% note to a bank and receives \$5,000 cash from the bank.
- (3) Rents a building and pays the annual rental of \$12,000 in advance.
- (4) Acquires display equipment costing \$8,000 and issues a check in full payment.
- (5) Acquires merchandise inventory costing \$25,000. The firm issues a check for \$12,000, with the remainder payable in 30 days.
- (6) Signs a contract with a nearby restaurant under which the restaurant agrees to purchase \$2,000 of groceries each week. The firm receives a check for the first two weeks' orders in advance.
- (7) Obtains a fire insurance policy providing \$50,000 coverage beginning next month. It pays the one-year premium of \$1,200.
- (8) Pays \$600 for advertisements that will appear in newspapers next month.
- (9) Places an order with suppliers for \$35,000 of merchandise to be delivered next month.

13. Recording transactions and preparing a balance sheet. Moulton Corporation engaged in the following seven transactions during December, Year 12, in preparation for opening the business on January 1, Year 13. We continue with data for Moulton Corporation in **Chapter 3, Problem 3.22**. You will not need some of the information given here until you work that problem. We give this information here, as the firm would often learn this information at the time of the transaction described here.

- (1) Issued for cash 80,000 shares of \$10 par value at par.
 - (2) Acquired for cash land costing \$50,000 and a building costing \$450,000. Information for later use: The building has an expected useful life of 25 years beginning on January 1, Year 13.
 - (3) Purchased merchandise inventory costing \$280,000 on account from various suppliers.
 - (4) Paid for inventory purchased in (3) with an original invoice price of \$250,000 in time to take advantage of a 2% discount for prompt payment. The firm treats discounts taken as a reduction in the cost of inventories. The firm has not yet paid for the remaining \$30,000 of purchases on account.
 - (5) Paid \$12,000 for a one-year insurance policy on the land and building. The insurance coverage begins January 1.
 - (6) Borrowed \$300,000 from a bank on December 31, Year 12. Information for later use: The loan bears interest at an annual rate of 8% and is due in five years. The interest is payable on January 1 of each year, beginning January 1, Year 14, and the \$300,000 amount borrowed is due on December 31, Year 17.
 - (7) Acquired equipment on December 31 costing \$80,000 and signed a 6% note payable to the supplier. The note is due on June 30, Year 13. Information for later use: The equipment has an estimated useful life of 5 years.
 - a. Record these seven transactions in T-accounts.
 - b. Prepare a balance sheet for Moulton Corporation as of December 31.
- 14. Recording transactions and preparing a balance sheet.** Patterson Corporation begins operations on January 1, Year 13. See the assumptions given at the end of the list. **Problem 3.23** continues this problem. The firm engages in the following transactions during January:
- (1) Issues 15,000 shares of \$10 par value common stock for \$210,000 in cash.
 - (2) Issues 28,000 shares of common stock in exchange for land, building, and equipment. The land appears at \$80,000, the building at \$220,000, and the equipment at \$92,000 on the balance sheet.
 - (3) Issues 2,000 shares of common stock to another firm to acquire a patent. The price per share is \$14 per share.
 - (4) Acquires merchandise inventories with a list price of \$75,000 on account from suppliers.
 - (5) Acquires equipment with a list price of \$6,000. It deducts a \$600 discount and pays the net amount in cash. The firm treats cash discounts as a reduction in the acquisition cost of equipment.
 - (6) Pays freight charges of \$350 for delivery of the equipment in (5). The firm treats freight charges as part of the acquisition cost of the equipment.
 - (7) Discovers that merchandise inventories with a list price of \$800 are defective and returns them to the supplier for full credit. The merchandise inventories had been purchased on account—see (4)—and no payment had been made as of the time that the goods were returned.
 - (8) Signs a contract for the rental of a fleet of automobiles beginning February 1. Pays the \$1,400 rental for February in advance.
 - (9) Pays invoices for merchandise inventories purchased in (4) with an original list price of \$60,000, after deducting a discount of 3% for prompt payment. The firm treats cash discounts as a reduction in the acquisition cost of merchandise inventories.
 - (10) Obtains fire and liability insurance coverage from Southwest Insurance Company. The two-year policy, beginning February 1, carries a \$2,400 premium that has not yet been paid.
 - (11) Signs a contract with a customer for \$20,000 of merchandise that Patterson plans to deliver in the future. The customer advances \$4,500 toward the contract price.
 - (12) Acquires a warehouse costing \$60,000 on January 31. The firm makes a down payment of \$7,000 and assumes a 20-year, 6% mortgage for the balance. Information for later use: Interest is payable on January 31 each year.
 - (13) Discovers that merchandise inventories with an original list price of \$1,500 are defective and returns them to the supplier. This inventory was paid for in (9). The returned

merchandise inventories are the only items purchased from this particular supplier during January. A cash refund has not yet been received from the supplier.

- (14) On January 31, the firm purchases 6,000 shares of \$10 par value common stock of the General Cereal Corporation for \$95,000. This purchase is a short-term use of excess cash. The shares of General Cereal Corporation trade on the New York Stock Exchange.

The following assumptions will help you resolve certain accounting uncertainties:

- Transactions (2) and (3) occur on the same day as transaction (1).
- The invoices paid in (9) are the only purchases for which suppliers made discounts available to the purchaser.

- a. Enter these 14 transactions in T-accounts.
- b. Prepare a balance sheet as of January 31, Year 13.

- 15. Recording transactions in T-accounts and preparing a balance sheet.** Veronica Regaldo creates a new business in Mexico on January 1, Year 8, to operate a retail store. Transactions of Regaldo Department Stores during January Year 8 in preparation for opening its first retail store in February Year 8 appear below. Regaldo applies IFRS and reports its results in thousands of Mexican pesos (\$).

- (1) January 1, Year 8: Receives \$500,000 from Veronica Regaldo for all of the common stock of Regaldo Department Stores. The stock has no par or stated value.
- (2) January 5, Year 8: Pays another firm \$20,000 for a patent, and pays the Mexican government \$4,000 to register the patent. IFRS treats the cost to register the patent as part of its acquisition cost.
- (3) January 10, Year 8: Orders merchandise from various suppliers at a cost of \$200,000. See transactions (5), (6), and (7) for later information regarding these merchandise orders.
- (4) January 15, Year 8: Signs a lease to rent land and a building for \$30,000 a month. The rental period begins February 1, Year 8. Regaldo pays \$60,000 for the first two months' rent in advance.
- (5) January 20, Year 8: Receives the merchandise ordered on January 10, Year 8. Regaldo delays payment for the merchandise until it receives an invoice from the supplier—see transaction (7) below.
- (6) January 21, Year 8: Discovers that merchandise costing \$8,000 is defective and returns the items to the supplier.
- (7) January 25, Year 8: Receives invoices for \$160,000 for the merchandise received on January 20, Year 8. After subtracting an allowed discount of 2% of the invoice for paying promptly, Regaldo pays the suppliers the amount due of \$156,800 ($0.98 \times \$160,000$). The firm treats cash discounts taken as a reduction in the acquisition cost of the merchandise.
- (8) January 30, Year 8: Obtains fire and liability insurance coverage from Windwards Islands Insurance Company for the period beginning February 1, Year 8. It pays the one-year insurance premium of \$12,000.

- a. Record these eight transactions in T-accounts.
- b. Prepare a balance sheet for Regaldo Department Stores on January 31, Year 8.

- 16. Recording transactions and preparing a balance sheet.** Whitley Products Corporation begins operations on April 1. The firm engages in the following transactions during April:

- (1) Issues 25,000 shares of \$10 par value common stock for \$15 per share in cash.
- (2) Acquires land costing \$25,000 and a building costing \$275,000 by paying \$50,000 in cash and signing a note payable to a local bank for the remainder of the purchase price.
- (3) Acquires equipment costing \$125,000 for cash.
- (4) Pays \$2,800 to transport the equipment to the office of Whitley Products Corporation. U.S. GAAP treats the cost to transport the equipment as part of the acquisition cost of the equipment.
- (5) Pays \$3,200 to install and test the equipment. U.S. GAAP treats the cost to install and test the equipment as part of the acquisition cost of the equipment.

- (6) Pays the one-year premium of \$12,000 for property and liability insurance on the building and equipment for coverage beginning May 1.
 - (7) Agrees to manufacture custom-ordered merchandise for a particular customer beginning in May at a selling price of \$15,000. The customer advances \$1,500 of the selling price with the order.
 - (8) Orders raw materials costing \$60,000 from various suppliers.
 - (9) Receives notification from the suppliers that the raw materials ordered in transaction (8) were shipped. The merchandise belongs to the suppliers until received by Whitley Products Corporation.
 - (10) Receives the raw materials shipped in transaction (9).
 - (11) Discovers that raw materials costing \$8,000 are damaged and returns them to the supplier. The firm has not yet paid the supplier.
 - (12) Pays the raw materials suppliers in transactions (8), (9), (10), and (11) the amounts due, after subtracting 2% for prompt payment. The firm treats cash discounts as a reduction in the acquisition cost of the raw materials.
- a. Enter these twelve transactions in T-accounts.
 - b. Prepare a balance sheet for Whitley Products Corporation as of April 30.
- 17. Effect of recording errors on the balance sheet equation.** Using the notation O/S (overstated), U/S (understated), or No (no effect), indicate the effects on assets, liabilities, and shareholders' equity of *failing to record or recording incorrectly* each of the following transactions or events. For example, a failure to record the issuance of common stock for \$10,000 cash would be shown as follows:
- Assets—U/S \$10,000
 - Liabilities—No
 - Shareholders' equity—U/S \$10,000
- (1) A firm ordered \$23,000 of merchandise from a supplier but did not record anything in its accounts.
 - (2) The firm received the merchandise in transaction (1) and recorded it by debiting Merchandise Inventory and crediting Accounts Payable for \$32,000.
 - (3) The firm acquired an automobile costing \$20,000 by paying \$2,000 in cash and signing a note payable for the remainder of the purchase price. It recorded the acquisition by debiting Automobile for \$20,000, crediting Cash for \$18,000, and crediting Note Payable for \$2,000.
 - (4) The firm paid the \$1,800 annual insurance premium on the automobile in transaction (3) by debiting Automobile and crediting Cash for \$1,800. The insurance period begins next month.
 - (5) The firm received an order from a customer for \$5,500 of merchandise that the firm will deliver next month. The customer included a check for \$1,500. The firm made no entry for this transaction.
 - (6) The firm issued 2,000 shares of its \$10 par value common stock having a market value of \$32,000 in exchange for land. It recorded the transaction by debiting Land and crediting Common Stock for \$20,000.
 - (7) The firm signed a three-year employment agreement with its chief executive officer at an annual salary of \$275,000. The employment period begins next month. The firm did not record anything in its accounts related to this agreement.
- 18. Effect of recording errors on the balance sheet equation.** A firm recorded various transactions with the journal entries shown below. Using the notation O/S (overstated), U/S (understated), or No (no effect), indicate the effects on assets, liabilities, and shareholders' equity of any errors in recording each of these transactions. For example, if a firm recorded the issue of \$10,000 of common stock by debiting Cash and crediting Bonds Payable, the effects of the error are shown as follows:
- Assets—No
 - Liabilities—O/S \$10,000
 - Shareholders' equity—U/S \$10,000

(1)	Equipment	10,000	
	Cash		2,000
	Note Receivable		8,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+10,000					
-2,000					
-8,000					

To record acquisition of equipment using \$2,000 cash and signing of an \$8,000 promissory note for the balance.

(2)	Equipment	4,000	
	Cash		1,000
	Note Payable		3,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+4,000		+3,000			
-1,000					

To record the placing of an order for equipment to be delivered next month. The firm made a \$1,000 deposit with the order.

(3)	Cash	800	
	Accounts Receivable		800

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+800					
-800					

To record an advance from a customer on merchandise to be shipped next month. The customer did not owe the firm any amounts at the time of this transaction.

(4)	Prepaid Rent	1,000	
	Rent Payable		1,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+1,000		+1,000			

To record the signing of a rental agreement for warehouse space for a one-year period beginning next month. The monthly rental fee of \$1,000 is due on the first day of each month.

(5)	Patent	2,500	
	Cash		2,500

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+2,500					
-2,500					

To record the issuance of common stock in the acquisition of a patent.

(6)	Merchandise Inventories	4,900	
	Cash		4,900

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+4,900					
-4,900					

To record the acquisition of office equipment for cash.

The Basics of Record Keeping and Financial Statement Preparation: Income Statement

1. Continue mastering the conventions of recording transactions, including the dual nature of transactions and the use of T-accounts and journal entries.
2. Understand the recording of income statement transactions in temporary accounts, which the record-keeping process closes at the end of the period to the Retained Earnings account on the balance sheet.
3. Understand the need for adjusting entries and begin to learn how accountants use a variety of clues and data to compute the amounts for such entries.
4. Understand the difference between transaction entries, adjusting entries, and closing entries.
5. Understand how the balance sheet and the income statement articulate.

LEARNING OBJECTIVES

This chapter shows how the accountant records operating transactions and then combines transaction records to prepare the income statement. This chapter, as did **Chapter 2**, focuses on record-keeping procedures, not on accounting principles and judgments.

This chapter considers four record-keeping concepts:

1. The dual nature (duality) of transactions and events.
2. The use of T-accounts and journal entries for recording the duality of a transaction or event.
3. The preparation of a simple income statement and statement of cash flows.
4. The link, or *articulation*, between the balance sheet and the income statement.

These concepts rely on the record-keeping terminology introduced in **Chapter 2**.

The word *account* refers to items on both the balance sheet and the income statement. An **account** is a device for keeping track of the amount on a line of the balance sheet or the income statement. Balance sheet accounts are **permanent accounts** in the sense that they remain open, with nonzero balances, at the end of the reporting period. In contrast, income statement accounts are **temporary accounts** in the sense that they start a period with a zero balance, accumulate information during the reporting period, and have a zero balance at the end of the reporting period. An income statement account shows the amount for a period of time.

The closing process (discussed below) ensures that each income statement account has a zero balance at the end of the reporting period and that the amounts that had been in the income statement accounts get transferred to the balance sheet account, Retained Earnings, at the end of the period for which the income statement reports data.

THE INCOME STATEMENT

COMMON TERMINOLOGY

Chapter 2 described the application of three record-keeping conventions (dual effects of transactions, T-accounts, and journal entries) to transactions affecting the balance sheet and emphasized the usefulness of the balance sheet equation in understanding how the recording of transactions

maintained the equality of assets and liabilities plus shareholders' equity. We now consider operating transactions that affect the income statement, a second principal financial statement that firms prepare to report on their business activities. First, we describe some account titles used in income statements to provide a sense of typical names (sometimes called “rows” or “line items”) used in published income statements.

Revenues or Sales: a measure of the assets received (for example, cash) in exchange for goods sold and services rendered. Outside the United States, sales or revenues are sometimes called *turnover*.

Cost of Goods Sold: the cost of products sold. *Cost of services* is a similar concept and refers to the cost of services sold.

Selling, General, and Administrative (SG&A): costs incurred to sell products and services (such as salaries of the sales force) as well as costs of administration (such as the salaries of top executives and rent and insurance on corporate headquarters buildings and furnishings).

Research and Development (R&D) Expense: costs incurred to create and develop new products, processes, and services.

Advertising Expense: costs incurred with the goal of increasing sales by attracting more customers or inducing existing customers to increase their purchases. No rule requires that the income statement separately show these items, which can be part of SG&A.

Interest Expense: the cost of using borrowed funds.

Interest Income: income earned on amounts lent to others or from investments in interest-yielding securities.

Income Tax Expense: federal, state, and local taxes levied on income.

A TYPICAL INCOME STATEMENT

Just as the balance sheet lists accounts, grouped by type, so too does the income statement. The income statement displays, for a given period, revenues (net asset inflows) and expenses (net asset outflows); the difference is net income (also called *earnings* or *profit*). If the expenses exceed the revenues of a period, the result is a *loss* or a *net loss*.

The income statement begins with revenues (sometimes called the “top line”) and then subtracts expenses associated with operating the business (for example, cost of goods sold, SG&A, R&D, and advertising). The next line items display other sources of income (such as interest income) and other expenses (such as interest expense) to arrive at income before taxes. Income tax expense is then subtracted to arrive at net income (sometimes called the “bottom line”). Some firms declare, then pay, dividends to their shareholders. A dividend is a distribution of net assets generated by earnings—not a cost incurred in generating earnings—so it never appears as an expense on the income statement.

The income statement of Toothpaste Company for the fiscal year ended December 31, Year 7, appears in **Exhibit 3.1**. Both U.S. GAAP and IFRS require the display of income statements for the current year as well as the two prior years. Toothpaste reports the results for the current year,

EXHIBIT 3.1

Toothpaste Company Income Statement

For the years ended December 31	Year 7	Year 6	Year 5
Net sales	\$13,789.7	\$12,237.7	\$11,396.9
Cost of sales	6,042.3	5,536.1	5,191.9
Gross profit	\$ 7,747.4	\$ 6,701.6	\$ 6,205.0
Selling, general, and administrative expenses	4,973.0	4,355.2	3,920.8
Other (income) expense, net.	121.3	185.9	69.2
Operating profit	\$ 2,653.1	\$ 2,160.5	\$ 2,215.0
Interest expense, net.	156.6	158.7	136.0
Income before income taxes	\$ 2,496.5	\$ 2,001.8	\$ 2,079.0
Provision for income taxes	759.1	648.4	727.6
Net income	\$ 1,737.4	\$ 1,353.4	\$ 1,351.4

Year 7, in the first (leftmost) column of numbers, with the results for Year 6 and Year 5 reported in the remaining two columns. Toothpaste’s income statement reflects a relatively sparse listing of accounts. Most firms’ income statements contain more detail, that is, more line items or rows.

Firms have considerable flexibility in the way they present income items. Toothpaste, for example, reports subtotals for Gross Profit, Operating Profit, and Income Before Income Taxes. A later section of this chapter and subsequent chapters discuss these terms more fully.

RELATION BETWEEN THE BALANCE SHEET AND THE INCOME STATEMENT

The income statement links the beginning and ending balance sheets. The beginning balance of the shareholders’ equity account Retained Earnings plus net income from the income statement less dividends equals the ending balance of Retained Earnings. The equation that describes the relation between the balance sheet and the income statement through the Retained Earnings account is as follows:

$$\text{Retained Earnings (beginning)} + \text{Net Income} - \text{Dividends} = \text{Retained Earnings (ending)}$$

In this sense, common terminology often says that the income statement “articulates” with the balance sheet. Retained earnings measures the cumulative excess of net income over dividends for the life of a firm. *Cumulative* means that retained earnings aggregates *all* undistributed earnings.

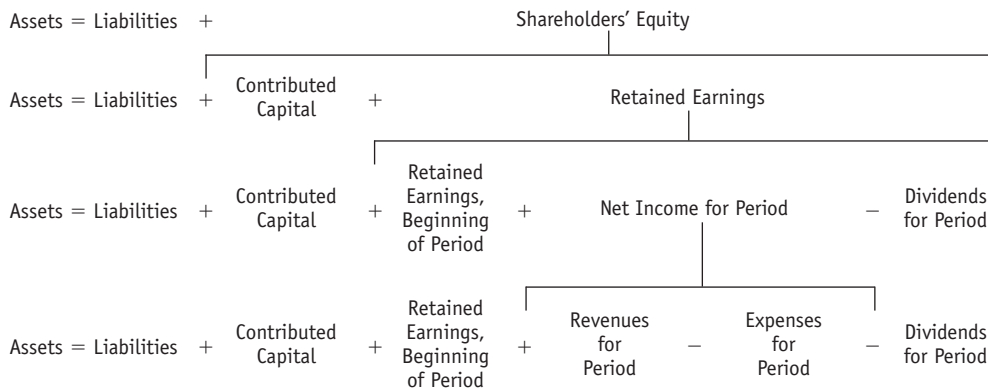
Inspection of Toothpaste’s balance sheet, shown in **Exhibit 2.1**, reveals that Toothpaste’s Retained Earnings balance increased from \$9,643.7 million on December 31, Year 6, to \$10,627.5 million on December 31, Year 7. From **Exhibit 3.1** we see that Toothpaste’s net income for Year 7 was \$1,737.4 million. Elsewhere in its annual report, Toothpaste reported Year 7 dividends of \$721.6 million for common shareholders and \$28.0 million for preferred shareholders, or a total of \$749.6 million in dividends. Using this information, we can calculate whether Toothpaste’s balance sheet and income statement articulate by examining whether the retained earnings relation holds:

$$\begin{aligned} \text{Retained Earnings (beginning)} + \text{Net Income} - \text{Dividends} &= \text{Retained Earnings (ending)} \\ &= \$9,643.7 + \$1,737.4 - \$749.6 \\ &= \$10,631.5 \end{aligned}$$

The calculated amount, \$10,631.5, is \$4.0 million higher than Toothpaste’s reported balance in Retained Earnings at the end of Year 7, \$10,627.5 million. The difference of \$4.0 million results from an adjustment for the application of a new accounting standard, which Toothpaste charged to Retained Earnings.

In summary, the retained earnings relation does not hold for Toothpaste for Year 7 because of other transactions that affected its Retained Earnings during the year.¹

The following disaggregation of the balance sheet equation shows the relation of revenues, expenses, and dividends to the components of the balance sheet.



¹We ignore these kinds of items here and revisit them in **Chapter 15**.

The preceding diagram shows that items that affect net income (revenues and expenses) also affect shareholders' equity. It is, therefore, possible to record revenue and expense amounts directly in the Retained Earnings account. Measuring net income would then involve solving the retained earnings relation for net income, as follows:

$$\text{Net Income} = \text{Retained Earnings at End of Period} - \text{Retained Earnings at Beginning of Period} + \text{Dividends}$$

The purpose of the income statement is not the calculation of net income, because the reader can do this by analyzing the retained earnings relation. Recording revenues and expenses directly in the Retained Earnings account suppresses information about the causes of net income. The line items or rows on the income statement display the sources and amounts of revenues as well as the nature and amounts of expenses that net to earnings for the period. Knowing these components helps the user to understand the causes of the firm's performance. Knowing the purpose of the income statement—to display the line items for components of net income—will help you understand the procedures for preparing it.

Accountants maintain individual revenue and expense accounts during an accounting period to permit preparation of an income statement. Recall from our discussion in **Chapter 2** that income statement accounts are temporary accounts, as opposed to the permanent accounts that appear on the balance sheet. All temporary accounts begin with a zero balance and accumulate information for the period. After preparing the income statement at the end of the period, the accountant transfers the balance in each temporary revenue and expense account to the Retained Earnings account. This procedure is called *closing* the revenue and expense accounts, because after closing (that is, the transfer to Retained Earnings), each revenue and expense account has a zero balance. Retained Earnings increases by the amount of net income (or decreases by the amount of net loss) for the period.

Maintaining separate revenue and expense accounts during the period and transferring their balances to the Retained Earnings account at the end of the period has the same effect on the balance sheet equation as initially recording revenues and expenses directly in the Retained Earnings account. The separate revenue and expense accounts collect the information needed to display the specific types of revenues and expenses in the income statement, which otherwise could show the total amount of net income but not its components. Once revenue and expense accounts serve their purpose of accumulating specific revenue and expense items for an accounting period, they have no further purpose for that period. The accountant closes these accounts so that they begin the following accounting period with a zero balance, ready for the revenue and expense entries of the new period.

ACCOUNTING PROCESS FOR REVENUES, EXPENSES, AND DIVIDENDS

Revenues, expenses, and dividends increase or decrease retained earnings, so the recording procedures for these items are the same as for any other transaction affecting shareholders' equity accounts.

Shareholders' Equity	
Decreases (Debit)	Increases (Credit)
Expenses	Revenues
Dividends	Issues of Capital Stock

A transaction generating revenue increases net assets (either by increasing assets or decreasing liabilities) and increases shareholders' equity. The usual journal entry to record a revenue transaction is therefore as follows:

Asset Increase or Liability Decrease (or both)	Amount	
Revenue		Amount

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+	or	-		+	IncSt → RE

Typical entry to recognize revenue.

We use the designation IncSt → RE in the “(Class.)” column to indicate an income statement account that is closed to retained earnings at the end of the period.

A transaction generating an expense decreases net assets (either by decreasing assets or increasing liabilities) and decreases shareholders’ equity. The usual journal entry to record an expense transaction is therefore as follows:

Expense	Amount	
Asset Decrease or Liability Increase (or both)		Amount

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-	or	+		-	IncSt → RE

Typical journal entry to recognize expense.

Dividends, which a firm may pay in cash or in other assets, decrease net assets and decrease shareholders’ equity. We assume that firms pay dividends in cash unless we have contrary information. The following journal entry records the declaration of a dividend by the board of directors:

Retained Earnings	Amount	
Dividend Payable		Amount

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		+		-	RE

Typical entry to record dividend declaration.

The following journal entry records the payment of the dividend:

Dividend Payable	Amount	
Cash		Amount

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-		-			

Typical entry to record dividend payment.

Although the journal entries for dividends resemble those for expenses, dividends are not expenses. They are not costs incurred in generating revenues. Rather, dividends represent distributions, to owners, of assets that the firm obtained from its operations. Because dividends are not expenses, they do not affect the measurement of net income and, therefore, are not included in the calculation of net income. Note that Toothpaste’s income statement in **Exhibit 3.1** shows no deduction for the \$749.6 million dividends paid in Year 7.

ILLUSTRATION OF DUAL EFFECTS AND JOURNAL ENTRIES FOR INCOME TRANSACTIONS

In **Chapter 2**, we illustrated the transactions of Miller Corporation for January. None of those transactions involved income statement accounts. **Exhibit 2.4** shows a zero balance in the Retained Earnings account on January 31 because during January Miller did not generate revenues nor incur expenses nor declare a dividend.

In this section, we consider transactions that affect both the income statement and the balance sheet. We consider seven transactions of Miller during February.

Transaction 1 On February 5 Miller purchases an additional \$25,000 of merchandise on account.

(1)	Merchandise Inventory	25,000	
	Accounts Payable		25,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+25,000		+25,000			

Purchase of inventory costing \$25,000 on account.

Transaction 2 During February, Miller sells merchandise to customers for \$50,000. Of this amount, \$3,000 represents sales to customers who paid \$3,000 to Miller on January 31. We recorded this amount as Advances from Customer (**Chapter 2**, transaction (7) that occurred during January). Miller makes the remaining \$47,000 of sales on account. Retail firms such as Miller typically recognize revenue at the time they deliver merchandise to customers, regardless of whether the customers have paid cash. The journal entry to record these sales is:

(2)	Advances from Customer	3,000	
	Accounts Receivable	47,000	
	Sales Revenue		50,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+47,000		-3,000		+50,000	IncSt → RE

Sales of merchandise for \$50,000, \$3,000 of which relates to cash received in January for merchandise delivered to customers in February and \$47,000 of which relates to sales on account during February for which Miller will receive cash sometime after the delivery of merchandise to customers.

Sales Revenue is a temporary income statement account that Miller will close to Retained Earnings at the end of February.

Transaction 3 The acquisition cost of the merchandise sold to customers in transaction (2) is \$30,000. Because Miller has sold and delivered this merchandise to customers, it is no longer Miller's asset. The following journal entry reduces the balance in Miller's inventory account and recognizes the cost of the inventory sold as an expense. (Firms often delay the computation of cost of goods sold until the end of the period and compute that cost for all sales in a single computation. In this example, we show only one sales transaction, so there is only one cost of goods sold computation to make, which we can make at the time of sale or at the end of the period.)

(3)	Cost of Goods Sold	30,000	
	Merchandise Inventory		30,000

(continued)

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-30,000				-30,000	IncSt → RE

The cost of merchandise sold to customers during February is \$30,000.

Cost of Goods Sold is a temporary income statement account that Miller will close to the Retained Earnings account at the end of February. The minus sign under the Shareholders' Equity column shows the effect on shareholders' equity, not on Cost of Goods Sold.

Transaction 4 Miller Corporation incurs and pays \$14,500 of selling and administrative costs during February. The journal entry to record this transaction is:

(4)	Selling and Administrative Expenses	14,500	
	Cash		14,500

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-14,500				-14,500	IncSt → RE

Selling and administrative expenses paid in cash during February total \$14,500.

We assume that Miller Corporation received all the benefits of these selling and administrative services during February, so the full amount of cost is an expense for the month. None of the expenditure results in an asset that would appear on the balance sheet at the end of February.

Transaction 5 Miller Corporation collects \$35,000 from customers for sales previously made on account. Miller recognized revenue from these sales at the time of sale (see transaction (2) for February); it will not record those revenues again. Collecting cash from customers increases the balance in the cash account and decreases accounts receivable.

(5)	Cash	35,000	
	Accounts Receivable		35,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+35,000					
-35,000					

Cash collections of \$35,000 from sales previously made on account.

Transaction 6 Miller pays \$20,000 to suppliers for merchandise previously purchased on account. The journal entry to record this payment is:

(6)	Accounts Payable	20,000	
	Cash		20,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-20,000		-20,000			

Cash payments of \$20,000 for purchases previously made on account.

Transaction 7 Miller Corporation declares and pays a dividend to shareholders of \$1,000. The entry to record the dividend is:

(7)	Retained Earnings	1,000	
	Cash		1,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-1,000				-1,000	RE

Dividends declared and paid during February total \$1,000.

These seven journal entries summarize Miller Corporation's activities during February. Each entry records an exchange between Miller and its suppliers or its customers or its shareholders. We have simplified the journal entries by aggregating the month's transactions into a single summary number.

The accounting system transfers the information in these journal entries to the balance sheet and income statement accounts affected; this activity is the **posting process**. We use T-accounts to show the account balances at the beginning of February (from **Exhibit 2.3**) and the posting of these seven transactions during February for Miller Corporation. **Exhibit 3.2** shows the T-accounts, with the seven entries recorded in blue. We discuss the entries recorded in red and gold next. The balance sheet accounts have beginning-of-February balances equal to their ending balances at the end of January. The income statement accounts have zero balances at the beginning of February (by design, because they are temporary accounts). Both the balance sheet accounts and the income statement accounts reflect the effects of the seven February transactions.

► PROBLEM 3.1 FOR SELF-STUDY

Journalizing transactions during a period. Harris Equipment Corporation began operations on January 2, Year 2, by issuing 10,000 shares of \$10-par value common stock for \$15 cash per share. The firm engages in the following transactions during Year 2:

1. January 2, Year 2: Acquires a building costing \$80,000 and equipment costing \$40,000. It pays cash in the amount of \$60,000 and assumes a 10% mortgage for the balance of the purchase price. ("Assumes a mortgage" means the company borrows the cash and signs a mortgage note to give to the lender.) Interest is payable on January 2 of each year, beginning one year after the purchase.
2. January 2, Year 2: Obtains a two-year fire insurance policy on the building and equipment. It pays the insurance premium of \$1,200 for the two-year period in advance.
3. During Year 2: Acquires merchandise on account totaling \$320,000. It makes payments to these suppliers during Year 2 totaling \$270,000.
4. During Year 2: Makes sales of merchandise totaling \$510,000, of which \$80,000 is for cash and \$430,000 is on account. Collections from credit customers during Year 2 total \$360,000.
5. During Year 2: Pays employees' salaries totaling \$80,000.
6. During Year 2: Pays utility bills totaling \$1,300.
7. November 1, Year 2: Receives a \$600 cash advance from a customer toward the purchase price of merchandise to be delivered during January, Year 3.
8. November 1, Year 2: Receives a \$1,000, 9%, 90-day note from a customer to settle an open account receivable.
9. December 1, Year 2: Rents out a portion of its building for a three-month period, at the rate of \$300 per month. The firm received the rent for the period, \$900, in advance.

Give the journal entries to record these nine transactions during Year 2. (The next self-study problem analyzes adjusting entries at the end of Year 2, including recognizing cost of goods sold.) Omit explanations for the journal entries and the box, which shows the effect on the balance sheet equation.

ADJUSTING ENTRIES

Transactions (1) to (7) involve exchanges between Miller Corporation and other entities or individuals during February. Each of the seven transactions involves a transaction or exchange that triggers accounting recognition in the form of a journal entry. For example, the events in transactions (1) and (2) are a purchase of inventory and the sale of merchandise to a customer, respectively. In addition to accounting entries that result from transactions or exchanges, some entries result from the passage of time. For example, interest expense on borrowing accrues as time passes. The costs of rent and insurance accrue as the firm uses these services.

Most firms record journal entries that result from the passage of time at the end of the accounting period. These entries are called **adjusting entries**, because they adjust the accounting records for changes in balance sheet and income statement accounts that continually occur and reflect changes in the firm’s resources (assets) and claims on those assets (liabilities and shareholder’s equity). The adjusting entries are part of the measurement of net income for the period and financial position at the end of the period. Some companies record cost of goods sold as an adjusting entry, making this computation once per period, rather than every time they make a sale. Unless we give explicit contrary instructions, assume the firms in our examples and problems make cost of goods sold computations once per period, as an adjusting entry. In this example, for Miller Corporation, we showed this computation earlier, in Transaction (3), because we had not yet introduced the concept of and procedures for adjusting entries.

Miller Corporation will make five adjusting entries at the end of February (shown in red in Exhibit 3.2).

Transaction 8 Miller records the cost of insurance, which is the portion of prepaid insurance attributable to insurance services received during February. Miller paid the \$600 one-year insurance premium on January 31 for coverage from February 1 of this year through January 31 of next year. Assuming the allocation of an equal amount of this insurance premium to each month of the year, the cost of insurance during February is \$50 (= \$600/12 months). Miller includes the cost of insurance in selling and administrative expenses. The entry is:

(8)	Selling and Administrative Expenses	50	
	Prepaid Insurance		50

Assets	=	Liabilities	+	Shareholders’ Equity	(Class.)
-50				-50	IncSt → RE

The cost of insurance services received during February is \$50.

The remaining \$550 of prepaid insurance becomes an expense during the next 11 months. In the meantime, it remains an asset on the balance sheet.

Transaction 9 Miller Corporation records the cost of rent, which is the portion of prepaid rent that is attributable to rental services consumed during February. Miller paid \$12,000 on January 31 to prepay its rent for February 1 of this year through January 31 of next year. Assuming the allocation of an equal amount of rental cost to each month, February’s rent expense is \$1,000 (= \$12,000/12 months). Miller Corporation includes rent expense in selling and administrative expenses. The entry is:

(9)	Selling and Administrative Expenses	1,000	
	Prepaid Rent		1,000

Assets	=	Liabilities	+	Shareholders’ Equity	(Class.)
-1,000				-1,000	IncSt → RE

The cost of rental services received during February is \$1,000.

The remaining \$11,000 of prepaid rent becomes an expense during the next 11 months.

EXHIBIT 3.2

Miller Corporation
Individual T-Accounts Showing Transactions During February

Cash (A)			
✓	82,400		
(5)	35,000	14,500	(4)
		20,000	(6)
		1,000	(7)
✓	81,900		

Merchandise Inventory (A)			
✓	15,000		
(1)	25,000	30,000	(3)
✓	10,000		

Prepaid Rent (A)			
✓	12,000		
		1,000	(9)
✓	11,000		

Buildings (A)			
✓	40,000		
✓	40,000		

Accounts Payable (L)			
		0	✓
(6)	20,000	25,000	(1)
		5,000	✓

Note Payable (L)			
		40,000	✓
		40,000	✓

Accounts Receivable (A)			
✓	0		
(2)	47,000	35,000	(5)
✓	12,000		

Prepaid Insurance (A)			
✓	600		
		50	(8)
✓	550		

Accumulated Depreciation (A)			
		0	✓
		167	(10)
		167	✓

Advances from Customer (L)			
		3,000	✓
(2)	3,000		
		0	✓

Accrued Interest Payable (L)			
		0	✓
		333	(11)
		333	✓

(continued)

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Transaction 10 Accumulated Depreciation shows the cumulative amount of the acquisition cost of long-lived assets that the firm has allocated to the cost of production or to expenses. On February 1, Miller Corporation begins consuming the services of the building that it purchased on January 31 for \$40,000 and recorded as an asset on that date.² Miller records depreciation on the building starting from February 1 (the date that it began using the building) to reflect the consumption over time of building services. Assume that Miller expects the building to last for 20 years and that Miller believes the building will have no value at that time (that is, the salvage value at the end of 20 years is zero). Miller will depreciate the cost of the building over its useful life by recording an expense proportional to the amount of the asset's life that has elapsed during the period. The depreciation charge each month is thus \$167 [= \$40,000/(20 years × 12 months per year)]. Miller includes depreciation on the building in selling and administrative expenses.

One way to record depreciation is to reduce the amount in the Buildings account by \$167 and recognize an expense of \$167. Instead of reducing the amount in the Buildings account directly, firms use the balance sheet contra account Accumulated Depreciation to accumulate the subtractions for depreciation charges. That is, each accounting period Miller will add to the

²Chapter 10 describes the judgments and estimates involved in measuring depreciation on long-lived assets; Transaction (10) illustrates only the mechanics and the accounts affected.

EXHIBIT 3.2**Miller Corporation (continued)
Individual T-Accounts Showing Transactions During February**

Income Tax Payable (L)		Income Tax Expense (SE)	
	0 ✓	✓	0
	1,382 (12)	(12)	1,382 1,382 (13)
	1,382 ✓	✓	0

Common Stock (SE)		Retained Earnings (SE)	
	107,000 ✓		0 ✓
	107,000 ✓	(7)	1,000 2,568 (13)
			1,568 ✓

Sales Revenue (SE)		Cost of Goods Sold (SE)	
	0 ✓	✓	0
(13)	50,000 50,000 (2)	(3)	30,000 30,000 (13)
	0 ✓	✓	0

Interest Expense (SE)		Selling and Administrative Expenses (SE)	
✓	0	✓	0
(11)	333 333 (13)	(4)	14,500
✓	0	(8)	50
		(9)	1,000
		(10)	167 15,717 (13)
		✓	0

Black = Balances
Blue = Transaction Entries

Red = Adjusting Entries
Gold = Closing Entries

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balance in Accumulated Depreciation the cost of the building services used during the period. The Accumulated Depreciation account appears on the balance sheet as a subtraction from the acquisition cost of the building.³ An account, such as Accumulated Depreciation, that accumulates subtractions from another account is a **contra account**. Thus, Miller will record depreciation for February as follows:

(10) Selling and Administrative Expenses (Depreciation Expense)	167
Accumulated Depreciation	167

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-167		-167			IncSt → RE

Depreciation of building for February of \$167.

The minus sign under Assets in the balance sheet equation indicates the effect on assets, not on Accumulated Depreciation. Likewise, the minus sign under Shareholders' Equity indicates the effect on shareholders' equity, not on Selling and Administrative Expense.

Transaction 11 Miller Corporation records interest expense on the note payable for the month of February. On January 31, Miller signed a note payable promising to repay the bank the \$40,000 of principal borrowed in three years' time and to make yearly interest payments at the rate of 10% per annum, or \$4,000 (= 10% × \$40,000) per year. Whenever Miller prepares financial statements, it will compute the amount of interest that has accumulated or accrued

³Chapter 10 explains the extra, useful information provided by this separate recording.

since the previous financial statement date. At the end of February, Miller will recognize (accrue) \$333 (= \$4,000/12) of interest, which is 1/12th of the total yearly interest amount, by making an adjusting entry:

(11) Interest Expense	333	
Interest Payable		333

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		+333		-333	IncSt → RE

The cost of interest on the note payable for the month of February is \$333.

Transaction 12 Miller Corporation recognizes income tax expense on February's income before income taxes. Assume an income tax rate of 35%. Net income before income taxes for February is \$3,950 (= \$50,000 - \$30,000 - \$14,500 - \$50 - \$1,000 - \$167 - \$333). Income tax expense is therefore \$1,382 (= 0.35 × \$3,950). Firms pay income taxes quarterly, so Miller's income taxes remain unpaid at the end of February. Income taxes are an expense of the accounting period, regardless of when the firm pays them. The adjusting entry to record income tax expense is:

(12) Income Tax Expense	1,382	
Income Tax Payable		1,382

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		+1,382		-1,382	IncSt → RE

Income tax expense for February is \$1,382.

In addition to recording effects that arise with the passage of time, adjusting entries also correct recording errors that the firm detects at the end of the period. These entries are sometimes called *correcting entries*. For example, property taxes on the headquarters buildings may appear as a debit to Cost of Goods Sold instead of Selling and Administrative Expenses, or a payment to a supplier for purchases on account may appear as a debit to Accounts Receivable instead of Accounts Payable. There were no such errors for Miller Corporation during February so it need not make adjusting entries to correct errors. After all the adjusting entries are complete, the accountant posts those entries to the accounts affected. Adjusting entries appear in red in **Exhibit 3.2**.

► PROBLEM 3.2 FOR SELF-STUDY

Journalizing adjusting entries at the end of the period. Refer to the data for Harris Equipment Corporation in **Problem 3.1 for Self-Study**. Give the adjusting entries on December 31, Year 2, to reflect the following items. You may omit explanations to the journal entries and the box, which shows the effect on the balance sheet equation.

10. The building acquired on January 2, Year 2 (see transaction (1) in **Problem 3.1 for Self-Study**), has a 20-year estimated life and zero salvage value. The equipment has a seven-year estimated life and \$5,000 salvage value. The firm uses the straight-line depreciation method.
11. The firm recognizes insurance expense on the fire insurance policy obtained on January 2, Year 2 (see transaction (2) in **Problem 3.1 for Self-Study**).
12. After the firm takes a physical inventory at the end of the year, it finds the cost of merchandise sold during Year 2 to be \$180,000 (see transaction (3) in **Problem 3.1 for Self-Study**).

(continued)

13. The firm recognizes interest expense on the mortgage liability for Year 2 (see transaction (1) in **Problem 3.1 for Self-Study**).
14. Salaries earned by employees during the last three days of December total \$800. The firm will pay them on January 4, Year 3.
15. The firm recognizes interest revenue on the note receivable (see transaction (8) in **Problem 3.1 for Self-Study**).
16. The firm makes an adjusting entry to record the proper amount of rent revenue for Year 2 (see transaction (9) in **Problem 3.1 for Self-Study**).
17. The firm declares dividends of \$25,000. It will pay the dividend on January 15, Year 3.
18. The income tax rate is 40% of net income before income taxes.

► PROBLEM 3.3 FOR SELF-STUDY

Preparing adjusting entries. To achieve efficient recording of day-to-day cash receipts and disbursements relating to operations, a firm may credit all cash receipts to revenue accounts and debit all cash disbursements to expense accounts. The efficiency stems from treating all receipts in the same way and all disbursements in the same way. The firm can program its computer to automatically record operating cash receipts and disbursements in this way. In the day-to-day recording of transactions, the computer program need not be concerned with whether a specific cash transaction reflects settlement of a past accrual, or a revenue or expense correctly assigned to the current period, or a prepayment relating to a future period. At the end of the period, accountants analyze the existing account balances and construct the adjusting entries required to correct them. This process results in temporarily incorrect balances in some balance sheet and income statement accounts during the accounting period.

Construct the adjusting entry required for each of the following scenarios.

- a. On May 1, Year 2, a tenant paid \$12,000 rent for the one-year period starting at that time. The tenant debited the entire amount to Rent Expense and credited Cash. The tenant made no adjusting entries for rent between May 1 and December 31. Construct the adjusting entry to be made on December 31, Year 2, to recognize the proper balances in the Prepaid Rent and Rent Expense accounts. What is the amount of Rent Expense for Year 2?
- b. The tenant's books for December 31, Year 2, after adjusting entries, show a balance in the Prepaid Rent account of \$10,000. This amount represents rent for the period January 1 through April 30, Year 3. On May 1, Year 3, the tenant paid \$36,000 for rent for the one-year period starting May 1, Year 3. The tenant debited this amount to Rent Expense and credited Cash but made no adjusting entries for rent during Year 3. Construct the adjusting entry required on December 31, Year 3. What is Rent Expense for Year 3?
- c. The tenant's books for December 31, Year 3, after adjusting entries, show a balance in the Prepaid Rent account of \$20,000. This amount represents rent for the period January 1 through April 30, Year 4. On May 1, Year 4, the tenant paid \$48,000 for rent for the 12-month period starting May 1, Year 4. The tenant debited this amount to Rent Expense and credited Cash but made no adjusting entries during Year 4. Construct the adjusting entry required on December 31, Year 4. What is Rent Expense for Year 4?

FINANCIAL STATEMENT PREPARATION

PREPARATION OF THE INCOME STATEMENT

The revenue and expense accounts show the effects of income transactions during February and adjusting entries at the end of February. We can use these amounts to prepare an income statement for the month. **Exhibit 3.3** shows Miller Corporation's income statement for February.

EXHIBIT 3.3**Miller Corporation
Income Statement
For the Month of February**

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Sales Revenue	\$ 50,000
Cost of Goods Sold	(30,000)
Selling and Administrative Expenses	(15,717)
Operating Income	\$ 4,283
Interest Expense	(333)
Income Before Income Taxes	\$ 3,950
Income Tax Expense	(1,382)
Net Income	<u>\$ 2,568</u>

This income statement uses the convention that parentheses indicate numbers to be subtracted. Numbers without parentheses are revenues, income subtotals, or net income. **Exhibit 3.3** shows a measure of income before financing charges (that is, interest expense) and before taxes. This measure is called *operating income* in **Exhibit 3.3**; in **Exhibit 3.1** Toothpaste uses the term *operating profit*. Operating income (or profit) is usually sales revenues less expenses associated with core operations, where *core* refers to transactions that are central to a firm's business. Miller Corporation operates a *retailing* business model: it buys and resells merchandise. Its operating income calculation includes the revenues associated with sales of merchandise and the expenses associated with operating this business. These expenses include, for example, the cost of merchandise sold and selling and administrative expenses. Neither U.S. GAAP nor IFRS defines operating income and profit, although both subtotals often appear on income statements. Managers can exercise judgment in deciding whether to report this number, and, if reported, managers can use judgment in how to calculate it. In addition, IFRS requires separate presentation of financing costs, as shown in **Exhibit 1.6** for Thames. In particular, Thames reports financial expenses of €91.6 million for Year 9.

CLOSING ENTRIES

The revenue and expense accounts have now served their purpose in accumulating the amounts to be included as line items on the income statement. That is, each revenue account contains a total of that revenue, and each expense account contains a total for that expense. Income statement accounts are temporary accounts and, as such, will have beginning and ending balances of zero. The next step is to transfer the amounts in the revenue and expense accounts to the Retained Earnings account—that is, to close each revenue and expense account for the period. The **closing process** involves reducing to zero the balance in each income statement account by:

1. Debiting the revenue accounts and crediting Retained Earnings for the amounts in the revenue accounts.
2. Crediting the expense accounts and debiting Retained Earnings for the amounts in the expense accounts.

Closing entries are shown in gold in **Exhibit 3.2**.

An income statement account with a debit balance requires a closing entry that credits that account, because a credit closing entry will result in a zero ending balance in the account. Miller's Cost of Goods Sold account has a debit balance of \$30,000. The closing entry for this account is:

Retained Earnings	30,000	
Cost of Goods Sold		30,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
				-30,000	IncSt → RE
				+30,000	IncSt → RE

To close the Cost of Goods Sold account to Retained Earnings at the end of February.

An income statement account with a credit balance requires a closing entry that debits that account, because a debit closing entry will result in a zero ending balance in the account. For example, Miller's Sales Revenue account has a credit balance of \$50,000. The closing entry for this account is:

Sales Revenues	50,000	
Retained Earnings		50,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
				-50,000	IncSt → RE
				+50,000	IncSt → RE

To close the Sales Revenue account to Retained Earnings at the end of February.

Exhibit 3.2 shows, in gold, the closing entry for the revenue and expense accounts; the entry nets all of the income statement accounts in a single journal entry:

(13) Sales Revenue	50,000	
Cost of Goods Sold		30,000
Selling and Administrative Expenses		15,717
Interest Expense		333
Income Tax Expense		1,382
Retained Earnings		2,568

To close the income statement accounts to Retained Earnings at the end of February.

The net effect of journal entry (13) changes the balance in the Retained Earnings account to reflect the net income of the period. In the case of Miller Corporation, the net effect credits Retained Earnings for February net income of \$2,568 (as reported in the income statement shown in **Exhibit 3.3**).

If you look at the journal entries for transactions (3)–(12) on pages 76 through 82, you will see that any entry for a revenue or expense shows in the (Class.) box of the balance sheet equation the notation “NI → RE.” The designation indicates that, later, there will be a closing entry that reclassifies the amount from an income statement account to the balance sheet account for Retained Earnings.

PREPARATION OF THE BALANCE SHEET

After the closing process is completed, the accounts with nonzero balances are all balance sheet accounts. We can use these accounts to prepare the balance sheet as at the end of the period. **Exhibit 3.4** presents the comparative balance sheets for Miller Corporation on January 31 and February 28.

The balance in Retained Earnings has increased from zero at the end of January to \$1,568 at the end of February. The change in Retained Earnings equals net income of \$2,568 minus dividends of \$1,000. Retained Earnings will begin March with a balance of \$1,568. Net income less dividends (if any) for March will be added to \$1,568 to yield the balance in Retained Earnings at the end of March. The balance in the Retained Earnings account, like all other balance sheet accounts, reflects the *cumulative* effect of transactions affecting that account.

PREPARATION OF A STATEMENT OF CASH FLOWS

The statement of cash flows describes the sources and uses of cash during a period and classifies them into operating, investing, and financing activities. It provides a detailed explanation for the change in the balance of the cash account during that period. For example, a statement of cash flows for Miller Corporation explains why the cash balance decreased from \$82,400 on February 1 to \$81,900 on February 28.⁴ The first approach, called the *direct method*, involves

⁴Chapter 6 and Chapter 16 focus on the statement of cash flows and describe two approaches used to compute cash flow from operations.

EXHIBIT 3.4

**Miller Corporation
Comparative Balance Sheets**

	February 28	January 31
ASSETS		
Cash	\$ 81,900	\$ 82,400
Accounts Receivable	12,000	—
Merchandise Inventory	10,000	15,000
Prepaid Insurance	550	600
Prepaid Rent	11,000	12,000
Total Current Assets	<u>\$115,450</u>	<u>\$110,000</u>
Buildings	\$ 40,000	\$ 40,000
Accumulated Depreciation	(167)	0
Buildings, Net of Depreciation	<u>\$ 39,833</u>	<u>\$ 40,000</u>
Total Assets	<u>\$155,283</u>	<u>\$150,000</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Accounts Payable	\$ 5,000	\$ —
Advances from Customer	—	3,000
Accrued Interest Payable	333	—
Income Tax Payable	1,382	—
Total Current Liabilities	<u>\$ 6,715</u>	<u>\$ 3,000</u>
Note Payable	40,000	40,000
Total Liabilities	<u>\$ 46,715</u>	<u>\$ 43,000</u>
Common Stock	\$107,000	\$107,000
Retained Earnings	1,568	—
Total Shareholders' Equity	<u>\$108,568</u>	<u>\$107,000</u>
Total Liabilities and Shareholders' Equity	<u>\$155,283</u>	<u>\$150,000</u>

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a relatively straightforward listing of the sources and uses of cash from operating activities, as one would understand from identifying and understanding the transactions that affect the Cash account. The second approach, called the *indirect method*, reconciles net income to cash flows from operations by adjusting net income for noncash income statement components. Although the indirect method dominates in practice, you would find it difficult to understand at this point because we have not yet discussed the adjustments necessary to reconcile net income to cash flow from operations.⁵

As noted previously, Miller’s cash balance declined by \$500 during February. A simplified statement of cash flows for February, shown in **Exhibit 3.5**, explains this change.

The rows reported in **Exhibit 3.5** correspond to all transactions that generated cash and all transactions that consumed cash during February. One way to identify these transactions is to look at the T-account for the cash account (shown in **Exhibit 3.2** and reproduced below):

Cash (A)			
	82,400		
(5)	35,000	14,500	(4)
		20,000	(6)
		1,000	(7)
	81,900		

Recall from transaction (2) that the \$50,000 in February sales revenues consists of \$3,000 in the form of a cash advance received in January (so it is a cash inflow on the January statement of cash flows) and \$47,000 in the form of customers’ promise to pay in the future (so this amount will be a cash inflow in the accounting period when the cash is collected). For the latter, transaction (5) tells us that Miller collected \$35,000 in cash from customers in February

⁵For this reason, we illustrate the direct method in this chapter and defer the discussion of the indirect method to **Chapter 6**.

EXHIBIT 3.5

Miller Corporation
Statement of Cash Flows—Direct Method
For the Month of February

Sources of Cash	
Cash Received from Customers	\$ 35,000
Uses of Cash	
Cash Paid for Selling and Administrative Items	(14,500)
Cash Paid to Suppliers	(20,000)
Dividends Paid	<u>(1,000)</u>
Change in Cash	\$ (500)
Cash, Beginning of Month	<u>82,400</u>
Cash, End of Month	<u><u>\$ 81,900</u></u>

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for goods that customers purchased on credit in February. Therefore, Miller has a \$35,000 cash *inflow* for February associated with collections of cash from customers on sales made in February.

Cash outflows in February consist of \$14,500 for selling, general, and administrative expenses and \$20,000 for items purchased on account in February; Miller also paid a cash dividend of \$1,000. Total cash outflows (\$35,500) exceed cash inflows (\$35,000), meaning that Miller used some cash on hand to cover the shortfall of \$500. As shown in **Exhibit 3.5**, the shortfall explains the decrease in the cash balance from \$82,400 at the beginning of February to \$81,900 at the end of February.

The statement of cash flows in **Exhibit 3.5** is a simplified presentation based on a statement of cash flows prepared using the direct method. Under both U.S. GAAP and IFRS, the statement of cash flows displays sources and uses of cash by activity. That is, the statement contains separate sections for operating cash flows, investing cash flows, and financing cash flows.⁶

SUMMARY

The income statement reports the results of operating activities. The process of recording operating activities involves recording

- Transaction entries, but not all operating activities involve transactions during the current period, so to record the effects of events that occur without transactions, the company records
- Adjusting entries and, after the company has prepared the income statement, it makes
- Closing entries, to transfer revenue and expense amounts to Retained Earnings.

All income statement accounts are temporary: they begin and end with zero balances. The closing process ensures that the ending balance in an income statement account is zero, by debiting or crediting each account with exactly the amount necessary to ensure that debits equal credits, so that the ending account balance is zero. The offsetting credit or debit to each of these closing transactions is Retained Earnings. Thus, the closing process reflects the articulation between the income statement and the balance sheet, as expressed in the retained earnings relation:

$$\text{Retained Earnings (beginning)} + \text{Net Income} - \text{Dividends} = \text{Retained Earnings (ending)}$$

In this equation, net income is a summary measure of the individual revenue and expense amounts.

The dual nature of transactions and the reporting consequences of that dual nature extend to items for which no event triggers a journal entry. Some items give rise to a journal entry and

⁶We leave the discussion of these three sections, as well as more complex issues relating to this statement, to **Chapter 6** and **Chapter 16**.

recognition in the financial statements because of the passage of time, such as wages earned but not yet paid to employees, consumption of a portion of a prepaid asset (for example, prepaid rent and prepaid insurance), and interest accrued on loans but not yet paid. The company records these and similar items using adjusting entries at the end of the reporting period. Adjusting entries may increase or decrease balances in balance sheet accounts and income statement accounts.

OVERVIEW OF THE ACCOUNTING PROCESS

The record-keeping process generally involves the following steps:

1. Recording each transaction in the form of a journal entry.
2. Posting the amounts from the journal entries to individual balance sheet and income statement accounts in a general ledger. T-accounts are useful devices for accumulating the effects of transactions on balance sheet and income statement accounts.

These first two steps occur daily (and perhaps many times during a day). The remaining steps typically occur at the end of the accounting period:

3. Making adjusting journal entries to the accounts to correct errors and to reflect the financial statement impacts of items that occur because of usage or the passage of time.
4. Preparing the income statement for the period from amounts in the income statement accounts.
5. Closing the temporary income statement accounts to retained earnings.
6. Preparing the balance sheet from amounts in the balance sheet accounts.
7. Preparing the statement of cash flows from balance sheet amounts and from details of transactions affecting the cash account.

Figure 3.1 shows these operations, which the previous sections illustrated using the transactions of Miller Corporation during February.

SOLUTIONS TO SELF-STUDY PROBLEMS

SUGGESTED SOLUTION TO PROBLEM 3.1 FOR SELF-STUDY

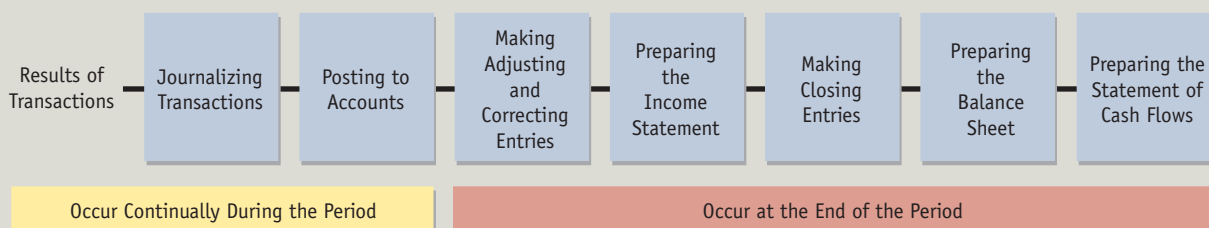
(Harris Equipment Corporation; journalizing transactions during a period.)

(1)	Jan. 2, Year 2		
	Building	80,000	
	Equipment	40,000	
	Cash		60,000
	Mortgage Payable		60,000
(2)	Jan. 2, Year 2		
	Prepaid Insurance	1,200	
	Cash		1,200

(continued)

FIGURE 3.1

Record-Keeping Cycle



(3)	During Year 2		
	Merchandise Inventory	320,000	
	Accounts Payable		320,000
	During Year 2		
	Accounts Payable	270,000	
	Cash		270,000
(4)	During Year 2		
	Cash	80,000	
	Accounts Receivable		430,000
	Sales Revenue		510,000
	Note: Harris Equipment Corporation recognizes all cost of goods sold at the end of the period; see next problem for self-study.		
	During Year 2		
	Cash	360,000	
	Accounts Receivable		360,000
(5)	During Year 2		
	Salaries Expense	80,000	
	Cash		80,000
(6)	During Year 2		
	Utilities Expense	1,300	
	Cash		1,300
(7)	Nov. 1, Year 2		
	Cash	600	
	Advances from Customers		600
(8)	Nov. 1, Year 2		
	Notes Receivable	1,000	
	Accounts Receivable		1,000
(9)	Dec. 1, Year 2		
	Cash	900	
	Advances from Tenants		900

SUGGESTED SOLUTION TO PROBLEM 3.2 FOR SELF-STUDY

(Harris Equipment Corporation; journalizing adjusting entries at the end of the period.)

(10)	Depreciation Expense	9,000	
	Accumulated Depreciation		9,000
	(\$80,000 - \$0)/20 = \$4,000;		
	(\$40,000 - \$5,000)/7 = \$5,000.		
(11)	Insurance Expense	600	
	Prepaid Insurance		600
(12)	Cost of Goods Sold	180,000	
	Merchandise Inventory		180,000
(13)	Interest Expense	6,000	
	Interest Payable		6,000
	\$60,000 × 0.10 = \$6,000		
(14)	Salaries Expense	800	
	Salaries Payable		800
(15)	Interest Receivable	15	
	Interest Revenue		15
	\$1,000 × 0.09 × 60/360		
(16)	Advances from Tenants	300	
	Rent Revenue		300

(17) Retained Earnings	25,000	
Dividends Payable		25,000
(18) Income Tax Expense	93,046	
Income Tax Payable		93,046
0.40(\$510,000 + \$900 - \$600 + \$15 - \$80,000 - \$1,300 -		
\$9,000 - \$600 - \$180,000 - \$6,000 - \$800) = \$93,046.		

SUGGESTED SOLUTION TO PROBLEM 3.3 FOR SELF-STUDY

(Preparing adjusting entries.)

- a. The Prepaid Rent account on the year-end balance sheet should represent four months of prepayments. The rent per month is \$1,000 ($= \$12,000/12$), so the balance required in the Prepaid Rent account is \$4,000 ($= 4 \times \$1,000$). Rent Expense for Year 2 is \$8,000 ($= 8 \times \$1,000 = \$12,000 - \$4,000$).

Prepaid Rent	4,000	
Rent Expense		4,000
To increase the balance in the Prepaid Rent account, reducing the amount in the Rent Expense account.		

- b. The Prepaid Rent account on the balance sheet for the end of Year 3 should represent four months of prepayments. The rent per month is \$3,000 ($= \$36,000/12$), so the required balance in the Prepaid Rent account is \$12,000 ($= 4 \times \$3,000$). The balance in that account is already \$10,000, so the adjusting entry must increase it by \$2,000 ($= \$12,000 - \$10,000$).

Prepaid Rent	2,000	
Rent Expense		2,000
To increase the balance in the Prepaid Rent account, reducing the amount in the Rent Expense account.		

The Rent Expense account will have a balance at the end of Year 3 before closing entries of \$34,000 ($= \$36,000 - \$2,000$). This amount comprises \$10,000 for rent from January through April and \$24,000 ($= \$3,000 \times 8$) for rent from May through December.

- c. The Prepaid Rent account on the balance sheet at the end of Year 4 should represent four months of prepayments. The rent per month is \$4,000 ($= \$48,000/12$), so the required balance in the Prepaid Rent account is \$16,000 ($= 4 \times \$4,000$). The balance in that account is \$20,000, so the adjusting entry must reduce it by \$4,000 ($= \$20,000 - \$16,000$).

Rent Expense	4,000	
Prepaid Rent		4,000
To reduce the balance in the Prepaid Rent account, increasing the amount in the Rent Expense account.		

The Rent Expense account will have a balance at the end of Year 4 before closing entries of \$52,000 ($= \$48,000 + \$4,000$). This amount comprises \$20,000 for rent from January through April and \$32,000 ($= \$4,000 \times 8$) for rent from May through December.

KEY TERMS AND CONCEPTS

Account
Permanent accounts
Temporary accounts
Posting process

Adjusting entries
Contra accounts
Closing process

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

1. Review the meaning of the terms and concepts listed above in Key Terms and Concepts.
2. What is the purpose of temporary accounts?
3. What does “articulation of the balance sheet with the income statement” refer to?
4. What is the purpose of the income statement?
5. What is the key difference between an adjusting entry and a correcting entry?

EXERCISES

6. **Analyzing changes in accounts receivable.** BrasPetro S.A., a large Brazilian petrochemical company, reported a balance of R\$1,594.9 million in Accounts Receivable at the beginning of Year 7 and R\$1,497.0 million at the end of Year 7. Its income statement reported total Sales Revenue of R\$12,134.5 million for Year 7. Assuming that BrasPetro makes all sales on account, compute the amount of cash collected from customers during Year 7. BrasPetro applies Brazilian accounting standards, and reports its results in millions of reals (R\$), the Brazilian currency. In answering this question, assume that BrasPetro uses either U.S. GAAP or IFRS; for purposes of this problem, this choice will not matter.
7. **Analyzing changes in inventory.** BigWing Company, a U.S. airplane manufacturer, reported a balance of \$8,105 million in Inventory at the beginning of Year 7 and \$9,563 million at the end of Year 7. Its income statement reported Cost of Products Sold of \$45,375 million for Year 7. Compute the cost of inventory either purchased or manufactured during Year 7. BigWing Company applies U.S. GAAP, and reports its results in millions of U.S. dollars.
8. **Analyzing changes in inventory and accounts payable.** EkaPhone, a Swedish firm specializing in communication networks, reported a balance in Inventories of SEK21,470 million at the beginning of Year 7 and SEK22,475 million at the end of Year 7. It also reported a balance in Trade (Accounts) Payable of SEK18,183 million at the beginning of Year 7 and SEK17,427 million at the end of Year 7. During Year 7, EkaPhone reported SEK114,059 million in Cost of Sales. Compute the amount of cash paid to suppliers of inventory during Year 7 for purchases made on account. Assume that all of EkaPhone’s inventory purchases are made on account. EkaPhone applies IFRS, and reports its results in millions of Swedish kronor (SEK).
9. **Analyzing changes in income taxes payable.** Conima Corporation, a Japanese construction firm, reported a balance in Income Taxes Payable of ¥3,736 million at the beginning of Year 7 and ¥14,310 million at the end of Year 7. Net income before income taxes for Year 7 totaled ¥73,051 million. Assume that the firm is subject to an income tax rate of 43%. Compute the amount of cash payments made for income taxes during Year 7. Conima Corporation applies Japanese accounting standards and reports its results in millions of yen (¥). In answering this question, assume that Conima Corporation uses either U.S. GAAP or IFRS; for purposes of this problem, this choice will not matter.
10. **Analyzing changes in retained earnings.** Ealing Corporation, a U.S. diversified power management company, reported a balance in Retained Earnings of \$2,796 million at the beginning of Year 7 and \$3,257 million at the end of Year 7. Based on Ealing Corporation’s financial reports for fiscal Year 7, it reported dividends declared and paid of \$251 million for Year 7. Compute the amount of net income for Year 7. Ealing Corporation applies U.S. GAAP and reports its results in millions of U.S. dollars.
11. **Relations between financial statements.** The following selected information is based on the Year 7 financial statements of the German healthcare firm, adopted from the financial statements Bayer Group. Bayer Group applies IFRS, and reports its results in millions of euros. Compute the missing information in each of the following four independent cases. The letters in parentheses refer to the following:

BS—Balance sheet

IS—Income statement

SCF—Statement of cash flows

a.	Accounts Receivable, January 1, Year 7 (BS)	€ 5,868
	Sales on Account for Year 7 (IS)	32,385
	Collections from Customers on Account during Year 7 (SCF)	?
	Accounts Receivable, December 31, Year 7 (BS)	5,830
b.	Income Taxes Payable, January 1, Year 7 (BS)	€ 109
	Income Tax Expense for Year 7 (IS)	?
	Payments to Governments during Year 7 (SCF)	763
	Income Taxes Payable, December 31, Year 7 (BS)	56
c.	Noncurrent financial liabilities, January 1, Year 7 (BS)	€14,723
	Issuance of new debt during Year 7 (SCF)	2,155
	Principal payments of debt during Year 7 (SCF)	?
	Noncurrent financial liabilities, December 31, Year 7 (BS)	12,911
d.	Retained Earnings, January 1, Year 7 (BS)	€ 6,782
	Net Income for Year 7 (IS)	4,711
	Dividends Declared and Paid during Year 7 (SCF)	?
	Retained Earnings, December 31, Year 7 (BS)	10,749

12. Relations between financial statements. The following selected information is based on the Year 7 financial statements adapted from those of Beyond Petroleum (BP). BP applies IFRS and reports its results in millions of U.S. dollars. Compute the missing information in each of the following four independent cases. The letters in parentheses refer to the following:

BS—Balance sheet

IS—Income statement

SCF—Statement of cash flows

a.	Accounts Receivable, January 1, Year 7 (BS)	\$?
	Sales on Account for Year 7 (IS)	288,951
	Collections from Customers on Account during Year 7 (SCF)	289,623
	Accounts Receivable, December 31, Year 7 (BS)	38,020
b.	Income Taxes Payable, January 1, Year 7 (BS)	\$ 2,635
	Income Tax Expense for Year 7 (IS)	10,442
	Payments to Governments during Year 7 (SCF)	?
	Income Taxes Payable, December 31, Year 7 (BS)	3,282
c.	Trade Payables, January 1, Year 7 (BS)	\$ 42,236
	Purchases of Supplies during Year 7 (SCF)	15,162
	Payments to Suppliers during Year 7 (SCF)	?
	Trade Payables, December 31, Year 7 (BS)	43,152
d.	Retained Earnings, January 1, Year 7 (BS)	\$ 88,453
	Net Income for Year 7 (IS)	21,169
	Dividends Declared and Paid during Year 7 (SCF)	8,106
	Retained Earnings, December 31, Year 7 (BS)	?

13. Journal entries for inventories and accounts payable. On December 31, Year 6, the Merchandise Inventories account of a Japanese electronics firm had a balance of ¥408,710 million, based on the firm's financial reports for fiscal Year 7. Assume that during Year 7, the firm purchased merchandise inventories on account for ¥1,456,412 million. On December 31, Year 7, it finds that merchandise inventory on hand is ¥412,387 million. The Accounts Payable account had a balance of ¥757,006 million on December 31, Year 6, and ¥824,825 million on December 31, Year 7. Present journal entries to account for all changes in the

Inventories and Accounts Payable accounts during Year 7. The firm reports its results in millions of yen (¥). In answering this question, assume that the firm uses either U.S. GAAP or IFRS; for purposes of this problem, this choice will not matter.

14. **Journal entries for insurance.** Bonana Company, a U.S. clothing designer, manufacturer, and retailer, reported a balance in prepaid insurance of \$24.0 million, based on its financial reports dated March 31, Year 8, the end of its fiscal year. Assume that all of this balance relates to an insurance policy with two remaining months of coverage. Assume also that on June 1, Year 8, the firm paid \$156 million for a one-year renewal of this policy. Give the journal entries that Bonana would make on April 30, Year 8; May 31, Year 8; June 30, Year 8; July 31, Year 8; and June 1, Year 8, assuming that the firm closes its books monthly. Bonana applies U.S. GAAP, and reports its results in millions of U.S. dollars.
15. **Journal entries for prepaid rent.** EBB Group (EBB), headquartered in Switzerland, is one of the world's largest engineering companies. EBB applies U.S. GAAP, and reports its results in millions of U.S. dollars. Based on EBB's financial reports for Year 7, at January 1, Year 7, EBB reported a balance in its Prepaid Rent account of \$247 million; assume that this amount reflects its prepayments of rent on factory and office space for the next month. Assume also that on January 31, Year 7, EBB paid \$3,200 million as the annual rent for the period from February 1, Year 7, to January 31, Year 8. EBB has a calendar year reporting period.
 - a. Provide the journal entries that EBB Group would make during January Year 7 that affect the Prepaid Rent account.
 - b. Provide the journal entry that EBB Group would make at the end of Year 7 that affects the Prepaid Rent account.
16. **Journal entries for borrowing.** A South African paper company, SAPC Limited (SAPC), reports noncurrent Interest-Bearing Borrowings of \$1,634 million at September 30, Year 6. SAPC applies IFRS and reports its results in millions of U.S. dollars. At September 30, Year 7, this balance had increased to \$1,828 million. Assume that on March 30, Year 7, SAPC borrowed \$1,200 million from a local bank. The loan bears interest at an annual rate of 7.5% and is due on March 31, Year 9. Assume also that SAPC makes its interest payments once per year on the last day of March. SAPC's fiscal year begins October 1 and ends on September 30. The firm closes its books on September 30 of each year.
 - a. What journal entry did SAPC record for the repayment of debt during the fiscal year ending September 30, Year 7?
 - b. Present the journal entries that SAPC Limited made in fiscal years ending September 30, Year 7, Year 8, and Year 9, related to the bank loan obtained on March 30, Year 7.
17. **Journal entries related to the income statement.** A Japanese car manufacturer (JCM) reported Sales of Products of ¥22,670 billion for the year ended March 31, Year 7. The Cost of Products Sold was ¥18,356 billion. Assume that JCM made all sales on credit. By March 31, Year 7, JCM had collected cash for all the sales made on account during the fiscal year ended March 31, Year 7. Provide the journal entries that JCM made during the fiscal year ended March 31, Year 7, related to these transactions. JCM applies U.S. GAAP, and reports its results in billions of yen (¥).
18. **Journal entries related to the income statement.** An Israeli drug company (IDC) reported Net Sales of \$9,408 million for the year ended December 31, Year 7. Based on IDC's financial reports for fiscal Year 7, the cost of these sales was \$6,531 million. Assume that IDC made all sales on credit, and that it collected \$2,659 million cash during Year 7. Provide the journal entries that IDC made in Year 7 related to these transactions. IDC applies U.S. GAAP, and reports its results in millions of U.S. dollars.
19. **Journal entries to correct recording error.** In the fiscal year ended December 31, Year 14, Bostick Enterprises paid \$120,000 for equipment that it had purchased on January 1, Year 14. The equipment has an expected useful life of 10 years and zero salvage value. The firm recorded the acquisition by debiting Equipment Expense and crediting Cash for \$120,000. Give the journal entries that Bostick Enterprises would make to correct its initial recording error and any related effects (ignore income tax effects). Bostick Enterprises applies U.S. GAAP, and reports its results in millions of U.S. dollars.

PROBLEMS

20. Preparing a balance sheet and an income statement. The accounting records of Callen Incorporated reveal the following for Year 7 and Year 8. Callen applies U.S. GAAP, and reports its results in thousands of euros.

Balance Sheet Items	December 31	
	Year 8	Year 7
Accounts Payable	€ 16,402	€ 14,063
Cash	30,536	2,559
Property, Plant, and Equipment (net)	98,130	149,990
Common Stock	72,325	72,325
Merchandise Inventory	114,249	151,894
Notes Payable to Banks (due within one year)	15,241	43,598
Long-Term Debt	31,566	38,315
Other Current Assets	109,992	134,916
Other Current Liabilities	84,334	109,335
Other Noncurrent Assets	56,459	88,955
Other Noncurrent Liabilities	19,859	27,947
Retained Earnings	169,639	222,731

Income Statement Items	For the Year Ended December 31, Year 8
Administrative Expenses	€141,183
Cost of Goods Sold	382,349
Income Tax Expense	24,324
Interest Expense	2,744
Sales Revenue	695,623
Selling Expenses	72,453

- a. Prepare a comparative balance sheet for Callen Incorporated as of December 31, Year 7, and December 31, Year 8. Classify each balance sheet item into one of the following categories: current assets, noncurrent assets, current liabilities, noncurrent liabilities, and shareholders' equity.
- b. Prepare an income statement for Callen Incorporated for the year ended December 31, Year 8. Separate income items into revenues and expenses.
- c. Prepare a schedule explaining the change in Retained Earnings between December 31, Year 7, and December 31, Year 8. Callen declared dividends during Year 8. You will need to derive the amount in working this part of the problem.
- 21. Preparing a balance sheet and an income statement.** The following information is based on accounting data for Year 7 and Year 8 for China Oil Company (COC), a large petrochemicals company in China. COC applies IFRS, and reports its results in millions of U.S. dollars.

Balance Sheet Items	December 31	
	Year 8	Year 7
Cash	\$ 88,589	\$ 54,070
Accounts Receivable	18,419	8,488
Advances to Suppliers	20,386	12,664
Inventories	88,467	76,038
Other Current Assets	20,367	13,457
Property, Plant, and Equipment (net)	247,803	231,590

(continued)

Oil and Gas Properties	326,328	270,496
Intangible Assets	20,022	16,127
Other Noncurrent Assets	163,711	132,214
Accounts Payable to Suppliers	104,460	77,936
Advances from Customers	12,433	11,590
Other Current Liabilities	84,761	90,939
Long-Term Debt	35,305	30,401
Other Noncurrent Liabilities	42,062	36,683
Common Stock	444,527	354,340
Retained Earnings	270,544	213,255

Income Statement Items	Year 8
Net Operating Revenues	\$835,037
Interest and Other Revenues	3,098
Cost of Sales	487,112
Selling Expenses	41,345
General and Administrative Expenses	49,324
Other Operating Expenses	64,600
Interest Expense	2,869
Income Taxes	49,331

- a. Prepare an income statement for COC for the year ending December 31, Year 8.
 - b. Prepare a comparative balance sheet for COC on December 31, Year 7, and December 31, Year 8. Show noncurrent assets before current assets and noncurrent liabilities before current liabilities, as is the customary presentation for IFRS, which COC uses.
 - c. Prepare an analysis of the change in Retained Earnings during the year ending December 31, Year 8.
22. Analysis of transactions and preparation of income statement and balance sheet. Refer to the information for Moulton Corporation as of December 31, Year 12, in **Chapter 2, Problem 2.13**. Moulton Corporation opened for business on January 1, Year 13. It uses the accrual basis of accounting. Transactions and events during Year 13 were as follows:
- (1) During Year 13: Purchased inventory on account costing \$1,100,000 from various suppliers.
 - (2) During Year 13: Sold merchandise to customers for \$2,000,000 on account.
 - (3) During Year 13: The cost of merchandise sold to customers totaled \$1,200,000.
 - (4) During Year 13: Collected \$1,400,000 from customers for sales made previously on account.
 - (5) During Year 13: Paid merchandise suppliers \$950,000 for purchases made previously on account.
 - (6) During Year 13: Paid various suppliers of selling and administrative services \$625,000. The firm consumed all of the benefits of these services during Year 13.
 - (7) June 30, Year 13: Repaid the note payable to a supplier with interest (see transaction (7) in **Chapter 2, Problem 2.13**).
 - (8) December 31, Year 13: Recognized interest on the long-term bank loan (see transaction (6) in **Chapter 2, Problem 2.13**).
 - (9) December 31, Year 13: Recognized insurance expense for Year 13 (see transaction (5) in **Chapter 2, Problem 2.13**).
 - (10) December 31, Year 13: Recognized depreciation expense for Year 13 (see transactions (2) and (7) of **Chapter 2, Problem 2.13**).
 - (11) December 31, Year 13: Recognize income tax expense and income tax payable for Year 13. The income tax rate is 40%. Assume that income taxes for Year 13 are payable by March 15, Year 14.

- a. Using T-accounts, enter the balances in balance sheet accounts on January 1, Year 13 (see **Chapter 2, Problem 2.13** and the effects of the 11 transactions above).
 - b. Prepare an income statement for Year 13.
 - c. Prepare a comparative balance sheet as of December 31, Year 12, and December 31, Year 13.
23. Analysis of transactions and preparation of income statement and balance sheet. Refer to the information for Patterson Corporation for January, Year 13, in **Chapter 2, Problem 2.14**, above. The following transactions occur during February.
- (1) February 1: The firm pays the two-year insurance premium of \$2,400 for fire and liability coverage beginning February 1.
 - (2) February 5: Acquires merchandise costing \$1,050,000. Of this amount, \$1,455 is from suppliers to whom Patterson returned defective merchandise during January but for which the firm had not yet received a refund for amounts paid. Patterson Corporation acquired the remaining purchases on account.
 - (3) During February: Sells merchandise to customers totaling \$1,500,000. Of this amount, \$4,500 was to customers who had advanced Patterson Corporation cash during January. Patterson Corporation makes the remaining sales on account.
 - (4) During February: The cost of the goods sold in transaction (3) was \$950,000.
 - (5) During February: Pays in cash selling and administrative expenses of \$235,000.
 - (6) During February: Collects \$1,206,000 from customer for sales previously made on account.
 - (7) During February: Pays \$710,000 to suppliers of merchandise for purchases previously made on account.
 - (8) February 28: Recognizes rent expense for February.
 - (9) February 28: Recognizes depreciation expense of \$2,500 for February. Patterson Corporation uses an Accumulated Depreciation account.
 - (10) February 28: Recognizes amortization expense of \$450 on the patent. Patterson Corporation does not use an Accumulated Amortization account for patents; instead, it records the amortized amounts directly to the patent account.
 - (11) February 28: Recognizes an appropriate amount of insurance expense for February.
 - (12) February 28: Recognizes interest expense on the mortgage payable (see transaction (12) in **Chapter 2, Problem 2.14**).
 - (13) February 28: Recognizes income tax expense for February. The income tax rate is 40%. Income taxes for February are payable by April 15.
- a. Using T-accounts, enter the balances in balance sheet accounts on February 1, Year 13 (see **Chapter 2, Problem 2.14**), and the effects of the 13 transactions above.
 - b. Prepare an income statement for the month of February, Year 13.
 - c. Prepare a comparative balance sheet as January 31 and February 28, Year 13.
24. **Miscellaneous transactions and adjusting entries.** Assume that LBJ Group (LBJ), a European engineering firm, engaged in the following six transactions during the year ended December 31, Year 3. LBJ applies U.S. GAAP and reports its results in millions of U.S. dollars. Give the journal entries to record (1) each of the six transactions, and (2) any necessary adjusting entries on December 31, Year 3. You may omit explanations for the journal entries. Assume the six transactions are independent of each other.
- a. On November 1, Year 3, LBJ gives a 90-day note to a supplier in exchange for inventory purchased costing \$180,000. The note bears interest at 8% per year and is due on January 31, Year 4.
 - b. On December 5, Year 3, LBJ receives \$842,000 in cash from a customer for products and services that LBJ will deliver in January Year 4.
 - c. LBJ acquires a machine on October 1, Year 3, for \$1,400,000 cash. It expects the machine to have a \$160,000 salvage value and a 10-year life.
 - d. On September 30, Year 3, LBJ sells merchandise to a customer, on credit, for \$565,000. The merchandise has a cost to LBJ of \$422,000.

- e. LBJ purchases insurance on its headquarters building on September 1, Year 3, for the next 12 months beginning on that date. It pays the \$360,000 insurance premium in cash.
 - f. On November 16, Year 3, LBJ issues 40,000 shares of common stock with a par value of \$1 for \$26 per share. LBJ uses the cash proceeds to repay accounts payable.
- 25. Journal entries, adjusting entries, income statement and balance sheet preparation.** The balance sheet of Rybowskiak’s Building Supplies on June 30, Year 12, appears nearby.

RYBOWIAK’S BUILDING SUPPLIES	
Balance Sheet	
June 30, Year 12	
Assets	
Cash	\$ 44,200
Accounts Receivable	27,250
Merchandise Inventory.	68,150
Prepaid Insurance	400
Total Current Assets	<u>\$140,000</u>
Equipment—At Cost	\$210,000
Less Accumulated Depreciation	<u>(84,000)</u>
Equipment—Net	<u>\$126,000</u>
Total Assets	<u>\$266,000</u>
Liabilities and Shareholders’ Equity	
Accounts Payable	\$ 33,100
Note Payable	5,000
Salaries Payable	1,250
Total Current Liabilities.	<u>\$ 39,350</u>
Common Stock	\$150,000
Retained Earnings	76,650
Total Shareholders’ Equity	<u>\$226,650</u>
Total Liabilities and Shareholders’ Equity.	<u>\$266,000</u>

The following transactions occurred during the month of July.

- (1) Sold merchandise on account for a total selling price of \$85,000.
- (2) Purchased merchandise inventory on account from various suppliers for \$46,300.
- (3) Paid rent for the month of July of \$11,750.
- (4) Paid salaries to employees during July of \$20,600.
- (5) Collected accounts receivable of \$34,150.
- (6) Paid accounts payable of \$38,950.

Information affecting adjusting entries at the end of July is as follows:

- (7) The firm paid the premium on a one-year insurance policy on March 1, Year 12, with coverage beginning on that date. This is the only insurance policy in force on June 30, Year 12.
 - (8) The firm depreciates its equipment over a 10-year life. Estimated salvage value of the equipment is negligible.
 - (9) Employees earned salaries of \$1,600 during the last two days of July but were not paid. These are the only unpaid salaries at the end of July.
 - (10) The note payable is a 90-day, 6% note issued on June 30, Year 12.
 - (11) Merchandise inventory on hand on July 31, Year 12, totals \$77,950. The cost of goods sold for July equals merchandise inventory on June 30, Year 12, plus purchases of merchandise during July minus merchandise inventory on July 31, Year 12.
- a. Prepare journal entries to reflect the transactions and other events during July. The firm classifies expenses by their nature (that is, insurance, depreciation). Revenues and expenses should appear in the Retained Earnings account but with an indication of the

specific revenue or expense account debited or credited. Be sure to indicate whether each entry increases or decreases assets, liabilities, or shareholders' equity.

- b. Enter the amounts from the June 30, Year 12, balance sheet and the effects of the 11 items above in T-accounts.
 - c. Prepare an income statement for the month of July. Ignore income taxes.
 - d. Enter closing entries in the T-accounts from part b.
 - e. Prepare a comparative balance sheet as of June 30, and July 31, Year 12.
- 26. Preparing the income statement and balance sheet using the accrual basis.** Bob Hansen opens a retail store on January 1, 2013. Hansen invests \$50,000 for all of the common stock of the firm. The store borrows \$40,000 from a local bank. The store must repay the loan with interest for both 2013 and 2014 on December 31, 2014. The interest rate is 10% per year. The store purchases a building for \$60,000 cash. The building has a 30-year life, zero estimated salvage value, and is to be depreciated using the straight-line method. The store purchases \$125,000 of merchandise on account during 2013 and pays \$97,400 of the amount by the end of 2013. A physical inventory taken on December 31, 2013, indicates \$15,400 of merchandise is still on hand.
- During 2013, the store makes cash sales to customers totaling \$52,900 and sales on account totaling \$116,100. Of the sales on account, the store collects \$54,800 by December 31, 2013. The store incurs and pays other costs as follows: salaries, \$34,200; utilities, \$2,600. It has unpaid bills at the end of 2013 as follows: salaries, \$2,400; utilities, \$180. The firm is subject to an income tax rate of 40%. Income taxes for 2013 are payable on March 15, 2014. Assume that Hansen applies U.S. GAAP, and reports in U.S. dollars.
- a. Prepare an income statement for Hansen Retail Store for 2013, assuming the accrual basis of accounting and revenue recognition at the time of sale. Show supporting computations for each revenue and expense.
 - b. Prepare a balance sheet for Hansen Retail Store as of December 31, 2013. Show supporting computations for each balance sheet item.
- 27. Analysis of transactions and preparation of the income statement and balance sheet.** Refer to the information for Regaldo Department Stores as of January 31, Year 8, in **Chapter 2, Problem 2.15**. Regaldo Department Stores opened for business on February 1, Year 8. Transactions and events during February Year 8 were as follows.
- (1) February 1: Purchased display counters and computer equipment for \$90,000. The firm borrowed \$90,000 from a local bank to finance the purchases. The bank loan bears interest at a rate of 12% each year and is repayable with interest on February 1, Year 9.
 - (2) During February: Purchased merchandise on account totaling \$217,900.
 - (3) During February: Sold merchandise costing \$162,400 to various customers for \$62,900 cash and \$194,600 on account.
 - (4) During February: Paid to employees compensation totaling \$32,400 for services rendered during the month.
 - (5) During February: Paid utility (electric, water, gas) bills totaling \$2,700 for services received during February Year 8.
 - (6) During February: Collected \$84,600 from customers for sales on account (see transaction (3) above).
 - (7) During February: Paid invoices from suppliers of merchandise (see transaction (2) above) with an original purchase price of \$210,000 in time to receive a 2% discount for prompt payment and \$29,000 to other suppliers after the discount period had elapsed. The firm treats discounts taken as a reduction in the acquisition cost of merchandise.
 - (8) February 28: Compensation that employees earned during the last several days in February and that the firm will pay early in March Year 8 totaled \$6,700.
 - (9) February 28: Utility services that the firm used during February and that the firm will not pay until March Year 8 totaled \$800.

- (10) February 28: The display counters and computer equipment purchased in transaction (1) have an expected useful life of five years and zero salvage value at the end of the five years. The firm depreciates such equipment on a straight-line basis over the expected life and uses an Accumulated Depreciation account.
- (11) February 28: The firm recognizes an appropriate portion of the prepaid rent as of January 31, Year 8.
- (12) February 28: The firm recognizes an appropriate portion of the prepaid insurance as of January 31, Year 8.
- (13) February 28: The firm amortizes (that is, recognizes as an expense) the patent over 60 months. The firm does not use a separate Accumulated Amortization account for the patent.
- (14) February 28: The firm recognizes an appropriate amount of interest expense on the loan in transaction (1) above.
- (15) February 28: The firm is subject to an income tax rate of 30% of net income before income taxes. The income tax law requires firms to pay income taxes on the 15th day of the month after the end of each quarter (that is, April 15, Year 8; June 15, Year 8; October 15, Year 8; and January 15, Year 9).
- a. Using T-accounts, enter the balances in balance sheet accounts on February 1, Year 8, from **Chapter 2, Problem 2.15** and the effects of the 15 transactions above.
- b. Prepare an income statement for the month of February Year 8.
- c. Prepare a comparative balance sheet as of January 31, Year 8, and February 28, Year 8.
- 28. Analysis of transactions and preparation of the income statement and balance sheet.** Zealock Bookstore opened a bookstore near a college campus on July 1, Year 4. Transactions and events of Zealock Bookstore during Year 4 follow. The firm uses the calendar year as its reporting period.
- (1) July 1, Year 4: Receives \$25,000 from Quinn Zealock for 25,000 shares of the bookstore's \$1 par value common stock.
- (2) July 1, Year 4: Obtains a \$30,000 loan from a local bank for working capital needs. The loan bears interest at 6% per year. The loan is repayable with interest on June 30, Year 5.
- (3) July 1, Year 4: Signs a rental agreement for three years at an annual rental of \$20,000. Pays the first year's rent in advance.
- (4) July 1, Year 4: Acquires bookshelves for \$4,000 cash. The bookshelves have an estimated useful life of five years and zero salvage value.
- (5) July 1, Year 4: Acquires computers for \$10,000 cash. The computers have an estimated useful life of three years and \$1,000 salvage value.
- (6) July 1, Year 4: Makes security deposits with various book distributors totaling \$8,000. The deposits are refundable on June 30, Year 5, if the bookstore pays on time all amounts due for books purchased from the distributors between July 1, Year 4, and June 30, Year 5.
- (7) During Year 4: Purchases books on account from various distributors costing \$160,000.
- (8) During Year 4: Sells books costing \$140,000 for \$172,800. Of the total sales, \$24,600 is for cash, and \$148,200 is on account.
- (9) During Year 4: Returns unsold books and books ordered in error costing \$14,600. The firm had not yet paid for these books.
- (10) During Year 4: Collects \$142,400 from sales on account.
- (11) During Year 4: Pays employees compensation of \$16,700.
- (12) During Year 4: Pays book distributors \$139,800 of the amounts due for purchases on account.
- (13) December 28, Year 4: Receives advances from customers of \$850 for special-order books that the bookstore will order and expects to receive during Year 5.

- (14) December 31, Year 4: Records an appropriate amount of interest expense on the loan in (2) for Year 4.
 - (15) December 31, Year 4: Records an appropriate amount of rent expense for Year 4.
 - (16) December 31, Year 4: Records an appropriate amount of depreciation expense on the bookshelves in (4).
 - (17) December 31, Year 4: Records an appropriate amount of depreciation expense on the computers in (5).
 - (18) December 31, Year 4: Records an appropriate amount of income tax expense for Year 4. The income tax rate is 40%. The taxes are payable on March 15, Year 5.
- a. Using T-accounts, enter the 18 transactions and events above.
 - b. Prepare an income statement for the six months ending December 31, Year 4.
 - c. Prepare a balance sheet on December 31, Year 4.

Note: **Problem 29** extends this problem to income transactions for Year 5.

29. Analysis of transactions and preparation of comparative income statements and balance sheets. Refer to the information for Zealock Bookstore in **Problem 28**. The following transactions relate to Year 5.

- (1) March 15, Year 5: Pays income taxes for Year 4.
 - (2) June 30, Year 5: Repays the bank loan with interest.
 - (3) July 1, Year 5: Obtains a new bank loan for \$75,000. The loan is repayable on June 30, 2010, with interest due at maturity of 8%.
 - (4) July 1, Year 5: Receives the security deposit back from the book distributors.
 - (5) July 1, Year 5: Pays the rent due for the period July 1, Year 5, to June 30, Year 6.
 - (6) During Year 5: Purchases books on account costing \$310,000.
 - (7) During Year 5: Sells books costing \$286,400 for \$353,700. Of the total sales, \$24,900 is for cash, \$850 is from special orders received during December Year 4, and \$327,950 is on account.
 - (8) During Year 5: Returns unsold books costing \$22,700. The firm had not yet paid for these books.
 - (9) During Year 5: Collects \$320,600 from sales on account.
 - (10) During Year 5: Pays employees compensation of \$29,400.
 - (11) During Year 5: Pays book distributors \$281,100 for purchases of books on account.
 - (12) December 31, Year 5: Declares and pays a dividend of \$4,000.
- a. Using T-accounts, enter the amounts for the balance sheet on December 31, Year 4, from **Problem 28**, the effects of the 12 transactions above, and any required entries on December 31, Year 5, to properly measure net income for Year 5 and financial position on December 31, Year 5.
 - b. Prepare a comparative income statement for Year 4 and Year 5.
 - c. Prepare a comparative balance sheet for December 31, Year 4, and December 31, Year 5.

30. Reconstructing the income statement and balance sheet. (Adapted from a problem by Stephen A. Zeff.) Portobello Co., a retailer, is in its 10th year of operation. On December 28, Year 18, three days before the close of its fiscal year, a flash flood devastated the company's administrative office and destroyed almost all of its accounting records. The company saved the balance sheet on December 31, Year 17 (see **Exhibit 3.6**), the checkbook, the bank statements, and some soggy remains of the specific accounts receivable and accounts payable balances. Based on a review of the surviving documents and a series of interviews with company employees, you obtain the following information.

- (1) The company's insurance agency advises that a four-year insurance policy has six months to run as of December 31, Year 18. The policy cost \$12,000 when the company paid the four-year premium during Year 15.
- (2) During Year 18, the company's board of directors declared \$6,000 of dividends, of which the firm paid \$3,000 in cash to shareholders during Year 18 and will pay the remainder during Year 19. Early in Year 18, the company also paid dividends of \$1,800 cash that the board of directors had declared during Year 17.

EXHIBIT 3.6

**Portobello Co.
Balance Sheet
December 31, Year 17
(Problem 30)**

ASSETS	
Cash	\$ 18,600
Accounts Receivable	33,000
Notes Receivable	10,000
Interest Receivable	600
Merchandise Inventories	22,000
Prepaid Insurance	4,500
Total Current Assets	<u>\$ 88,700</u>
Computer System:	
At Cost	\$ 78,000
Less Accumulated Depreciation	(26,000)
Net	<u>\$ 52,000</u>
Total Assets	<u>\$140,700</u>
LIABILITIES AND SHAREHOLDERS' EQUITY	
Accounts Payable for Merchandise	\$ 36,000
Dividend Payable	1,800
Salaries Payable	6,500
Taxes Payable	10,000
Advances from Customers	600
Total Liabilities	<u>\$ 54,900</u>
Common Stock	\$ 40,000
Retained Earnings	45,800
Total Shareholders' Equity	<u>\$ 85,800</u>
Total Liabilities and Shareholders' Equity	<u>\$140,700</u>

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- (3) On April 1, Year 18, the company received from Appleton Co. \$10,900 cash, which included principal of \$10,000 and interest, in full settlement of Appleton's nine-month note dated July 1, Year 17. According to the terms of the note, Appleton paid all interest at maturity on April 1, Year 18.
- (4) The amount owed by the company to merchandise suppliers on December 31, Year 18, was \$20,000 less than the amount owed on December 31, Year 17. During Year 18, the company paid \$115,000 to merchandise suppliers. The cost of merchandise inventory on December 31, Year 18, based on a physical count, was \$18,000 larger than the balance in the Merchandise Inventory account on the December 31, Year 17, balance sheet. On December 8, Year 18, the company exchanged shares of its common stock for merchandise inventory costing \$11,000. The company's policy is to purchase all merchandise on account.
- (5) The company purchased delivery trucks on March 1, Year 18, for \$60,000. To finance the acquisition, it gave the seller a \$60,000 four-year note that bears interest at 10% per year. The company must pay interest on the note each six months, beginning September 1, Year 18. The company made the required payment on this date. The delivery trucks have an expected useful life of 10 years and an estimated salvage value of \$6,000. The company uses the straight-line depreciation method.
- (6) The company's computer system has a six-year total expected life and zero expected salvage value.
- (7) The company makes all sales on account and recognizes revenue at the time of shipment to customers. During Year 18, the company received \$210,000 cash from its customers. The company's accountant reconstructed the Accounts Receivable subsidiary

ledger, the detailed record of the amount owed to the company by each customer. It showed that customers owed the company \$51,000 on December 31, Year 18. A close examination revealed that \$1,400 of the cash received from customers during Year 18 applies to merchandise that the company will not ship until Year 19. Also, \$600 of the cash received from customers during Year 17 applies to merchandise not shipped to customers until Year 18.

- (8) The company paid \$85,000 in cash to employees during Year 18. Of this amount, \$6,500 relates to services that employees performed during Year 17, and \$4,000 relates to services that employees will perform during Year 19. Employees performed the remainder of the services during Year 18. On December 31, Year 18, the company owes employees \$1,300 for services performed during the last several days of Year 18.
- (9) The company paid \$27,000 in cash for property and income taxes during Year 18. Of this amount, \$10,000 relates to income taxes applicable to Year 17, and \$3,000 relates to property taxes applicable to Year 19. The company owes \$4,000 in income taxes on December 31, Year 18.
- (10) The company entered into a contract with a management consulting firm for consulting services. The total contract price is \$48,000. The contract requires the company to pay the first installment of \$12,000 cash on January 1, Year 19, and the company intends to do so. The consulting firm had performed 10% of the estimated total consulting services under the contract by December 31, Year 18.

Prepare an income statement for Year 18 and a balance sheet on December 31, Year 18.

- 31. Reconstructing the income statement and balance sheet.** Computer Needs, Inc., operates a retail store that sells computer hardware and software. It began operations on January 2, Year 7, and operated successfully during its first year, generating net income of \$8,712 and ending the year with \$15,600 in its bank account. **Exhibit 3.7** presents an income statement for Year 7, and **Exhibit 3.8** presents a balance sheet as of the end of Year 7.

As Year 8 progressed, the owners and managers of Computer Needs, Inc., felt that they were doing even better. Sales seemed to be running ahead of Year 7, and customers were always in the store. Unfortunately, a freak lightning storm hit the store on December 31, Year 8, and completely destroyed the computer on which Computer Needs, Inc., kept its records. It now faces the puzzle of calculating Year 8 income in order to assess its operating performance and to calculate income taxes for the year.

Prepare an income statement for Year 8 and a balance sheet at the end of Year 8. To assist in this effort, you obtain the following information.

- (1) The bank at which Computer Needs, Inc., maintains its account provided a summary of the transactions during Year 8, as shown in **Exhibit 3.9**.

EXHIBIT 3.7

Computer Needs, Inc. Income Statement For the Year Ended December 31, Year 7 (Problem 31)

Sales	\$ 152,700
Cost of Goods Sold	(116,400)
Selling and Administrative Expenses	(17,400)
Depreciation	(2,800)
Interest	(4,000)
Income Taxes	(3,388)
Net Income	<u>\$ 8,712</u>

EXHIBIT 3.8

**Computer Needs, Inc.
Balance Sheet
December 31, Year 7
(Problem 31)**

ASSETS	
Cash	\$ 15,600
Accounts Receivable	32,100
Inventories	46,700
Prepayments	1,500
Total Current Assets	<u>\$ 95,900</u>
Property, Plant, and Equipment:	
At Cost	\$ 59,700
Less Accumulated Depreciation	(2,800)
Net	<u>\$ 56,900</u>
Total Assets	<u><u>\$152,800</u></u>
LIABILITIES AND SHAREHOLDERS' EQUITY	
Accounts Payable—Merchandise Suppliers	\$ 37,800
Income Tax Payable	3,388
Other Current Liabilities	2,900
Total Current Liabilities	<u>\$ 44,088</u>
Mortgage Payable	50,000
Total Liabilities	<u>\$ 94,088</u>
Common Stock	\$ 50,000
Retained Earnings	8,712
Total Shareholders' Equity	<u>\$ 58,712</u>
Total Liabilities and Shareholders' Equity	<u><u>\$152,800</u></u>

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EXHIBIT 3.9

**Computer Needs, Inc.
Analysis of Changes in Bank Accounts
for the Year Ended December 31, Year 8
(Problem 31)**

Balance, January 1, Year 8	\$ 15,600
Receipts:	
Cash from Cash Sales	37,500
Checks Received from Third-Party Credit Cards and Customers	151,500
Disbursements:	
To Merchandise Suppliers	(164,600)
To Employees and Other Providers of Selling and Administrative Activities	(21,000)
To U.S. Government for Income Taxes for Year 8	(3,388)
To Bank for Interest (\$4,000) and Principal on Mortgage (\$800)	(4,800)
To Supplier of Equipment	<u>(6,000)</u>
Balance, December 31, Year 8	<u><u>\$ 4,812</u></u>

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- (2) Cash received during January Year 9, from third-party credit card companies and from customers for sales made during Year 8 totaled \$40,300. This is your best estimate of accounts receivable outstanding on December 31, Year 8.
- (3) Clerks took a physical inventory of merchandise on January 1, Year 9. Using current catalogs from suppliers, you estimate that the merchandise has a total cost of \$60,700.
- (4) Computer Needs, Inc., had paid its annual insurance premium on October 1, Year 8 (included in the amounts paid to “Other Providers” in **Exhibit 3.9**). You learn that \$1,800 of the insurance premium applies to coverage during Year 9.
- (5) Based on depreciation claimed during Year 7 and new equipment purchased during Year 8, you estimate Year 8 depreciation expense of \$3,300.
- (6) Bills received from merchandise suppliers during January Year 9 totaled \$45,300. This is your best estimate of accounts payable outstanding to these suppliers on December 31, Year 8.
- (7) Other Current Liabilities represent amounts payable to employees and other providers of selling and administrative services. Other Current Liabilities as of December 31, Year 8, total \$1,200.

Prepare an income statement for Computer Needs, Inc., for Year 8 and a balance sheet on December 31, Year 8. The income tax rate is 28%.

- 32. Effect of errors on financial statements.** Consider the following hypothetical information pertaining to Embotelladora Andina S.A. (Embotelladora), the producer and distributor of Coca-Cola products in Chile. Embotelladora applies Chilean accounting standards, and reports its results in thousands of Chilean pesos (\$). Using the notations O/S (overstated), U/S (understated), and NO (no effect), indicate the effects (direction and amount) on assets, liabilities, and shareholders’ equity as of December 31 of the following independent errors or omissions. Ignore income tax implications.
- a. On December 1, Embotelladora paid \$120,000 for rental of a building for December and the following January. The firm debited Rent Expense and credited Cash for \$120,000 on December 1, and made no further entries with respect to this rental during December or January.
 - b. On December 15, Embotelladora received \$82,000 from a customer as a deposit on merchandise that Embotelladora expects to deliver to the customer during the next month, January. The firm debited Cash and credited Sales Revenue on December 15, and made no further entries with respect to this deposit during December or January.
 - c. On December 1, Embotelladora acquired a truck to be used to transport beverages from the central warehouse to retailers. The truck cost \$98,000, has zero salvage value, and is expected to last four years. The firm recorded the transaction by debiting Truck Expense and crediting Cash for \$98,000 and made no further entries during December with respect to the acquisition.
 - d. On December 15, Embotelladora purchased office supplies costing \$86,800. It recorded the purchase by debiting Office Supplies Expense and crediting Cash. The Office Supplies Inventory account on December 1 had a balance of \$27,700. Based on a physical inventory on December 31, office supplies costing \$24,600 were on hand. The firm made no entries in its accounts with respect to office supplies on December 31.
 - e. Embotelladora incurred interest expense of \$34,500 for the month of December on a 60-day loan obtained on December 1. The firm properly recorded the loan on its books on December 1, but made no entry to record interest on December 31. The loan is payable with interest at the end of the following month, on January 31.
 - f. Embotelladora purchased merchandise on account costing \$17,900 on December 23, debiting Merchandise Inventory and crediting Accounts Payable. The firm paid for this purchase on December 28, debiting Cost of Goods Sold and crediting Cash, but had not sold the merchandise by December 31.
- 33. Effect of recording errors on financial statements.** Forgetful Corporation (Forgetful) neglected to make various adjusting entries on December 31, the end of its accounting period. Forgetful applies U.S. GAAP, and reports in U.S. dollars. Indicate the effects on assets, liabilities, and shareholders’ equity on December 31, of failing to adjust for the following independent items as appropriate, using the descriptions *overstated*, *understated*, and *no effect*. Also, give the amount of the effect. Ignore income tax implications.

- a. On December 15, Forgetful Corporation received a \$1,400 advance from a customer for products to be manufactured and delivered the next month, in January. The firm recorded the advance by debiting Cash and crediting Sales Revenue and made no adjusting entry as of December 31.
 - b. On July 1, Forgetful Corporation acquired a machine for \$5,000 and recorded the acquisition by debiting Cost of Goods Sold and crediting Cash. The machine has a five-year useful life and zero estimated salvage value.
 - c. On November 1, Forgetful Corporation received a \$2,000 note receivable from a customer in settlement of an account receivable. It debited Notes Receivable and credited Accounts Receivable on receipt of the note. The note is a six-month note due April 30 of the following year and bears interest at an annual rate of 12%. Forgetful Corporation made no other entries related to this note.
 - d. Forgetful Corporation paid its annual insurance premium of \$1,200 on October 1, the first day of the year of coverage. It debited Prepaid Insurance \$900, debited Insurance Expense \$300, and credited Cash for \$1,200. It made no other entries related to this insurance.
 - e. The Board of Directors of Forgetful Corporation declared a dividend of \$1,500 on December 31. The dividend will be paid 15 days later, on January 15. Forgetful Corporation neglected to record the dividend declaration.
 - f. On December 1, Forgetful Corporation purchased a machine on account for \$50,000, debiting Machinery and crediting Accounts Payable for \$50,000. Ten days later the company paid the account and took the allowed 2% discount. It credited Cash \$49,000 and Miscellaneous Revenue \$1,000. It debited Accounts Payable \$50,000. Forgetful Corporation normally records cash discounts taken as a reduction in the cost of assets. On December 28, the firm paid \$4,000 cash to employees to install the machine; it debited Maintenance Expense and credited Cash for \$4,000. The machine started operation three days later, on January 1. Since the firm did not place the machine into operation until January 1 it correctly recorded no depreciation for the year of purchase.
- 34. Working backward to the balance sheet at the beginning of the period.** (Problems 34 through 36 derive from problems by George H. Sorter.) The following data relate to the Prima Company.
- (1) **Exhibit 3.10:** Balance sheet at December 31, Year 8.
 - (2) **Exhibit 3.11:** Statement of net income and retained earnings for Year 8.
 - (3) **Exhibit 3.12:** Statement of cash receipts and disbursements for Year 8.
- Purchases of merchandise during the period, all on account, were \$127,000. All Other Operating Expenses were credited to Prepayments.
- Prepare a balance sheet for December 31, Year 7. (*Hint:* Using T-accounts, enter the December 31, Year 8, amounts from the balance sheet. Using the information in the income statement and statement of cash receipts and disbursements, reconstruct the transactions that took place during the year and enter the amounts in the appropriate places in the T-accounts or transactions template. Finally, compute the amounts on the December 31, Year 7, balance sheet.)
- 35. Working backward to cash receipts and disbursements.** Exhibit 3.13 presents the comparative balance sheet of The Secunda Company as of the beginning and end of Year 8. Exhibit 3.14 presents the income statement for Year 8. The company makes all sales on account and purchases all goods and services on account. The Other Operating Expenses account includes depreciation charges and expirations of prepayments. The company debits Dividends Declared during the year to Retained Earnings.
- Prepare a schedule showing all cash transactions for Year 8. (*Hint:* Using T-accounts, enter the amounts shown as of December 31, Year 7, and December 31, Year 8. Starting with the revenue and expense accounts, reconstruct the transactions that took place during the year, and enter the amounts in the appropriate places in the T-accounts. Note that the Retained Earnings account in the balance sheet on December 31, Year 8, reflects the effects of earnings activities and dividends during Year 8.)
- 36. Working backward to the income statement.** Tertia Company presents balance sheets at the beginning and end of Year 8 (Exhibit 3.15), as well as a statement of cash receipts and disbursements (Exhibit 3.16). Prepare a combined statement of income and retained

EXHIBIT 3.10**Prima Company
Balance Sheet
December 31, Year 8
(Problem 34)****ASSETS**

Cash	\$ 10,000
Marketable Securities	20,000
Accounts Receivable	25,000
Merchandise Inventory	30,000
Prepayments for Miscellaneous Services	3,000
Total Current Assets	<u>\$ 88,000</u>
Land, Buildings, and Equipment (at cost)	\$ 40,000
Less Accumulated Depreciation	<u>(16,000)</u>
Land, Buildings, and Equipment (net)	<u>\$ 24,000</u>
Total Assets	<u><u>\$112,000</u></u>

LIABILITIES AND SHAREHOLDERS' EQUITY

Accounts Payable (for merchandise)	\$ 25,000
Interest Payable	300
Taxes Payable	4,000
Total Current Liabilities	<u>\$ 29,300</u>
Note Payable (6%, long-term)	20,000
Total Liabilities	<u>\$ 49,300</u>
Common Stock	\$ 50,000
Retained Earnings	12,700
Total Shareholders' Equity	<u>\$ 62,700</u>
Total Liabilities and Shareholders' Equity	<u><u>\$112,000</u></u>

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EXHIBIT 3.11**Prima Company
Statement of Net Income and Retained Earnings
For Year Ended December 31, Year 8
(Problem 34)**

Sales	\$200,000
Less Expenses:	
Cost of Goods Sold	\$130,000
Depreciation Expense	4,000
Taxes Expense	8,000
Other Operating Expenses	47,700
Interest Expense	1,200
Total Expenses	<u>\$190,900</u>
Net Income	<u>\$ 9,100</u>
Less Dividends	5,000
Increase in Retained Earnings	<u><u>\$ 4,100</u></u>

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EXHIBIT 3.12

**Prima Company
Statement of Cash Receipts and Disbursements
For Year Ended December 31, Year 8
(Problem 34)**

Cash Receipts	
Cash Sales	\$ 47,000
Collection from Credit Customers	<u>150,000</u>
Total Receipts	<u>\$197,000</u>
Cash Disbursements	
Payment to Suppliers of Merchandise	\$128,000
Payment to Suppliers of Miscellaneous Services	49,000
Payment of Taxes	7,500
Payment of Interest	1,200
Payment of Dividends	5,000
Purchase of Marketable Securities	<u>8,000</u>
Total Disbursements	<u>\$198,700</u>
Excess of Disbursements over Receipts	<u>\$ 1,700</u>

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EXHIBIT 3.13

**The Secunda Company
Balance Sheet
December 31, Year 8, and December 31, Year 7
(Problem 35)**

	December 31	
	Year 8	Year 7
ASSETS		
Cash	\$ 9,000	\$ 20,000
Accounts Receivable	51,000	36,000
Merchandise Inventory	60,000	45,000
Prepayments	<u>1,000</u>	<u>2,000</u>
Total Current Assets	<u>\$121,000</u>	<u>\$103,000</u>
Land, Buildings, and Equipment (at cost)	\$ 40,000	\$ 40,000
Less Accumulated Depreciation	<u>(18,000)</u>	<u>(16,000)</u>
Land, Buildings, and Equipment (net)	\$ 22,000	\$ 24,000
Total Assets	<u>\$143,000</u>	<u>\$127,000</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Interest Payable	\$ 2,000	\$ 1,000
Accounts Payable	<u>40,000</u>	<u>30,000</u>
Total Current Liabilities	\$ 42,000	\$ 31,000
Mortgage Payable	<u>17,000</u>	<u>20,000</u>
Total Liabilities	<u>\$ 59,000</u>	<u>\$ 51,000</u>
Common Stock	\$ 50,000	\$ 50,000
Retained Earnings	<u>34,000</u>	<u>26,000</u>
Total Shareholders' Equity	\$ 84,000	\$ 76,000
Total Liabilities and Shareholders' Equity	<u>\$143,000</u>	<u>\$127,000</u>

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EXHIBIT 3.14

The Secunda Company
Income Statement
For Year Ended December 31, Year 8
(Problem 35)

Sales Revenue	\$100,000
Less Expenses:	
Cost of Goods Sold	\$ 50,000
Interest Expense	3,000
Other Operating Expenses	<u>29,000</u>
Total Expenses	<u>\$ 82,000</u>
Net Income	<u>\$ 18,000</u>

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earnings for Year 8. (*Hint:* Using T-accounts, enter the amounts shown as of December 31, Year 7, and December 31, Year 8. Starting with the cash receipts and disbursements for the year, reconstruct the transactions that took place during the year, and enter them in the appropriate places in the T-accounts. The Retained Earnings account reflects the effect of earnings activities and dividends for Year 8.)

- 37. Preparing adjusting entries.** Assume that a firm closes its books once per year, on December 31. The firm employs a full-time bookkeeper and a part-time professional accountant who makes all necessary adjusting entries to prepare the financial statements on December 31. During the year, the firm uses the following simplified bookkeeping and transactions recording convention: When it receives cash, the firm debits cash and credits a revenue account; when it pays cash, the firm debits an expense account and credits cash. The purposes of using this simplified transaction recording convention are (1) to achieve efficient recording of cash receipts and disbursements so that the firm always has an up-to-date balance in its cash account and (2) to avoid involving the professional accountant until the end of the year. On December 31, the professional accountant makes the adjusting entries necessary to properly record revenues and expenses of the period and calculate the correct balances in balance sheet accounts. Construct the adjusting entry required for each of the following scenarios.
- On September 1, Year 6, a tenant paid \$24,000 rent for the one-year period starting at that time. The tenant debited the entire amount to Rent Expense and credited Cash. The tenant made no adjusting entries for rent between September 1 and December 31. Construct the adjusting entry to be made on December 31, Year 6, to recognize the proper balances in the Prepaid Rent and Rent Expense accounts. What is the amount of Rent Expense for Year 6?
 - Refer to part a. The tenant's books for December 31, Year 6, after adjusting entries, show a balance in the Prepaid Rent account of \$16,000. This amount represents rent for the period January 1 through August 31, Year 7. On September 1, Year 7, the tenant paid \$30,000 for rent for the one-year period starting September 1, Year 7. The tenant debited this amount to Rent Expense and credited Cash but made no adjusting entries for rent during Year 7. Construct the adjusting entry required on December 31, Year 7. What is Rent Expense for Year 7?
 - Refer to part b. The tenant's books for December 31, Year 7, after adjusting entries, show a balance in the Prepaid Rent account of \$20,000. This amount represents rent for the period January 1 through August 31, Year 8. On September 1, Year 8, the tenant paid \$18,000 for rent for the six-month period starting September 1, Year 8. The tenant debited this amount to Rent Expense and credited Cash but made no adjusting entries during Year 8. Construct the adjusting entry required on December 31, Year 8. What is Rent Expense for Year 8?
 - Whenever the firm makes payments for wages, it debits Wage Expense and credits Cash. At the start of April, the Wages Payable account had a balance of \$5,000, representing

EXHIBIT 3.15

**Tertia Company
Balance Sheets
December 31, Year 8, and December 31, Year 7
(Problem 36)**

	December 31	
	Year 8	Year 7
ASSETS		
Cash	\$ 67,800	\$ 40,000
Accounts and Notes Receivable	41,000	36,000
Merchandise Inventory	49,500	55,000
Interest Receivable	700	1,000
Prepaid Miscellaneous Services	5,200	4,000
Building, Machinery, and Equipment	47,000	47,000
Accumulated Depreciation	<u>(12,000)</u>	<u>(10,000)</u>
Total Assets	<u>\$ 99,200</u>	<u>\$173,000</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Accounts Payable (miscellaneous services)	\$ 2,500	\$ 2,000
Accounts Payable (merchandise purchases)	41,000	34,000
Property Taxes Payable	1,500	1,000
Mortgage Payable	<u>30,000</u>	<u>35,000</u>
Total Liabilities	<u>\$ 75,000</u>	<u>\$ 72,000</u>
Common Stock	\$ 25,000	\$ 25,000
Retained Earnings	<u>99,200</u>	<u>76,000</u>
Total Shareholders' Equity	<u>\$124,200</u>	<u>\$101,000</u>
Total Liabilities and Shareholders' Equity	<u>\$199,200</u>	<u>\$173,000</u>

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EXHIBIT 3.16

**Tertia Company
Statement of Cash Receipts and Disbursements
For Year Ended December 31, Year 8
(Problem 36)**

	Year 8
CASH RECEIPTS	
1. Collection from Credit Customers	\$144,000
2. Cash Sales	63,000
3. Collection of Interest	<u>1,000</u>
Total Cash Receipts	<u>\$208,000</u>
LESS CASH DISBURSEMENTS	
4. Payment to Suppliers of Merchandise	\$114,000
5. Repayment on Mortgage	5,000
6. Payment of Interest	500
7. Prepayment to Suppliers of Miscellaneous Services	57,500
8. Payment of Property Taxes	1,200
9. Payment of Dividends	<u>2,000</u>
Total Cash Disbursements	<u>\$180,200</u>
Increase in Cash Balance for Year 8	<u>\$ 27,800</u>

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wages earned but not paid during the last few days of March. During April, the firm paid \$30,000 in wages, debiting the entire amount to Wage Expense. At the end of April, analysis of amounts earned since the last payday indicates that employees have earned wages of \$4,000 that they have not received. These are the only unpaid wages at the end of April. Construct the required adjusting entry. What is Wage Expense for April?

- e. The firm purchased an insurance policy providing one year's coverage from May 1, Year 5, and debited the entire amount to Insurance Expense. After the firm made adjusting entries, the balance sheet on December 31, Year 5, correctly showed Prepaid Insurance of \$3,000. Construct the adjusting entry that the firm must make on January 31, Year 6, if the firm closes its books monthly and prepares a balance sheet for January 31, Year 6.
- f. For receipts a landlord collects related to an apartment building, the bookkeeper always credits Rent Revenue for cash received from tenants. At the beginning of Year 7, the liability account Advances from Tenants had a credit balance of \$25,000, representing collections from tenants for rental services the landlord will render during Year 7. During Year 7, the firm collected \$250,000 from tenants; it debited Cash and credited Rent Revenue. It made no adjusting entries during Year 7. At the end of Year 7, analysis of the individual accounts indicates that of the amounts already collected, \$30,000 represents collections for rental services the landlord will provide to tenants during Year 8. Present the required adjusting entry. What is Rent Revenue for Year 7?
- g. When the firm acquired new equipment costing \$10,000 on January 1, Year 5, the bookkeeper debited Depreciation Expense and credited Cash for \$10,000 but made no further entries for this equipment during Year 5. The equipment has an expected service life of five years and an estimated salvage value of zero. Construct the adjusting entry required before the accountant can prepare a balance sheet for December 31, Year 5.

Balance Sheet: Presenting and Analyzing Resources and Financing

1. Understand the concepts of assets, liabilities, and shareholders' equity, including the criteria for recognizing (recording) these items on the balance sheet, measuring their amounts (measurement), and identifying where they appear on the balance sheet (classification).
2. Understand why and how the recognition and measurement guidance in U.S. GAAP and IFRS affect the information reported on balance sheets.

LEARNING OBJECTIVES

A user of financial statements might raise questions such as the following with respect to a firm's balance sheet:

1. Does the balance sheet show all of the firm's economic resources as assets and all of the claims on those resources as liabilities and shareholders' equity? If not, what kinds of resources and claims are not recognized on the balance sheet and why?
2. How do the amounts reported on the balance sheet relate to prices observed in the marketplace? For example, how does the amount reported for a given asset relate to the amount the firm would receive if it sold that asset? Is the amount reported for a liability equal to the amount that the firm would have to pay to settle the obligation? How does the amount shown for shareholders' equity relate to the market value of the firm's equity?
3. What does the balance sheet reveal about how the firm has financed its assets? Why do financing arrangements differ across firms?

Understanding the balance sheet permits the user to answer these and other questions about a firm's financial position. This chapter discusses the following concepts underlying the balance sheet, emphasizing asset and liability:

- Definition.
- Recognition.
- Measurement.

Mastery of these concepts requires understanding also the procedures used to prepare the balance sheet, described in **Chapter 2**.

UNDERLYING CONCEPTS

BALANCE SHEET EQUALITY

Chapter 1 introduced the balance sheet, one of the three principal financial statements. Some refer to the balance sheet as the *statement of financial position*. The balance sheet displays resources

(assets) and the financing of those resources (liabilities and shareholders' equity) as of a point in time.¹ The balance sheet reflects the following equality, called the **balance sheet equation**:

$$\text{Assets} = \text{Liabilities} + \text{Shareholders' Equity}$$

This equation requires that assets equal the financing provided by creditors and owners of the firm. Stated differently, management uses the funds provided by creditors (in the form of liabilities) and owners (in the form of shareholders' equity) to acquire resources (in the form of assets). The nature and mix of liabilities and shareholders' equity comprise the **financing structure**, a topic we return to later in this chapter.

BALANCE SHEET CLASSIFICATIONS

Balance sheets present lists of items, grouped by category. Two categories used to group assets and liabilities result from the timing of cash receipts (for assets) and the timing of cash payments (for liabilities). Assets that management expects to convert to cash, or to sell, or to consume during the normal **operating cycle** of the business are **current assets**. All other assets are **noncurrent assets**. Similarly, obligations that management expects to discharge with a cash payment or otherwise settle during the operating cycle are **current liabilities**, whereas all other obligations are **noncurrent liabilities**.

The operating cycle is the period of time required to convert cash into salable goods and services, sell those goods and services to customers, and receive cash from customers in payment. A firm's business model determines its operating cycle. The operating cycle can be as short as one to three months. Some industries, such as building construction or wine making, have operating cycles that span several years. Unless the operating cycle exceeds one year, accounting convention uses one year to distinguish current items from noncurrent items. Thus, the phrase *current assets* (*current liabilities*) is typically understood to imply assets (liabilities) that will convert to (be paid for with) cash within one year.

Current assets include cash; marketable securities held for the short term; accounts and notes receivable; inventories of merchandise, raw materials, supplies, work in process, and finished goods; and certain prepayments, such as insurance and rent paid for in advance of receiving the insurance or rental services. Noncurrent assets include property, plant, and equipment; long-term investments in securities; and intangible assets (such as patents, trademarks, and goodwill).

Current liabilities include amounts owed to suppliers (accounts payable), to employees (accrued salaries and wages), and to governmental units (income taxes payable). They also include the current portion of long-term debt—that is, the portion of notes and bonds payable that must be paid within the next year. Noncurrent liabilities include interest-bearing obligations with maturities beyond one year (such as bonds, mortgages, and similar debts), some obligations under long-term leases, some retirement obligations, and certain noninterest-bearing obligations such as deferred income taxes.

BALANCE SHEET FORMAT: U.S. GAAP

The typical balance sheet lists assets first, followed by liabilities and shareholders' equity. In U.S. GAAP, the balance sheet lists assets from most liquid to least liquid, where *liquid* refers to the ease of converting the asset into cash. A balance sheet prepared according to U.S. GAAP begins with the most liquid of the current assets—cash and cash equivalents—and then moves to other current assets, followed by noncurrent assets. Similarly, the balance sheet lists liabilities starting with those that the firm will discharge soonest (the most current or closest to maturity liabilities) and ending with those that it will pay latest (the most noncurrent or distant to maturity liabilities).

¹The financial reporting requirements of the jurisdiction in which the firm is domiciled determine how often it must prepare a balance sheet, file it with the appropriate regulatory body, and make it publicly available. For example, in the United States, all firms with publicly traded debt or equity securities must prepare and file financial reports quarterly. Elsewhere, semiannual reporting is more common. Nothing precludes more frequent financial statement preparation, for example, to support internal decision making or negotiations with a lender, such as bank.

Exhibit 1.1 (in **Chapter 1**) shows Great Deal's balance sheet, prepared under U.S. GAAP as of February 27, 2013. The balance sheet begins with cash and cash equivalents of \$1,826 million. The balance sheet then lists, in order, the remaining current assets in decreasing order of liquidity, with merchandise inventories (of \$5,486 million) and other assets (of \$1,144 million) the least liquid of the current assets. The list of noncurrent assets follows:

■ Property, plant, and equipment, net	\$4,070 million
■ Goodwill	2,452 million
■ Trade names	159 million
■ Customer relationships	279 million
■ Equity and other investments	324 million
■ Other assets	452 million

In the liability section, Great Deal shows that the liability it must discharge soonest is accounts payable (amounts owed to suppliers and vendors) of \$5,276 million. Next is Great Deal's obligation for unredeemed gift cards.² Next in line for payment are amounts earned by employees but not yet paid (accrued compensation and related expenses) of \$544 million. Moving down the balance sheet, Great Deal reports long-term debt of \$1,104 million. This amount excludes payments of long-term debt due in the coming year. The current portion of long-term debt (\$35 million) appears among the current liabilities. Within the shareholders' equity section, Great Deal reports \$5,797 million of retained earnings, the source for net assets that Great Deal has generated through its earnings process over time (its cumulative earnings) and has not distributed to shareholders.

Using Great Deal's balance sheet, we can verify the balance sheet equation: assets (\$18,302 million) equal liabilities (the sum of \$8,978, \$1,256 and \$1,104, or \$11,338 million) plus shareholders' equity (\$6,964 million).

BALANCE SHEET FORMAT: IFRS

International Financial Reporting Standards (IFRS) permit but do not require the reverse ordering of balance sheets, with both assets and liabilities listed from least liquid to most liquid. This reporting format appears in **Exhibit 1.5** (in **Chapter 1**), which contains the balance sheet for Thames Limited. Thames's balance sheet dated December 31, 2013, begins with its least liquid asset—goodwill—of €2,986.9 million. Thames's tangible noncurrent assets (€1,338.3 million) consist of land, buildings, plant, and equipment. Moving down the list, Thames's most liquid assets are its cash at bank and equivalents, €1,960.1 million at the end of 2013. We can use Thames's balance sheet and the balance sheet equation to verify that assets (€18,007.6 million) equal the sum of liabilities (the sum of €2,766.9 and €11,486.9, or €14,253.8 million) plus shareholders' equity (€3,753.8 million).

Although Great Deal uses U.S. GAAP and Thames uses IFRS, their balance sheets present similar information, albeit in differing orders. Many questions remain unanswered, however, including the following:

1. Which resources does a firm recognize as assets, and which obligations does it recognize as liabilities? That is, what conditions must an item meet to be an asset or a liability on a balance sheet? Do these conditions differ between U.S. GAAP and IFRS?
2. How do firms measure assets and liabilities? That is, what number appears next to the item on the balance sheet? Do measurements differ between U.S. GAAP and IFRS?
3. How do firms measure shareholders' equity? What are the components of shareholders' equity, and how do they appear on the balance sheet? Are those components, their measurement, and their display the same under U.S. GAAP and IFRS?

The rest of this chapter addresses these questions. We distinguish, where necessary, between the requirements of U.S. GAAP and IFRS. We refer to pronouncements from either the FASB or the IASB as *authoritative guidance*.

²Accounting for gift cards is discussed in **Chapter 5**.

ASSET RECOGNITION AND MEASUREMENT

ASSET DEFINITION AND RECOGNITION

Asset recognition means that the item is an asset on the balance sheet. For an item to be an asset, it must meet both (1) the definition of an asset and (2) the asset recognition criteria.³

- **Asset Definition** An asset is a probable⁴ future economic benefit that a firm controls because of a past event or transaction. The definition of an asset is similar in U.S. GAAP and IFRS.
- **Asset Recognition** The three criteria for asset recognition are the following:
 1. The firm owns or controls the right to use the item.
 2. The right to use the item arises as a result of a past transaction or exchange.
 3. The future benefit has a relevant measurement attribute that can be quantified with sufficient reliability.

Although all assets provide future benefits, not all future benefits are assets. This is because a future benefit that qualifies as an asset must meet the three recognition criteria, the first two of which are part of the definition of an asset. The third criterion pertains to recognition: an item that meets the definition of an asset must be measurable with sufficient reliability. *Reliability* of a reported amount means that the amount corresponds to what it purports to represent and is reasonably free from error and bias, in the sense that multiple independent measurers would agree on the amount.⁵ For example, if a reported amount on a balance sheet purports to represent the acquisition cost of inventory, a reliable measure would be the price paid. That price can be confirmed by independent measurers as the amount quoted in the invoice for the inventories. Neither U.S. GAAP nor IFRS specifies what amount of reliability is sufficient, suggesting that this judgment is context-specific and subjective.

To understand how these conditions influence asset recognition, we consider several examples of transactions that result in future economic benefits but may not result in the recognition of an asset. Except where noted, both U.S. GAAP and IFRS require the same accounting treatment for these examples.

Example 1 Great Deal sold a television for \$1,000 to a customer who purchased the television using a Great Deal credit card. Although Great Deal has not received any cash, it has received a future economic benefit in the form of a promise of cash payment. Great Deal would recognize this benefit as an asset (an account receivable) because it has a right to receive a definite amount of cash (\$1,000) as a result of the sale of the television.

Example 2 Thames purchased new equipment it will use in producing communications systems. The new equipment substitutes a robotically controlled machining process for a labor-intensive process. Thames agreed to give the equipment vendor 200,000 shares of its common stock in payment for the equipment. At the time of the transaction, Thames's stock price was €32 per share. Thames will recognize the new equipment as an asset because it controls the equipment and it expects to receive future benefits in the form of reduced labor costs.⁶

³The U.S. GAAP asset definition is in FASB, *Statement of Financial Accounting Concepts No. 6*, "Elements of Financial Statements," 1985, par. 26; and its asset recognition criteria are in FASB, *Statement of Financial Accounting Concepts No. 5*, "Recognition and Measurement in Financial Statements of Business Enterprises," 1984, par. 63–65. The IFRS asset definition is in the IASB *Framework for the Preparation and Presentation of Financial Statements*, "Chapter 4, the remaining text," 2010, par. 4.4–4.14.

⁴The word *probable* is used to capture the idea that commercial arrangements are often uncertain as to outcome. It refers to items or events that can be reasonably expected to occur or believed to have occurred based on available evidence.

⁵The FASB and IASB issued conceptual guidance in September 2010 that uses the term "representational faithfulness" to capture the ideas associated with reliability in the asset recognition criteria. The U.S. GAAP conceptual guidance on representational faithfulness is in FASB, *Statement of Financial Accounting Concepts No. 8*, "Conceptual Framework for Financial Reporting, Chapter 3, Qualitative Characteristics of Useful Financial Information," 2010, par. QC12–QC16. The IFRS conceptual guidance is in IASB, *Framework for the Preparation and Presentation of Financial Statements*, Chapter 3, 2010, par. QC12–QC16.

⁶We discuss the amount Thames will report on its balance sheet for this equipment in a later section. This is the asset *measurement* question.

Example 3 Thames sold 16 defense systems for a total of €80 million. The customer agreed to pay Thames €20 million at the time Thames delivered the systems and the rest in four equal installments at the end of each of the next four years. At the time of the final payment, Thames will transfer the legal title of the systems to the customer. Although Thames has legal title to the systems during the next four years, it has no rights to use them. Provided the customer makes the required payments, the future benefits of the systems reside with, and will stay with, the customer. Thus, the systems are the customer's assets, not Thames's. Thames will recognize as assets the €20 million cash received at the time of delivery and a receivable for the remaining payments.

Example 4 Some customers regularly purchase electronic items from Great Deal because of Great Deal's separate service, the Nerd Squad, which assists customers in installing these items. Great Deal hires talented staff and invests in training to ensure high-quality service. Management believes that the service leads to more loyal customers who are more willing to purchase at Great Deal in the future. Thus, satisfied Nerd Squad customers provide future benefits in the form of increased sales of Great Deal products. Neither the expected future sales nor the satisfied customers are assets on Great Deal's balance sheet because Great Deal cannot control customers' future purchasing decisions.

Example 5 Continuing with **Example 4**, the Nerd Squad itself provides a future benefit. It is not, however, an asset on Great Deal's balance sheet because it is typically not possible to own or control a human being. (In the case of sporting teams, it is the contracts with players and not the players themselves that are the assets.)

Example 6 Like many companies, Great Deal has developed and maintains a list of its customers and their characteristics, which it uses for mailing catalogs and other promotions. Creating and maintaining a customer list takes time and resources, so a decision to have one entails certain investments and continuing expenditures. The expected benefits of a customer list are the future cash inflows associated with purchases made by listed customers after they receive their promotional materials. The larger and more detailed the customer list, and the more high-purchasing customers it includes, the greater are the expected future benefits of the customer list. An internally developed customer list is not an asset, however. Although the item meets the *definition* of an asset, it does not meet the third *recognition* criterion, because the firm cannot measure the future economic benefits of the list with sufficient reliability. The firm would, however, recognize an *externally purchased* customer list as an asset and measure (record) it at the purchase price. Great Deal includes the purchase price of these acquired customer lists in the asset called Customer Relationships on its balance sheet.⁷

Example 7 Thames plans to open a manufacturing facility in Poland next year. It has identified an existing facility that could be purchased for €500 million and modified for its use at an additional cost of €200 million. Thames plans to use a combination of cash on hand and cash recently raised from issuing common shares to finance the transaction. Although Thames has firm plans to buy and modify the facility, it is not an asset until Thames has obtained control of it as a result of a transaction with the current owner.

Example 8 Continuing with the transaction proposed in **Example 7**, suppose both the owner of the facility and Thames sign a contract in which they *promise* to transact—to sell and purchase the facility—one year later. Such an exchange of promises is an **executory contract**, an exchange of promises for mutual performance in the future that neither party has yet begun to perform. Thames has acquired the rights to the future benefits arising from the facility, but the contract is unexecuted by both the facility owner (who must relinquish control of the facility) and Thames (who must pay the agreed purchase price). Executory contracts are typically not assets or liabilities until one or both of the contracting parties begin to complete their contractual obligations.

Example 9 Continuing with the transaction described in **Examples 7** and **8**, suppose that Thames pays the owner of the facility €100 million toward the purchase of the facility. Thames

⁷**Chapter 10** discusses the distinction between internally developed and acquired intangible assets in more detail and introduces certain differences between U.S. GAAP and IFRS.

has partially performed under the contract and will recognize an asset to the extent of its partial performance. In this example, Thames would recognize an asset called Deposit Paid on Factory for €100 million.

ASSET MEASUREMENT

Each asset on a balance sheet has an associated monetary amount (the measurement of that asset). Authoritative guidance specifies bases for measuring those monetary amounts. In this section, we describe several measurement bases that U.S. GAAP and IFRS use.

Acquisition Cost or Historical Cost **Acquisition (historical) cost** is the amount of cash paid (or the cash equivalent value of other forms of payment) to acquire an asset. Most assets are initially measured using acquisition cost, which the firm can generally document by reference to contracts, invoices, and canceled checks. The reason for initially measuring an asset at its acquisition cost is that the buyer believes the asset will generate future benefits (that is, increased cash inflows or reduced cash outflows) that are at least as large as the purchase price. Otherwise, the buyer would have an immediate economic loss and would have no incentive to acquire the asset. This reasoning implies that acquisition cost sets the lower bound on the asset's expected future benefits.

In the case of a nonfinancial asset, the acquisition cost includes the invoice price and all expenditures made or obligations incurred to prepare that asset for use. For example, transportation costs, installation costs, handling charges, and brokerage fees are among the costs incurred to place the asset into service. The acquisition cost of some equipment is shown in the following illustration:

Invoice Price of Equipment	€400,000
Less: 2% Discount for Prompt Cash Payment.	(8,000)
Net Invoice Price	€392,000
Transportation Cost	13,800
Installation Cost	27,000
Total Cost	<u>€432,800</u>

The firm may acquire assets by paying cash or exchanging other items of value. For example, a firm may exchange its own shares to acquire an asset. If the consideration exchanged for an asset is not cash, the acquisition cost is the fair value of the consideration given or the fair value of the asset received, whichever the firm can more reliably measure.

Example 10 Return to **Example 2**, where Thames purchased new equipment in exchange for 200,000 shares of its common stock. At the time of the transaction, Thames's stock price was €32 per share. Thames would record the equipment on its balance sheet at €6.4 million (= 200,000 shares × €32 per share), the fair value of the shares exchanged, plus any additional costs incurred to prepare the equipment for its intended use.

Current Replacement Cost The **current replacement cost** of an asset is the amount a firm would have to pay to obtain another asset with identical service potential; it is therefore an **entry value** that reflects economic conditions at the measurement date. This measurement base is often used in U.S. GAAP to measure inventories whose usefulness (typically, in terms of salability) to the firm has declined below the acquisition cost of the inventories. Because inventories are purchased or produced frequently, measuring their current replacement cost may be as simple as consulting suppliers' catalogs or price lists.⁸

Net Realizable Value **Net realizable value** is the net cash (selling price less selling costs) that the firm would receive if it sold the asset today in an arm's-length transaction. Net

⁸Chapter 9 discusses inventory in more detail.

realizable value is an example of an **exit value**, because it reflects a price that the firm would receive when an asset leaves the firm. Net realizable value is similar, but not identical, to fair value.

Fair Value U.S. GAAP and IFRS define **fair value** as “the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.”⁹ Unlike net realizable value, fair value does not reduce the price for selling costs or other transaction costs in the measurement.¹⁰ The notion of fair value as an *exit* value applies to both assets and liabilities.

The fair value of an asset is an **opportunity cost** in the sense that fair value reflects an amount that the firm could receive if it sold the asset today. Fair value is the amount the firm forgoes by not selling the asset. Fair value reflects a *market participant* perspective. This means that the firm measures fair value based on how market participants would use the asset, not how management intends to use the asset. In addition, fair value reflects current economic conditions, as opposed to acquisition cost, which reflects the economic conditions that existed when the firm acquired the asset. As a result, fair value can (and does) change, with the frequency, direction, and magnitude of changes determined by economic conditions.

Fair value is also a hypothetical amount (that is, the price at which the firm *could* sell the asset), so it does not require data from actual transactions for the asset’s measurement. In contrast, acquisition costs of assets are typically readily observable from records of actual transactions, such as invoices. While fair value measurements need not be based on actual transactions, some fair values are more observable than others. For example, some assets, such as commodities and securities, trade on well-organized and active markets, so the firm can observe fair values. In contrast, for assets that do not trade in active markets, the firm must estimate fair values. In estimating these fair values, authoritative guidance requires that the firm use measurement techniques, inputs, and assumptions that market participants would use if they were arriving at a transaction price. We discuss next an example of a technique that firms can use to arrive at a fair value measurement when active markets for the asset do not exist.

Present Value of Future Net Cash Flows Present value is the amount that results from using an appropriate interest rate to discount one or more future cash flows to the present.¹¹ The **present value of future cash flows** is the sum of the present values of the individual future cash inflows and outflows associated with an asset. Present value is not a measurement attribute. Rather, it is a means of arriving at a measurement attribute. In particular, if the inputs to a present value calculation—the discount rate and the future cash inflows and outflows—are amounts that market participants would use, the firm can use this technique to arrive at a fair value estimate. The present value of an asset is always less than the sum of the undiscounted future cash inflows and outflows associated with that asset, because some amount of implied interest cost is always associated with the use of cash and other resources. The following example presents the general approach.

Example 11 Great Deal lends \$1 million to Worldwide Retailers Inc. The terms of the loan call for Worldwide to pay Great Deal \$130,000 at the end of each of the next five years and an additional \$655,000 at the end of the fifth year. The total amount of cash that Worldwide will pay Great Deal is \$1.305 million ($= [\$130,000 \times 5] + \$655,000$). The present value of the future cash inflows associated with this loan differs as the discount rate changes. If the discount rate is the rate that a market participant would demand in an arm’s-length lending arrangement, the present value is an estimate of the fair value of the loan. For example, if that rate is 7%, the present value, which is also the fair value, is calculated as follows (assuming each cash flow occurs at the end of the year indicated, in millions):

⁹The U.S. GAAP definition is in ASC 820-10, par. 35-2. The application of fair value measurement to assets is in ASC 820-10, par. 35-10 to 35-15. The IFRS definition is in IASB, *IFRS 13, Fair Value Measurement*, 2011, Appendix A.

¹⁰The reason for excluding transaction costs is that they are not an attribute of an asset or liability but rather costs incurred to sell an asset or transfer a liability. They are thus specific to the transaction and not to the asset or liability that is the subject of the transaction.

¹¹The **Appendix** discusses the technique.

First Year:	$\$130 \div (1.07)^1 = \$$	121.50
Second Year:	$130 \div (1.07)^2 =$	113.55
Third Year:	$130 \div (1.07)^3 =$	106.12
Fourth Year:	$130 \div (1.07)^4 =$	99.18
Fifth Year:	$130 \div (1.07)^5 =$	92.69
Fifth Year:	$655 \div (1.07)^5 =$	<u>467.01</u>
Total:		<u><u>\$1,000.05</u></u>

The sum of these discounted future cash flows is \$1 million (after rounding). From a business perspective, Great Deal is lending \$1 million with the expectation that it will receive both the principal of \$1 million and an annual return of 7%. Great Deal expects to receive a total *undiscounted* cash inflow from Worldwide of \$1.305 (= [$\130×5] + \$655) million. These undiscounted cash inflows include both principal and interest at 7%.¹²

We can use the discounted cash flow technique to illustrate estimating a fair value in the absence of an observable market price. First, the firm must identify the amounts of future cash flows. In the loan example, the cash flows are specified in the loan contract. As a practical matter, however, the future cash flows associated with an asset may depend on numerous factors, including technological innovation, product introductions by competitors, and inflation rates. Even in the example of the loan with contractually specified cash flows, there is some possibility that Worldwide will default (that is, not make the promised payments). In a fair value measurement, Great Deal would use a market participant perspective to estimate the probability of default.

Second, the firm selects the appropriate rate to discount the future cash flows to the present. To provide an estimate of the asset's fair value, the discount rate should be the rate that market participants would use, reflecting current economic conditions that include expectations of inflation and any uncertainty about the cash flows of the asset.

MEASUREMENT APPROACHES FOR SPECIFIC ASSETS

The same asset can have different measurements for tax purposes, for financial reporting purposes, and for internal managerial decision-making purposes. In addition, certain specialized business situations call for specific measurements; for example, an insurance policy on a warehouse might specify that the insured amount of the warehouse is the cost to replace the warehouse. In this textbook we focus on measurement for financial reporting.

Both U.S. GAAP and IFRS specify the asset measurement basis for financial reporting. As noted earlier in this chapter, acquisition cost is the initial measurement basis for most assets. Subsequent measurement depends on the type of asset. We discuss several broad categories of assets and their measurements next.

Financial assets include cash and claims to cash, such as accounts receivable. The most liquid financial asset, cash, appears as the amount of cash on hand or in the bank. Accounts receivable from customers appears as the amount of cash the firm expects to collect. If the time until collection extends beyond one year, by convention the firm discounts the expected future cash inflow to a present value; otherwise, the measurement of receivables ignores implied interest. Because the firm collects most accounts receivable within one to three months, the convention to ignore discounting for these assets rests on a lack of materiality.¹³

In addition to cash and receivables, many firms also have financial assets in the form of investments in marketable securities, typically bonds and stocks issued by other firms. The firm initially measures these assets at acquisition cost, but the subsequent measurement depends on the nature of the investment.¹⁴

Nonfinancial assets are tangible and intangible resources that firms use in operations to generate future cash flows. Common examples include inventory, land, buildings, machinery, licenses, and patents. Firms initially measure nonfinancial assets at acquisition cost; they

¹²We discuss fair value measurement more fully in **Chapter 11**. Other techniques for estimating the fair value of assets go beyond the scope of this textbook.

¹³**Chapter 1** discusses the concept of materiality.

¹⁴**Chapter 13** discusses marketable security investments.

subsequently reduce this amount to reflect the consumption over time of the asset's economic benefits as well as to recognize declines in the fair value of the asset.

The first adjustment results from the *depreciation* process, which allocates the asset's acquisition cost less estimated salvage value to the periods during which the asset provides future benefits (also called the asset's useful life). Depreciation allocates the asset's cost to the periods of benefit. The depreciation process always results in reducing the asset's carrying value,¹⁵ from initial acquisition cost to salvage value. The purpose of depreciation is to allocate costs to periods of benefit, not to track changes in fair value.

The second adjustment results from *impairment*, which occurs when an asset's fair value falls below its carrying value. Both U.S. GAAP and IFRS require that firms test assets for impairment and have specific rules for measuring the amount of an impairment loss.¹⁶

THREE CONVENTIONS UNDERLYING ASSET MEASUREMENT

Three conventions underlie the measurement of asset values: going concern, relevance and reliability, and conservatism.

GOING CONCERN

Accounting presumes that a firm will remain in operation long enough to carry out its current plans. A firm that is a **going concern** will realize changes in the fair values of its assets by using those assets or by selling them. **Realized** means converted to cash. An item is **recognized**, for accounting purposes, when it is displayed in the financial statements.¹⁷ For most assets, U.S. GAAP and IFRS require the following recognition rules:

- *Value decreases.* The firm recognizes value decreases as impairment losses when the decreases occur before it realizes the collection of the reduced cash flows. Thus, firms generally recognize unrealized losses.
- *Value increases.* U.S. GAAP forbids the recognition of unrealized gains from increases in the fair value of most nonfinancial assets. The firm can realize the fair value increase by selling the appreciated asset. IFRS permits, but does not require, firms to recognize unrealized increases in the fair values of some nonfinancial assets on their balance sheets. That is, IFRS permits firms to *revalue* certain nonfinancial assets to fair values that exceed carrying values.¹⁸

RELEVANCE AND RELIABILITY

Recall the third criterion for asset recognition: the future benefit has a relevant measurement basis that the firm can quantify with sufficient reliability.¹⁹ **Relevance** means that the information could affect the decisions of users of financial reports. Relevant financial accounting information helps users form predictions or correct their expectations. Standard setters must choose which of an asset's several attributes, such as historical cost, fair value, and market value, provides the most relevant measurement, subject to reliability considerations.

Reliability means that the information presented is reasonably free from error and bias and faithfully represents what it purports to represent. Standard setters view acquisition cost measurements as providing reliable information that faithfully represents the economic value

¹⁵An asset's carrying value is its value reported on the balance sheet.

¹⁶Chapter 10 discusses these requirements more fully.

¹⁷The distinction between recognition and realization is essential to accrual accounting, hence the importance accorded to recognition criteria. Firms recognize items that qualify for inclusion in the financial statements when they enter the financial statements, regardless of when those items are realized by conversion to cash.

¹⁸Chapter 10 discusses these cases.

¹⁹Relevance and representational faithfulness are discussed in FASB, *Statement of Financial Accounting Concepts No. 8*, "Chapter 3, Qualitative Characteristics of Accounting Information," 2010, par. QC6–QC10 and par. QC12–QC16, respectively.

sacrificed to acquire an asset. Reliability encompasses also the ability to verify the measured amount. Acquisition cost is reliable in that different accountants will likely agree on the same amount because each of them can verify the acquisition cost by reference to contracts and invoices. Fair value measurements can be reliable, for example, if the asset being measured trades in an active market. Because many assets do not trade in active markets, some accountants view acquisition costs as more reliable than fair values.

CONSERVATISM

Historically, **conservatism** has described a preference for financial reporting such “that possible errors in measurement be in the direction of understatement rather than overstatement of net income and net assets.”²⁰ Conservatism is the basis for the practice of reporting certain assets at the lower of acquisition cost or fair value.²¹ The requirement to test assets for impairment and to record impairment charges rests on the notion that a balance sheet carrying value should not exceed the amount of cash that the firm expects to receive by using or selling the asset. Acquisition cost measurement combined with impairment testing thus provides conservative (that is, lower) asset balance sheet values.

The general acceptance of these three conventions does not justify them. Some managers appear to prefer acquisition cost measures to fair value measures because the latter usually cause more volatility in reported income. The increased volatility results from fair values reflecting changes in economic conditions as they occur. For the most part, U.S. GAAP and IFRS specify the measurement basis. We will note the cases in which management has a choice of measurement basis.

▶ PROBLEM 4.1 FOR SELF-STUDY

Asset recognition and measurement. The following transactions relate to Polo Ralph Lauren (“Polo”). For each, indicate whether the transaction immediately gives rise to an asset for Polo and, if so, state the account title and amount Polo will record.

- a. Polo spends \$16 million to advertise a new line of perfume in the expectation that the advertisements will attract new customers.
- b. Polo signs a contract with Nordstrom for the distribution of its fall line of clothes. Polo promises to distribute certain jeans exclusively through Nordstrom, and Nordstrom promises to display and market the jeans in a manner designed to increase sales. Polo estimates the fair value of the contract to be \$4 million.
- c. Polo invests \$24 million in research and development related to its paint line of business.
- d. Polo spends \$800,000 on tuition assistance programs for its middle-level managers to obtain MBAs. Historically, 80% of the managers who seek MBAs receive them and remain with the company five years or more.
- e. Polo acquires and occupies a warehouse outside Seattle by signing a mortgage payable for \$75 million. Legal title for the warehouse remains with the bank (the holder of the mortgage) because Polo has yet not made all the required mortgage payments.

²⁰Accounting Principles Board, *Statement 4*, par. 171, as discussed in FASB, *Statement of Financial Accounting Concepts No. 2*, “Qualitative Characteristics of Accounting Information,” 1980. The latter was superseded in 2010 by *Statement of Financial Accounting Concepts No. 8*. Later, you will learn that no accounting method can report smaller income in all periods. The more conservative method reports lower income in earlier periods and higher income in later periods.

²¹As previously discussed, IFRS but not U.S. GAAP permits, but does not require, certain assets to be measured at fair value even when fair value exceeds acquisition cost. In this sense, IFRS is less conservative than U.S. GAAP.

LIABILITY RECOGNITION AND MEASUREMENT

LIABILITY DEFINITION AND RECOGNITION

A liability arises when a firm receives goods or services and, in exchange, promises to pay the provider of those goods or services a reasonably definite amount at a reasonably definite future time.²² All accounting liabilities are obligations, but not all obligations are liabilities. To be a liability, an item must meet both (1) the definition of a liability and (2) recognition criteria:

- **Liability Definition** Liabilities are probable²³ future sacrifices of economic benefits arising from present obligations to transfer assets or provide services to other entities in the future as a result of a past event or transaction.
- **Liability Recognition** The criteria for liability recognition are as follows:
 1. The item represents a present obligation, not a potential future commitment or intent.
 2. The obligation must exist as a result of a past transaction or exchange, called the *obligating event*.
 3. The obligation must require a probable future economic resource that the firm has little or no discretion to avoid.
 4. The obligation must have a relevant measurement base that the firm can quantify with sufficient reliability.

To help you better understand liability recognition, we consider several examples of transactions that result in obligations, and some that do not result in obligations.

Example 12 Great Deal purchased merchandise inventory from Sony and agreed to pay Sony \$180,000 within 30 days. This obligation is a liability on Great Deal's balance sheet because Great Deal received the goods and must pay a definite amount, \$180,000, at a reasonably definite future time, within 30 days. Because Great Deal has promised to pay the amount within one year, it is a current liability (accounts payable).

Example 13 Great Deal borrowed \$50 million by issuing long-term bonds whose terms require that on February 27 of each year, Great Deal pays 10% of the amount borrowed. In addition, Great Deal must repay the \$50 million amount borrowed in 20 years. The \$50 million obligation is a liability because Great Deal received the cash and must repay the debt. Great Deal reports the borrowed amount as a noncurrent liability on its balance sheet (included in Long-Term Debt) until the end of the 19th year, at which time Great Deal will reclassify the \$50 million as a current liability (included in Current Portion of Long-Term Debt). In contrast, the annual 10% interest becomes a liability as time passes. By the end of each year, Great Deal will record (accrue) \$5 million ($= 0.10 \times \50 million) as Interest Payable, a current liability. The obligating event is the passage of time.

Example 14 Thames received an advance of €60 million from a customer for navigation air systems that Thames will deliver next year. The cash advance creates a liability for Thames of €60 million. The obligating event is Thames's receipt of the cash. Thames has incurred an obligation to deliver the air systems next year, or it must return the cash advance.²⁴ Because it expects to discharge this obligation within 12 months by delivering the systems, Thames classifies the €60 million as a current liability on its balance sheet, included in Advance Payments from Customers.²⁵

²²The U.S. GAAP liability definition is in FASB, *Statement of Financial Accounting Concepts No. 6*, "Elements of Financial Statements," 1985, par. 35, and its recognition criteria are in *Statement of Financial Accounting Concepts No. 5*, "Recognition and Measurement in Financial Statements of Business Enterprises," 1984, par. 63–65. The IFRS liability definition is in International Accounting Standards Board, *Framework for the Preparation and Presentation of Financial Statements*, 1989, par. 60–64. The **Glossary** discusses the U.S. GAAP and IFRS definitions of a liability.

²³As was the case with the asset definition, the word *probable* as used in the liability definition refers to something that can be reasonably expected or believed based on available evidence.

²⁴In some transactions of this sort, the manufacturer does not have the option to return the cash. If the manufacturer does not provide the goods as promised, it may be liable for court-awarded damages based on the economic harm the customer suffered from not getting the promised items.

²⁵We discuss this account more fully in **Chapter 8**.

Example 15 Thames signs an agreement with its employees' labor union, promising to increase wages by 6% and to increase medical benefits. Although this agreement creates an obligation, it does not immediately create a liability because the obligating event has not yet occurred. That event occurs when employees provide labor services that require Thames to pay wages and provide medical benefits. As employees work, Thames recognizes a liability on its balance sheet.

The agreement in **Example 15** is a **mutually unexecuted contract** (also called an **executory contract**) because neither Thames nor its employees have performed under the contract. Firms usually do not recognize the obligations created by mutually unexecuted contracts as accounting liabilities, nor do they recognize the benefits of such contracts as assets, as illustrated previously in **Example 8**.²⁶

Example 16 Thames provides a five-year warranty on the communication systems it builds and sells. The promise to provide repair services under the warranty agreement creates an obligation, resulting from the sale of the communication systems. The selling price for a Thames system includes payment for future warranty services even if the invoice does not explicitly show the portion of the total purchase price associated with the warranty. At the time of sale, Thames receives a benefit (the cash collected from the customer), but it has not fulfilled its obligations with respect to the warranty period. It will fulfill those obligations over the five-year warranty period. Based on past experience, Thames estimates both the proportion of customers who will seek services under the warranty agreement and the expected cost of providing the warranty services. These estimates form the basis for measuring the warranty liability.²⁷

Example 17 A customer files a suit claiming damages of €10 million from faulty defense systems that Thames manufactured. The case has not yet gone to trial, so no court has yet rendered a decision or verdict. Firms do not recognize unsettled lawsuits as liabilities unless the firm judges that it will probably lose, and the loss estimate satisfies some other conditions. If the firm judges the eventual loss to be less than probable or if it judges the loss to be probable but it cannot estimate the amount of payment, it will not recognize a liability. That is, unless it is *probable* that Thames will have to pay *and* Thames can estimate the amount of payment, then it will not record a liability for the lawsuit. Thames will disclose in notes to its financial statements the existence of the lawsuit (if it is material) and the potential for future payments.

The warranty in **Example 16** illustrates a liability that is of uncertain timing or amount or both. *Probable* as a recognition criterion for liabilities with uncertain amount, uncertain timing, or both has a different meaning from the meaning in the asset and liability definition. The IFRS guidance for recognizing these liabilities defines *probable* as more likely than not, which implies more than 50%. Applying this criterion to **Example 16**, Thames would determine whether the likelihood that customers will require warranty services exceeds 50% and, if yes, Thames will recognize a warranty liability. U.S. GAAP does not set a precise threshold to *probable*; in practice the rule of thumb is approximately 80%. That is, a liability with uncertain amount or timing or both must be at least 80% likely in order to recognize it. U.S. GAAP and IFRS require similar (but not identical) measurements for these liabilities. Both specify that the firm will recognize the liability (that is, measure the liability) at the most likely amount.²⁸

The lawsuit (**Example 17**) illustrates an obligation that a firm would not recognize under either U.S. GAAP or IFRS, although the firm would disclose the lawsuit in the notes if it judged it to be material. In this example, the firm does not judge the obligation arising from the lawsuit as probable and it cannot reasonably estimate the amount.

Arrangements of the sort illustrated in **Examples 16** and **17** are common. For example, most firms that sell products include some kind of warranty (**Example 16**). Arrangements like the lawsuit in **Example 17** are often disclosed, but not recognized, because they do not meet the criteria specified for the accounting recognition of liabilities. For example, Great Deal displays a commitment and contingencies line on the balance sheet; information about this item is in Note 13. Thames's balance sheet (**Exhibit 1.5**) displays an account called Reserves for Contingencies; additional information is in Note 22.²⁹

²⁶Chapter 12 discusses the accounting treatment of some of these arrangements.

²⁷Chapter 9 discusses warranty liabilities.

²⁸In U.S. GAAP, if there is a range of possible outcomes and no amount in this range is more likely than any other amount, the firm will recognize the minimum of the range. Under IFRS, if the firm's arrangement involves a large number of items, such as a warranty, the firm will recognize the expected value.

²⁹The Glossary contains a discussion of *reserve*, as that word is used in accounting.

SUMMARY OF LIABILITY RECOGNITION

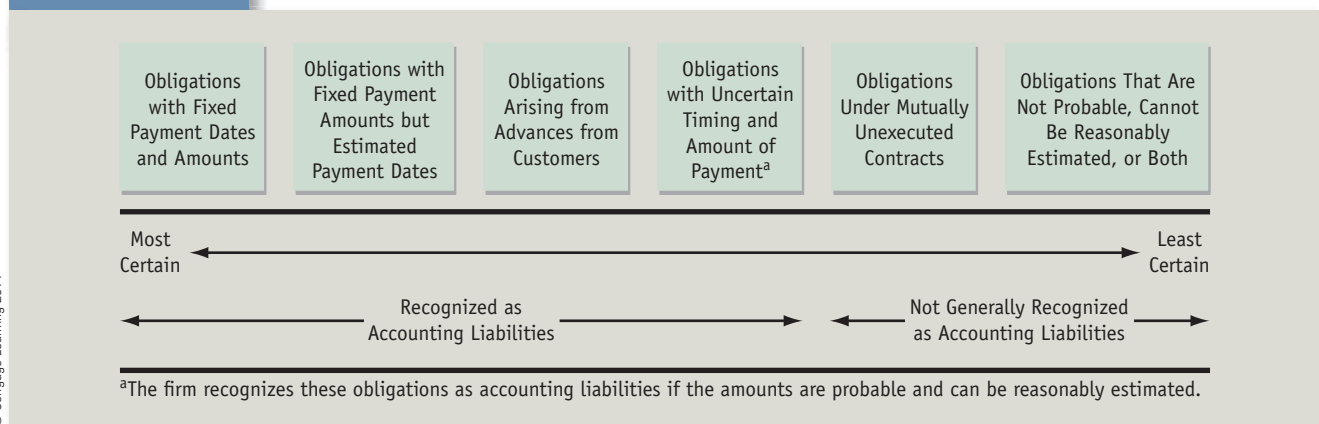
Examples 12–17 illustrate obligations with varying amounts of uncertainty with respect to amount and timing, as well as measurement. **Figure 4.1** classifies obligations into six categories based on these characteristics. As the examples and the figure illustrate, obligations vary considerably in the extent to which they contain uncertainties. In some cases, authoritative guidance precludes the recognition of uncertain obligations that do not meet a probability threshold.

LIABILITY MEASUREMENT

Many liabilities are financial, requiring settlement with cash or other assets. The firm reports those due within one year or less at the amount required to discharge the obligation. If the payment dates extend more than one year into the future (for example, the case of the Great Deal bonds in **Example 13**), the firm records the liability on the balance sheet as a noncurrent liability, measured at the present value of the future cash outflows.³⁰

A liability that requires delivering goods or rendering services, rather than paying cash, is nonfinancial. The warranty liability in **Example 16** is nonfinancial because Thames has agreed to provide services—system repairs. The cash advance in **Example 14** is also nonfinancial, because Thames will settle the liability by delivering systems. Other examples of nonfinancial liabilities arising from cash payments from customers include amounts received by retailers for (as yet) unused gift cards, by magazine publishers for future magazine deliveries, by theatrical and sports teams for future performances or games, by landlords for future rental services, and by airlines for tickets purchased in advance. Account titles used for liabilities of this type include Advances from Customers, Deferred Revenues, Unearned Revenues, and Deferred Income.³¹

FIGURE 4.1 Classification of Obligations by Degree of Certainty



► PROBLEM 4.2 FOR SELF-STUDY

Liability recognition and measurement. The following transactions relate to Polo Ralph Lauren (“Polo”). For each, indicate whether the transaction immediately gives rise to a liability and, if so, state the account title and amount that Polo would recognize.

- a. Polo’s boutique stores sell gift cards for \$100 per card. Assume that gift cards expire three years from the date of issuance.

(continued)

³⁰Chapter 11 describes the measurement of debt obligations.

³¹Although these account titles are common in practice, we do not use all of them in this book. The word *revenue* in the account titles may lead the reader to infer that the firm has recognized items in income, when, in fact, this is not the case.

- b. Refer to **Problem 4.1 for Self-Study**, part a. Polo receives an invoice for \$16 million in advertising services from the supplier, an agency that specializes in television advertisements.
- c. Attorneys have notified Polo that the firm is a defendant in a lawsuit claiming \$12 million in lost profits and damages, based on allegations that Polo unlawfully used fashion designs belonging to the plaintiff. Polo's lawyers predict that the court will probably find Polo liable in the lawsuit, and Polo's management estimates that the range of damages is \$2 million to \$10 million, with all amounts in this range equally likely.
- d. A two-week strike by employees closed down one of Polo's clothing manufacturing facilities. As a result, Polo could not deliver merchandise totaling \$20 million, for which it has already received payment.

SHAREHOLDERS' EQUITY MEASUREMENT AND DISCLOSURE

Shareholders' equity is a residual interest or claim. That is, the owners (shareholders) of a firm have a claim on assets not required to meet the claims of creditors.³² The measurement of the assets and liabilities on the balance sheet therefore determines the measurement of total shareholders' equity. The accounting process also provides an independent derivation of the amount of shareholders' equity.

Corporate laws within many jurisdictions require that, within shareholders' equity, firms distinguish between amounts received from owners and amounts generated by operations that the firm has not distributed to owners. The amounts that firms report as received from owners equal the amounts the firm received when it originally issued those shares. Many firms further disaggregate the initial amounts they received from shareholders for common shares into the **par** or **nominal** or **stated value** of the shares and the amounts received in excess of this value, called **additional paid-in capital (APIC)**, **share premium**, or **capital contributed in excess of par value**.³³ We use *additional paid-in capital*, or *APIC*, to refer to this account. The firm assigns the par value of a share of stock at an amount it chooses. Par values are typically small, often \$1 or less per share, and rarely equal the amounts the firm receives when it issues the shares. The sum of the par value amount and the additional paid-in capital amount is the total amount received from shareholders when the firm first issued the shares. This total amount is also called **contributed capital** or **paid-in capital**.

For example, Great Deal reports that the par value of its common shares is \$42 million. Great Deal also reports additional paid-in capital of \$441 million. Total paid-in capital for Great Deal is, therefore, the sum of \$42 million and \$441 million, or \$483 million.

Any subsequent sale of common shares from one investor to another (such as occurs on stock exchanges) has no effect on the recorded amounts of shareholders' equity. The issuing firm does *not* take part in those transactions. As a result, in a rising stock market, the total paid-in capital amount reported on a balance sheet will usually be less than the current market value of the common shares. The balance sheet amount of shareholders' equity does not, and is not intended to, provide a measure of the market value of common equity. The user can, however, learn the market value of a publicly traded firm by looking up the most recent share price (as reported in various online services) and then multiplying this share price times the number of common shares outstanding, as reported on the balance sheet.

Retained earnings measures the net assets generated by a firm from operations exceeding dividends declared. The Retained Earnings account accumulates the amounts of these undistributed earnings over time. When the firm has accumulated losses, rather than profits, the account is typically called **Accumulated Deficit** rather than Retained Earnings.

³²FASB, *Statement of Financial Accounting Concepts No. 6*, "Elements of Financial Statements," 1985, par. 49.

³³The distinction between par value and additional paid-in capital has legal significance but not economic significance. For this reason, some firms report a single account, often called common stock, equal to the sum of par value and additional paid-in capital.

Retained earnings are a source of financing for assets. Retained earnings are not cash or other assets. In contrast to liabilities and contributed capital, which common practice refers to as *external financing*, common practice refers to retained earnings as *internal financing*.

Example 18 Hoskins Limited legally incorporated on January 1, 2011. In its initial public offering (IPO), the firm issued 15,000 shares of €0.10 par value common stock for €10 cash per share. During 2011, Hoskins generated net income of €30,000 and paid dividends of €10,000. The shareholders' equity section of the balance sheet of Hoskins on December 31, 2011, is as follows:

Common Stock (at par value of €0.10 per share, 15,000 shares issued and outstanding)	€ 1,500
Additional Paid-In Capital	148,500
Retained Earnings	<u>20,000</u>
Total Shareholders' Equity	<u>€170,000</u>

The €1,500 amount reported as the total par value of the shares is the par value per share times the total number of shares issued, or €0.10 per share \times 15,000 shares. The €148,500 amount reported as additional paid-in capital (APIC) is the difference between the proceeds from the sale of stock of €150,000 ($= 15,000 \times €10$) and the par value of €1,500. The €20,000 amount of retained earnings reported by Hoskins for its first year of operations is the amount of undistributed earnings, €30,000 of income minus €10,000 dividends.

Example 19 Continuing **Example 18**, assume it is now December 31, 2012. During 2012, Hoskins issued another 5,000 shares of stock at €12 per share, earned net income of €5,000, and paid dividends of €10,000. The shareholders' equity section of the balance sheet of Hoskins on December 31, 2012, is as follows:

Common Stock (at par value of €0.10 per share, 20,000 shares issued and outstanding)	€ 2,000
Additional Paid-In Capital	208,000
Retained Earnings	<u>15,000</u>
Total Shareholders' Equity	<u>€225,000</u>

The €2,000 amount reported as total par value is the par value per share times the total number of shares issued, or €0.10 per share \times 20,000 shares. This €2,000 amount is the sum of the par value of 1,500 shares issued in 2011 plus the par value of 5,000 shares issued in 2012. The €208,000 amount reported as additional paid-in capital (APIC) is the sum of the €148,500 of APIC from 2011 plus the €59,500 of APIC from the issuance of 5,000 shares in 2012 ($€12$ per share \times 5,000 shares minus $€500$ par value, or $€60,000 - €500$). The increase in Hoskins's share price, from €10 per share in 2011 to €12 per share in 2012, does not change the amount reported on the balance sheet for the 15,000 shares issued in 2011. The firm does not change the amounts reported for total paid-in capital (par value and APIC) to reflect changes in share price. Rather, those amounts reflect the share price at the time the firm originally issued the shares.³⁴

Hoskins's retained earnings at the end of 2012 of €15,000 is the cumulative undistributed earnings through its second year of operations, equal to the beginning-of-2012 retained earnings of €20,000, plus 2012 earnings of €5,000, minus 2012 dividends of €10,000. Because dividends reduce retained earnings, not current earnings, a firm can declare and pay a dividend that exceeds its net income for the year. A firm could even pay dividends in a year that it generated a loss.

³⁴Chapter 15 describes more complex transactions that affect additional paid-in capital.

SUMMARY

The balance sheet displays three classes of items: assets, liabilities, and shareholders' equity. These items depict a firm's financial position at a point in time. Broadly speaking, assets represent future economic benefits in the form of resources available to carry out operations. Liabilities and shareholders' equity show the sources of funds the firm used to acquire the resources and show the claims on them. The following are two key factors in preparing a balance sheet:

1. Deciding whether items meet the definitions and recognition criteria for assets and liabilities and, if so,
2. Deciding how to measure the items.

For a firm to recognize an asset, a resource must represent a future economic benefit that the firm controls as a result of a past transaction or exchange, and the firm must be able to measure the resource with sufficient reliability. For a firm to recognize an obligation as a liability, the obligation must impose a future economic sacrifice because of a past event or transaction that the firm has little or no discretion to avoid, and the firm must be able to measure the obligation with sufficient reliability. Shareholders' equity reports the amounts of funding attributable to owners' contributions and resulting from the retention of net assets generated by earnings. Shareholders' equity equals the difference between total assets and total liabilities and typically comprises contributed (paid-in) capital and retained earnings.

Most asset and liability definitions and recognition criteria—particularly for items that we focus on in this book—are similar under U.S. GAAP and IFRS. Once an item has met the appropriate recognition criteria, the firm must measure the amount it will report on the balance sheet. Measurement depends on the item being considered. U.S. GAAP and IFRS specify how a firm should measure each asset and liability. Firms generally measure financial assets at their cash equivalent amounts, while they generally report nonfinancial assets at acquisition cost, reduced for use and impairment.

SOLUTIONS TO SELF-STUDY PROBLEMS

SUGGESTED SOLUTION TO PROBLEM 4.1 FOR SELF-STUDY

(Polo Ralph Lauren; asset recognition and measurement)

- a. Polo does not recognize an asset. U.S. GAAP and IFRS do not allow firms to capitalize most advertising expenditures as assets (the exception is certain direct-response marketing costs³⁵) because of the uncertainty of future benefits and measurement uncertainty.
- b. Polo does not recognize an asset. U.S. GAAP and IFRS do not allow firms to record exchanges of promises as assets.
- c. U.S. GAAP and IFRS do not permit the recognition of research expenditures as assets because of the uncertainty of future benefits and measurement uncertainty. This accounting issue is discussed more fully in **Chapter 10**.
- d. Polo does not recognize an asset because of the uncertainty of future benefits and measurement uncertainty, as given in part **a**.
- e. Polo will recognize an asset, Land and Building, and measure it at \$75 million. Polo must allocate the purchase price between the land and the building because the building is depreciable and the land is not. Polo will likely base the allocation on appraisals for the land and building evaluated separately. Legal passage of title is not necessary to justify asset

³⁵Direct-response marketing costs consist primarily of advertisements, including coupons for a firm's products or services. U.S. GAAP concluded that firms can measure the probable future economic benefits of these costs with a sufficient degree of reliability, so the firm should recognize the costs as assets on the balance sheet. The firm then amortizes the asset over its expected period of future benefits; in the case of coupons, this service life is three months. (American Institute of Certified Public Accounting, Accounting Standards Executive Committee, Statement of Position 937, *Reporting on Advertising Costs*, 1994.)

recognition. Polo has acquired the rights to use the land and building and can sustain those rights as long as it makes the required payments on the mortgage obligation.

SUGGESTED SOLUTION TO PROBLEM 4.2 FOR SELF-STUDY

(Polo Ralph Lauren; liability recognition and measurement)

- Polo would record a liability, Advances from Customers, measured as the amount received on the sale of the gift cards.
- Polo would record a liability, Accounts Payable, measured as \$16 million.
- Polo will recognize a liability, measured at the minimum point of the range, applying U.S. GAAP.
- At the time it received the payment, Polo recorded a liability for \$20 million, Advances from Customers. Because the firm has already recognized a liability, and assuming the customers are willing to wait for the delayed delivery, the firm need recognize no additional liability.

KEY TERMS AND CONCEPTS

Balance sheet equation	Nonfinancial assets
Financing structure	Going concern
Operating cycle	Realized
Current assets	Recognized
Noncurrent assets	Relevance
Current liabilities	Reliability
Noncurrent liabilities	Conservatism
Asset definition	Liability definition
Asset recognition	Liability recognition
Executory contract	Mutually unexecuted contract, executory contract
Acquisition (historical) cost	Shareholders' equity
Current replacement cost	Par, nominal, or stated value
Entry value	Additional paid-in capital (APIC), share premium, capital contributed in excess of par value
Net realizable value	Contributed capital, paid-in capital
Exit value	Retained earnings
Fair value	Accumulated deficit
Opportunity cost	
Present value of future cash flows	
Financial assets	

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

- Review the meaning of the terms and concepts listed in **Key Terms and Concepts**.
- Who might the accounting convention of conservatism hurt?
- One of the criteria for the recognition of an asset or a liability is that there be an exchange. What justification can you see for this requirement?
- Identify the underlying accounting principle that guides the items to include in the acquisition cost of inventories, equipment, buildings, and other similar assets. What is the rationale for this accounting principle?
- Accounting typically does not recognize either assets or liabilities for mutually unexecuted contracts. What justification can you see for this treatment?

6. Accounting treats cash discounts taken on the purchase of merchandise or equipment as a reduction in the amount recorded for the assets acquired. What justification can you see for this treatment?
7. A group of investors owns an office building that it rents unfurnished to tenants. It purchased the building five years previously from a construction company. At that time, it expected the building to have a useful life of 40 years. Indicate the procedures you might follow to ascertain the measurement amount for this building under each of the following measurement approaches:
 - a. Acquisition cost.
 - b. Adjusted acquisition cost (reduced for services already consumed).
 - c. Current replacement cost.
 - d. Net realizable value.
 - e. Fair value.
8. Some of the assets of one firm correspond to the liabilities of another firm. For example, an account receivable on the seller's balance sheet is an account payable on the buyer's balance sheet. For each of the following items, indicate whether it is an asset or a liability and give the corresponding account title on the balance sheet of the other party to the transaction:
 - a. Advances from Customers.
 - b. Bonds Payable.
 - c. Interest Receivable.
 - d. Prepaid Insurance.
 - e. Rental Fees Received in Advance.
9. For each of the following items, indicate whether the item meets all of the criteria in the definition of a liability. If so, how does the firm value it?
 - a. Interest accrued but not paid on a note.
 - b. Advances from customers for goods and services to be delivered later.
 - c. Confirmed orders from customers for goods and services to be delivered later.
 - d. Product warranties.
 - e. Damages the company must pay if it loses a pending lawsuit.
 - f. Contractual promises to purchase specific quantities of natural gas for each of the next 10 years.
 - g. Promises by an airline to provide flights in the future in exchange for miles flown, if customers accumulate a certain number of miles at regular fares.
10. What is the amount of the liability that the company recognizes in each of the following independent cases?
 - a. A plaintiff files a lawsuit against the company. The probability is 90% that the company will lose. If it loses, the amount of the loss will most likely be \$100,000.
 - b. A cereal company issues coupons that can be exchanged for boxes of cereal. It issues 1 million coupons that promise the retailer who redeems the coupons \$1 per coupon. The probability of redemption of any one coupon is 9%.
11. The word *probable* appears in the definitions of assets and liabilities and in the recognition criteria for liabilities with uncertain amount and/or timing.
 - a. What is the meaning of *probable* as used in the definitions of assets and liabilities?
 - b. How does the meaning of *probable* as used in the recognition criteria for liabilities with uncertain amount and/or timing differ between U.S. GAAP and IFRS?

EXERCISES

12. **Balance sheet formats.** The following information is based on the balance sheet of Aracel, a Brazilian manufacturer of paper pulp, for Year 6. Aracel applies U.S. GAAP and reports its results in thousands of U.S. dollars. (Adapted from the financial statements of Aracruz Celulose.)

Inventories	\$ 202,704
Other Current Assets	132,782
Other Long-Term Liabilities	350,761
Property, Plant, and Equipment, net	2,151,212
Retained Earnings	1,293,301
Cash and Short-Term Investments	579,643
Goodwill	192,035
Common Stock (no par)	295,501
Preferred Stock	614,496
Other Noncurrent Assets	451,757
Current Liabilities	286,819
Long-Term Debt	1,155,050
Accounts Receivable	285,795

- a. Prepare a balance sheet for Aracel for Year 6 assuming the firm follows U.S. GAAP.
 - b. Prepare a balance sheet for Aracel for Year 6 assuming the firm follows IFRS.
- 13. Balance sheet formats.** The following information is based on the fiscal Year 7 balance sheet of Delicious Foods Group, a Belgian food distributor. Delicious Foods applies IFRS and reports its results in millions of euros. Prepare a balance sheet for Delicious Foods that uses a format common to firms reporting under U.S. GAAP. (Adapted from the financial statements of Delhaize Group.)

<i>Assets</i>	
Goodwill	€2,445.7
Intangible Assets	552.1
Property, Plant, and Equipment	3,383.1
Other Noncurrent Assets	244.0
	<u>€6,624.9</u>
Inventories	€1,262.0
Receivables	564.6
Other Current Assets	121.5
Cash and Cash Equivalents	248.9
	<u>€2,197.0</u>
Total Assets	<u>€8,821.9</u>
<i>Liabilities and Equity</i>	
Share Capital	€ 50.1
Share Premium	2,698.9
Retained Earnings	2,355.3
Other Reserves and Adjustments	(1,428.3)
Total Shareholders' Equity	<u>€3,676.0</u>
Long-Term Debt	€1,911.7
Obligations Under Finance Leases	595.9
Provisions	207.2
Other Noncurrent Liabilities	210.4
Total Noncurrent Liabilities	<u>€2,925.2</u>
Short-Term Borrowings	€ 41.5
Long-Term Debt, Current Portion	108.9
Obligations Under Finance Lease, Current Portion	39.0
Provisions	41.8
Income Tax Payable	58.7
Accounts Payable	1,435.8
Accrued Expenses	375.7
	(continued)

Other Current Liabilities	119.3
Total Current Liabilities	<u>€2,220.7</u>
Total Liabilities	<u>€5,145.9</u>
Total Liabilities and Equity	<u>€8,821.9</u>

14. Classifying financial statement accounts. The balance sheet or income statement classifies various items in one of the following ways:

- CA—Current assets
- NA—Noncurrent assets
- CL—Current liabilities
- NL—Noncurrent liabilities
- CC—Contributed capital
- RE—Retained earnings
- NI—Income statement item (revenue or expense)
- X—Item generally does not appear on a balance sheet or an income statement

Using the abbreviations in the previous list, indicate the classification of each of the following items under U.S. GAAP and IFRS. If the classifications differ between U.S. GAAP and IFRS, indicate what that difference would be.

- a. Factory.
- b. Interest revenue.
- c. Treasury shares repurchased by a corporation.
- d. Research and development expenditures.
- e. Automobiles used by sales staff.
- f. Cash on hand.
- g. Promise to a vendor to buy inventory from it next period.
- h. Commissions earned by sales staff.
- i. Supplies inventory.
- j. Note payable, due in three months.
- k. Increase in fair value of land held.
- l. Dividends declared.
- m. Income taxes owed to state or city government.
- n. Note payable, due in six years.
- o. The portion of the note payable in part **n** that is due next year.

15. Balance sheet relations. Jennings Group, a Malaysian investment management company, reported the following data for four recent years. Jennings applies Malaysian accounting standards and reports its results in millions of ringgit (RM). Compute the missing balance sheet amounts for each of the four years. In answering this question, assume that Jennings uses U.S. GAAP. (Adapted from the financial statements of Genting Group.)

	Year 7	Year 6	Year 5	Year 4
Noncurrent Assets	?	RM18,717.4	RM11,289.1	RM9,713.9
Shareholders' Equity	RM21,537.3	16,666.9	9,002.0	?
Total Assets	?	28,224.7	?	?
Current Liabilities	?	4,351.3	1,494.2	1,755.2
Current Assets	10,999.2	?	?	6,882.6
Noncurrent Liabilities	5,721.7	?	?	3,540.7
Total Liabilities and Shareholders' Equity	30,178.9	?	18,491.3	?

16. Balance sheet relations. Selected balance sheet amounts for Kyoto Corporation, a Japanese construction firm, are shown in the following table for four recent years. Kyoto applies

Japanese accounting standards and reports its results in billions of yen (¥). Compute the missing balance sheet amounts for each of the four years. In answering this question, assume that Kyoto uses IFRS. (Adapted from the financial statements of Kajima Corporation.)

	Year 10	Year 9	Year 8	Year 7
Total Assets	¥2,107	?	?	¥1,870
Noncurrent Liabilities	437	?	¥ 411	467
Noncurrent Assets	?	¥ 773	703	?
Total Liabilities.	?	?	1,583	?
Current Liabilities	1,318	1,148	?	1,172
Shareholders' Equity	?	298	220	?
Current Assets	1,323	1,133	?	1,110
Total Liabilities and Shareholders' Equity	?	?	?	?

17. Balance sheet relations. Selected data based on the balance sheet amounts for Finmest Corporation, a Finnish paper company, for four recent years appear in the following table. Finmest applies IFRS and reports its results in millions of euros (€). Compute the missing balance sheet amounts for each of the four years. (Adapted from the financial statements of Metso Corporation.)

	Year 11	Year 10	Year 9	Year 8
Current Assets	€3,357	€2,995	? ^a	€2,097
Noncurrent Assets	?	1,973	?	?
Total Liabilities.	?	?	?	?
Total Assets	?	?	€3,904	?
Current Liabilities	? ^c	2,610	1,802	1,466
Noncurrent Liabilities	957	?	?	1,109
Total Shareholders' Equity.	?	?	1,292	?
Contributed Capital	?	711	?	634
Retained Earnings	910	? ^b	553	361
Total Liabilities and Shareholders' Equity	5,254	?	?	?

^aCurrent Assets – Current Liabilities = €675.
^bNet income for 2006 is €252 and dividends are €66.
^cCurrent Assets – Current Liabilities = €651.

- 18. Asset and liability recognition and measurement.** After winning *America's Next Top Model*, Danielle Evans signed a contract with Ford Models, was named a spokesmodel for Cover-Girl, and signed a contract for a photo spread in *Elle* magazine. Although Ford did not disclose the details of the contract, typical terms would provide for payments of \$500,000 for each of the next three years. Assume that the present value of these payments is \$1.2 million. At the time that Danielle signs the contract, Ford Models also provides her with a BMW M3 convertible sports car, valued at \$70,000. How should Ford Models treat this contract at the time of signing?
- 19. Asset recognition and measurement.** Duke University, a U.S. university, provides tuition support for up to eight semesters of undergraduate education for up to two children of faculty and staff of the university. To qualify for this tuition benefit, the faculty or staff member must have at least seven contiguous years of full-time service and be a full-time employee when the benefits are received. Duke estimates that this tuition benefit helps retain and attract employees. How should Duke treat its expenditures on tuition benefits each year?
- 20. Asset measurement.** Assume that Jennifer's Juice (JJ), an organic food retailer in the United States, recently purchased a new refrigeration system for its Chapel Hill, North Carolina, store. JJ paid \$1.3 million for the refrigeration unit and paid an additional \$120,000 to

modify the unit to meet its specific needs. JJ paid \$55,000 for the transportation and installation of the unit, plus \$48,000 for an annual insurance premium for the first year, which begins next month. Finally, assume that JJ hired a refrigeration technician, who is charged with the maintenance of the unit; that technician's annual salary is \$80,000. How much should JJ record as the acquisition cost of the refrigeration unit? Describe the treatment of any of the above amounts that you did not include in the acquisition cost of the unit.

- 21. Recognition of a loss contingency.** Consider the following hypothetical series of events. While shopping in a Nordstrom store on July 5, 2013, a customer slips on the escalator and falls, sustaining back and neck injuries. On January 15, 2014, the customer sues Nordstrom for \$1 million. The case comes to trial on April 30, 2014. The jury renders its verdict on June 15, 2014, and finds Nordstrom liable for negligence. The jury grants a damage award of \$400,000 to the customer. Nordstrom, on June 25, 2014, appeals the decision to a higher court, which rules on November 1, 2014, that the trial court should retry the case. The trial court retries the case beginning March 21, 2015. Another jury, on April 20, 2015, again finds Nordstrom liable for negligence and awards \$500,000. On May 15, 2015, the store pays the \$500,000 judgment. Nordstrom applies U.S. GAAP.
- When, if at all, should Nordstrom recognize a liability from these events? If Nordstrom recognizes a liability, what is the amount? Explain your reasoning.
 - How would your response change if Nordstrom were applying IFRS?
- 22. Asset recognition and measurement.** The following hypothetical transactions relate to Nestlé S.A., the Swiss chocolate manufacturer. Indicate whether each transaction immediately gives rise to an asset of the company under U.S. GAAP and separately, under IFRS. If Nestlé recognizes an asset, state the account title, the amount, and the classification of the asset on the balance sheet as either a current asset or a noncurrent asset. Nestlé reports its results in millions of Swiss francs (CHF).
- Nestlé invests CHF800 million in a government bond. The bond has a maturity value of CHF1,000 million in five years, and Nestlé intends to hold the bond to maturity.
 - Two months prior to its year-end, Nestlé pays its insurer CHF240 million to cover annual premiums on its European plants.
 - Nestlé pays a developer in the Czech Republic CHF6 million for an option to purchase a tract of land on which it intends to build a warehouse to serve the eastern European markets. The price of the land is CHF450 million.
 - Nestlé signs a four-year employment agreement with its chief executive officer for a package valued at CHF17.4 million per year. Of this amount, CHF3.1 million is base salary; the rest is expected bonus and deferred compensation arrangements. The contract period begins next month.
 - Nestlé spends CHF80 million on research and development (R&D) related to a new, low-calorie chocolate; 60% of the total amount was spent on pure research, the rest on development. The R&D is successful, and the firm is able to acquire a patent on the new formula. The cost of filing the paperwork and other procedures to obtain the patent is CHF0.5 million.
 - Nestlé received notice that a cocoa supplier had shipped by freight cocoa beans invoiced at CHF700 million with payment due in 30 days. The supplier retains title to the cocoa beans until received by Nestlé.
- 23. Asset recognition and measurement.** The following hypothetical transactions relate to Ryanair Holdings, Plc. (Ryanair), an Irish airline. Indicate whether each transaction immediately gives rise to an asset under U.S. GAAP and, separately, IFRS. If Ryanair recognizes an asset, state the account title, the amount, and the classification of the asset on the balance sheet as either a current asset or a noncurrent asset. Ryanair reports its results in thousands of euros.
- Ryanair's board of directors decides to purchase 10 Boeing 777 airplanes, costing €640 million each.
 - Ryanair places an order with Boeing for 10 Boeing 777 airplanes, costing €640 million each.
 - Ryanair pays Boeing €60 million as a deposit on the aircraft it ordered in part b.
 - Ryanair spends €50 million to obtain landing rights for the next five years at Beijing Capital International Airport.

- e. Ryanair writes a check for €12 million and assumes a mortgage from its bank for another €65 million to purchase new ground equipment costing €77 million.
- f. Ryanair issues common stock with a market value of €160 million to acquire used aircraft from a bankrupt regional airline. The carrying value of the equipment on the bankrupt airline's books is €75 million.
- 24. Liability recognition and measurement.** The following transactions relate to Hana Microelectronic Public Company Limited (Hana Microelectronic), an electronics and semiconductor firm headquartered in Thailand. Indicate whether each transaction immediately gives rise to a liability under U.S. GAAP and, separately, IFRS. If accounting recognizes a liability, state the account title, the amount, and the classification of the liability on the balance sheet as either a current liability or a noncurrent liability. Hana Microelectronic reports its results in millions of baht (Bt).
- a. Hana Microelectronic agrees to purchase land and a manufacturing plant from Fujitsu Limited for Bt3,000 million.
- b. Hana Microelectronic receives a check for Bt168 million from a customer for the delivery of merchandise that Hana Microelectronic will produce next month.
- c. Refer to the event in part **b**, except now assume that Hana Microelectronic will deliver half of the merchandise next month and the remainder three years from now.
- d. During the year, Hana Microelectronic issues 6 million shares of Bt1 par value common stock, for Bt62 million.
- e. Hana Microelectronic borrows Bt24 million from a local bank, payable in equal installments over the next three years and bearing interest at the annual rate of 9%.
- f. Hana Microelectronic signs a contract to purchase at least Bt45 million of merchandise from a particular supplier over the next two years.
- g. Refer to part **f**, and assume Hana Microelectronic places an order for Bt15 million of this merchandise.
- 25. Liability recognition and measurement.** The following hypothetical events relate to the Berlin Philharmonic. Indicate whether each transaction immediately gives rise to a liability under U.S. GAAP and, separately, IFRS. If the Berlin Philharmonic recognizes a liability, state the account title, the amount, and the classification of the liability on the balance sheet as either a current liability or a noncurrent liability. The Berlin Philharmonic reports its results in euros.
- a. The Berlin Philharmonic receives €3,040,000 for season tickets sold for next season.
- b. The Berlin Philharmonic places an order with a printing company totaling €185,000 for symphony performance programs for next season.
- c. The Berlin Philharmonic receives the programs ordered in part **b**, along with an invoice for €185,000.
- d. The Berlin Philharmonic receives notice from its attorneys that a loyal customer attending a concert last season and sitting in the first row of the symphony hall has sued the Berlin Philharmonic for €10 million, claiming hearing loss. The customer normally sits farther back, but staff asked her to move forward for this particular concert because of damage to the regular seat.
- e. The Berlin Philharmonic signs a three-year contract with its first violinist at a salary of €140,000 per year.
- f. The Berlin Philharmonic signs a five-year contract with Sir Simon Rattle, present conductor of the Philharmonic, to be the spokesman for the symphony at the end of his current contract, in 2012. Under the terms of the deal, the Berlin Philharmonic will pay compensation of €2 million a year to Sir Simon, beginning in 2012. Sir Simon will earn this compensation regardless of whether the Berlin Philharmonic asks him to perform any speaking engagements each year.
- 26. Recognition and measurement of a loss contingency.** Consider the following hypothetical scenario for Royal Dutch Shell (Shell), a Netherlands-based oil and gas firm. One of Shell's oil rig platforms collapsed, creating damage to the seafloor as well as environmental damage to surrounding ocean water. Given the following additional information, what amount, if any should Shell recognize as a liability were it applying U.S. GAAP and, separately, IFRS? Shell reports its results in millions of U.S. dollars.

- a. Engineers who have examined the damaged site believe that much of the damage will naturally resolve itself, leading them to conclude that there is a 90% chance that damages are zero. They further estimate there is a 10% chance that the forces of nature will not resolve the damages, which will require additional intervention at a cost of \$10 million.
- b. Upon further analysis, the engineers in part **a** have revised their assessments. They now believe there is a 51% chance that damages will be \$5 million, and a 49% chance that damages will be zero.
- c. Environmentalists who have examined the damaged site believe that the damage is extensive and requires immediate cleanup, with the following range of damage estimates: \$25 million (probability 20%); \$300 million (probability 35%); and \$4,000 million (probability 45%).
- d. Upon further analysis, the environmentalists in part **c** have revised their assessments. They now believe there is an 85% chance that damages will be \$5,000 million and a 15% chance that they will be zero.

PROBLEMS

27. Effect of recording errors on the balance sheet equation. Magyar Telekom is a Hungarian telecommunications company. The company applies IFRS and reports its results in millions of Hungarian forints (HUF). For each of the following hypothetical transactions or events facing Magyar Telekom, indicate the effects on assets, liabilities, and shareholders' equity of *failing to record or recording incorrectly* the transaction or event. Use the notation O/S (overstated), U/S (understated), or No (no effect). For example, Magyar Telekom's failure to record the issuance of common stock for HUF10,000 cash would be shown as follows:

- Assets—U/S HUF10,000.
- Liabilities—No.
- Shareholders' equity—U/S HUF10,000.

- (1) Magyar Telekom ordered HUF5,600 million of inventory from a supplier but did not record anything in its accounts.
- (2) Magyar Telekom received the merchandise in transaction (1) and recorded it by debiting Inventory and crediting Accounts Payable for HUF6,500 million.
- (3) Magyar Telekom acquired new equipment costing HUF17,000 million by paying HUF2,500 million in cash and signing a note payable for the remainder of the purchase price. It recorded the acquisition by debiting Equipment for HUF2,500 million and crediting Cash for HUF2,500 million.
- (4) The firm paid the HUF36,000 million annual insurance premium on its headquarters building by debiting Property and crediting Cash for HUF36,000 million. The insurance period begins next month.
- (5) Magyar Telekom won a contract to supply telecommunications services to a customer next year. The value of the contract is HUF25,000 million. The customer delivered a check to Magyar Telekom in the amount of HUF6,000 million. The firm made no journal entries for these events.
- (6) The firm issued 2 million shares of its HUF100 par value common stock when the shares traded in the stock market at HUF700 per share. It issued the shares to acquire land. It recorded the transaction by debiting Land and crediting Common Stock for HUF200 million.
- (7) The firm signed a three-year employment agreement with its chairperson for an annual salary of HUF6.6 million. The employment period begins next month. The firm did not record anything in its accounts related to this agreement.

28. Effect of recording errors on the balance sheet equation. Siderúrgica Venezolana "Sivensa," S.A., is a Venezuelan steel and metalworking company. Assume that during a recent year, Sivensa recorded various transactions with the following journal entries. The company applies IFRS and reports its results in thousands of U.S. dollars. Using the notation O/S (overstated), U/S (understated), or No (no effect), indicate the effects on assets, liabilities, and shareholders' equity of any errors in Sivensa's recording of each of these transactions. For example, if Sivensa recorded the issue of \$10,000 of common stock by debiting Cash and crediting Bonds Payable, the effects of the error are as follows:

- Assets—No.
- Liabilities—O/S \$10,000.
- Shareholders' equity—U/S \$10,000.

(1)	Equipment	10,000	
	Cash		2,000
	Accounts Receivable.....		8,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+10,000					
-2,000					
-8,000					

Sivensa acquired equipment costing \$10,000 by paying \$2,000 cash and signing a note payable for \$8,000. It debited Equipment, credited Cash for \$2,000, and credited Accounts Receivable for \$8,000.

(2)	Equipment	4,000	
	Note Payable.....		4,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+4,000		+4,000			

Sivensa placed an order for equipment valued at \$4,000 that it will receive next month. Sivensa made a \$1,000 deposit when it made the order and promised to pay the rest on delivery of the equipment. Sivensa debited Equipment for \$4,000 and credited Notes Payable for \$4,000.

(3)	Cash	800	
	Accounts Receivable.....		800

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+800					
-800					

Sivensa received \$800 as a deposit from a customer and debited Cash and credited Accounts Receivable for \$800. The customer did not owe Sivensa any amounts at the time of this transaction.

(4)	Prepaid Rent	1,000	
	Rent Payable.....		1,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+1,000		+1,000			

Sivensa signed a rental agreement for warehouse space for a one-year period beginning next month. The monthly rental fee of \$1,000 is due on the first day of each month. Sivensa debited Prepaid Rent and credited Rent Payable for \$1,000.

- (5) Sivensa exchanged common stock with a market value of \$2,500 for a patent and made no journal entry to record the exchange.

(6) Merchandise Inventories	4,900	
Cash		4,900

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+4,900					
-4,900					

Sivensa acquired \$4,900 of office equipment for cash. It debited Inventory for \$4,900 and credited Cash for \$4,900.

29. Balance sheet format, terminology, and accounting methods. Exhibit 4.1 presents the balance sheet of Hathway Atlantic Airways Limited (Hathway), a Hong Kong airline, for the

EXHIBIT 4.1

Hathway Atlantic Airways Limited Balance Sheets (amounts in millions of Hong Kong dollars [HKD]) (Problem 29)

	Year ended December 31,	
	Year 11	Year 10
ASSETS AND LIABILITIES		
Noncurrent Assets and Liabilities		
Fixed Assets	HKD 62,388	HKD 57,602
Intangible Assets	7,782	7,749
Investments in Associates	10,054	8,826
Other Long-Term Receivables and Investments	3,519	3,406
	<u>83,743</u>	<u>77,583</u>
Long-Term Liabilities	(40,323)	(33,956)
Related Pledged Security Deposits	7,833	8,164
Net Long-Term Liabilities	(32,490)	(25,792)
Retirement Benefit Obligations	(268)	(170)
Deferred Taxation	(6,771)	(6,508)
	<u>(39,529)</u>	<u>(32,470)</u>
Net Noncurrent Assets	<u>44,214</u>	<u>45,113</u>
Current Assets and Liabilities		
Stock	882	789
Trade and Other Receivables	11,376	8,735
Liquid Funds	21,649	15,624
	<u>33,907</u>	<u>25,148</u>
Current Portion of Long-Term Liabilities	(4,788)	(7,503)
Related Pledged Security Deposits	910	1,352
Net Current Portion of Long-Term Liabilities	(3,878)	(6,151)
Trade and Other Payables	(14,787)	(10,999)
Unearned Transportation Revenue	(6,254)	(4,671)
Taxation	(2,475)	(2,902)
	<u>(27,394)</u>	<u>(24,723)</u>
Net Current Assets	6,513	425
Net Assets	<u>HKD 50,727</u>	<u>HKD 45,538</u>
CAPITAL AND RESERVES		
Share Capital	HKD 788	HKD 787
Reserves	49,761	44,599
Funds Attributable to Hathway Atlantic Shareholders	50,549	45,386
Minority Interests	178	152
Total Equity	<u>HKD 50,727</u>	<u>HKD 45,538</u>

fiscal years ended December 31, Years 11 and 10. This balance sheet uses the terminology, format, and accounting methods of Hong Kong Financial Reporting Standards (HKFRS). Hathway reports results in millions of Hong Kong dollars (HKD). (Adapted from the financial statements of Cathay Pacific Airways Limited.)

- a. Prepare a balance sheet for Hathway for each year, following the format and terminology commonly used by firms that apply U.S. GAAP.
 - b. Prepare a balance sheet for Hathway for each year, following the format and terminology commonly used by firms that apply IFRS.
- 30. Balance sheet format, terminology, and accounting methods. Exhibit 4.2** presents the balance sheet prepared by Infotech Limited, an Indian information technology firm, for Years 12 and 11. Infotech applies accounting standards issued by the Institute of Chartered Accountants of India and reports its results in millions of rupees (Rs. Crore). (Adapted from the financial statements of Infosys Limited.)
- a. Prepare a balance sheet for Infotech for both years, following the format and terminology commonly used by firms that apply U.S. GAAP.
 - b. Prepare a balance sheet for Infotech for both years, following the format and terminology commonly used by firms that apply IFRS.
- 31. Balance sheet format, terminology, and accounting methods. Exhibit 4.3** presents the balance sheet prepared by Svenson, a Swedish telecommunications firm, for Years 7 and 6. Svenson applies IFRS and reports its results in millions of Swedish kronor (SEK). In addition to the items reported in Svenson’s balance sheet, assume the following hypothetical information is available to you. (Adapted from the financial statements of Ericsson.)
- In Year 7 Svenson revalued land with an acquisition cost of SEK300 million upward, to its current fair value of SEK1,200 million.

EXHIBIT 4.2

**Infotech Limited
Balance Sheet
For Years 12 and 11
(amounts in millions of Rs. Crore) (Problem 30)**

	Year 12	Year 11
SOURCES OF FUNDS		
Shareholders’ Funds		
Share capital	Rs 286	Rs 286
Reserves and surplus	13,204	10,876
	<u>Rs13,490</u>	<u>Rs 11,162</u>
APPLICATION OF FUNDS		
Fixed Assets		
Original cost.	Rs 4,508	Rs 3,889
Less: Accumulated depreciation	1,837	1,739
Net book value	2,671	2,150
Add: Capital work-in-progress	1,260	957
	3,931	3,107
Investments	964	839
Deferred Tax Assets	99	79
Current Assets, Loans and Advances		
Sundry debtors	3,093	2,292
Cash and bank balances	6,429	5,470
Loans and advances.	2,705	1,199
	12,227	8,961
Less: Current Liabilities and Provisions		
Current liabilities	1,483	1,162
Provisions	2,248	662
Net Current Assets	<u>8,496</u>	<u>7,137</u>
	<u>Rs13,490</u>	<u>Rs 11,162</u>

EXHIBIT 4.3

**Svenson
Balance Sheet
For Years 7 and 6
(amounts in millions of Swedish kronor [SEK]) (Problem 31)**

	December 31,	
	Year 7	Year 6
ASSETS		
Noncurrent assets		
Intangible assets		
Capitalized development costs	SEK 3,661	SEK 4,995
Goodwill	22,826	6,824
Intellectual property rights, brands, and other intangible assets	23,958	15,649
Property, plant, and equipment	9,304	7,881
Financial assets		
Equity in joint ventures and associated companies	10,903	9,409
Other investments in shares and participations	738	721
Customer financing, noncurrent	1,012	1,921
Other financial assets, noncurrent	2,918	2,409
Deferred tax assets	11,690	13,564
	<u>87,010</u>	<u>63,373</u>
Current assets		
Inventories	22,475	21,470
Trade receivables	60,492	51,070
Customer financing, current	2,362	1,735
Other current receivables	15,062	15,012
Short-term investments	29,406	32,311
Cash and cash equivalents	28,310	29,969
	<u>158,107</u>	<u>151,567</u>
Total assets	<u>SEK245,117</u>	<u>SEK214,940</u>
EQUITY AND LIABILITIES		
Equity		
Stockholders' equity	SEK134,112	SEK120,113
Minority interest in equity of subsidiaries	940	782
	<u>135,052</u>	<u>120,895</u>
Noncurrent liabilities		
Post-employment benefits	6,188	6,968
Provisions, noncurrent	368	602
Deferred tax liabilities	2,799	382
Borrowings, noncurrent	21,320	12,904
Other noncurrent liabilities	1,714	2,868
	<u>32,389</u>	<u>23,724</u>
Current liabilities		
Provisions, current	9,358	13,280
Borrowings, current	5,896	1,680
Trade payables	17,427	18,183
Other current liabilities	44,995	37,178
	<u>77,676</u>	<u>70,321</u>
Total equity and liabilities	<u>SEK245,117</u>	<u>SEK214,940</u>

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- In Year 7 Svenson wrote down the value of equipment, with a net carrying value of SEK2,400 million, to its fair value of SEK1,600 million.
- Included in current provisions for Year 7 is the estimated loss on a lawsuit that a competitor filed, alleging patent infringement. Svenson estimates the following range of

outcomes for this lawsuit: 10% chance of damages of SEK6,000 million, 10% chance of damages of SEK2,400 million, 30% chance of damages of SEK500 million, 10% chance of damages of SEK40 million, and 40% chance of zero damages.

Prepare a balance sheet for Svenson for Year 7, following the format, terminology, and accounting methods required by U.S. GAAP. Ignore any income tax effects of any revisions to reported amounts.

32. **Balance sheet format, terminology, and accounting methods.** Exhibit 4.4 presents the balance sheet of Paul Loren Company for Years 10 and 9. This balance sheet uses the terminology,

EXHIBIT 4.4

**Paul Loren Company
Balance Sheets
For Years 10 and 9
(amounts in millions of US\$) (Problem 32)**

	Year 10	Year 9
ASSETS		
Current Assets		
Cash and cash equivalents	\$ 563.1	\$ 481.2
Short-term investments	584.1	338.7
Accounts receivable, net of allowances of \$206.1 and \$190.9 million . . .	381.9	474.9
Inventories	504.0	525.1
Deferred tax assets	103.0	101.8
Prepaid expenses and other	<u>139.7</u>	<u>135.0</u>
Total Current Assets	2,275.8	2,056.7
Noncurrent investments	75.5	29.7
Property and equipment, net	697.2	651.6
Deferred tax assets	101.9	102.8
Goodwill	986.6	966.4
Intangible assets, net	363.2	348.9
Other assets	<u>148.7</u>	<u>200.4</u>
Total Assets	<u>\$ 4,648.9</u>	<u>\$4,356.5</u>
LIABILITIES AND STOCKHOLDERS' EQUITY		
Current Liabilities		
Accounts payable	\$ 149.8	\$ 165.9
Income tax payable	37.8	35.9
Accrued expenses and other	<u>559.7</u>	<u>472.3</u>
Total Current Liabilities	747.3	674.1
Long-Term Debt	747.3	674.1
Deferred Tax Liabilities	282.1	406.4
Other Noncurrent Liabilities	<u>126.0</u>	<u>154.8</u>
Total Liabilities	<u>1,902.7</u>	<u>1,909.4</u>
STOCKHOLDERS' EQUITY:		
Class A common stock, par value \$0.01 per share; 75.7 million and 72.3 million shares issued; 56.1 million and 55.9 million shares outstanding	0.8	0.7
Class B common stock, par value \$0.01 per share; 42.1 million and 43.3 million shares issued and outstanding	0.4	0.4
Additional paid-in capital	1,243.8	1,108.4
Retained earnings	2,544.9	2,177.5
Treasury stock, Class A, at cost (19.6 million and 16.4 million shares)	(1,197.7)	(966.7)
Accumulated other comprehensive income	<u>154.0</u>	<u>126.8</u>
Total Stockholders' Equity	<u>2,746.2</u>	<u>2,447.1</u>
Total Liabilities and Stockholders' Equity	<u>\$ 4,648.9</u>	<u>\$4,356.5</u>

format, and accounting methods of U.S. GAAP, and Paul Loren reports results in millions of U.S. dollars. (Adapted from the financial statements of Polo Ralph Lauren.)

In addition to the items reported in Paul Loren's balance sheet, assume the following hypothetical information is available to you:

- In Year 10 Paul Loren revalued a building with an acquisition cost of \$200 million downward, to its current fair value of \$182 million.
 - In Year 10 Paul Loren wrote up the value of inventory, with a carrying value of \$135 million, to its fair value of \$165 million.
 - Included in commitments and contingencies for Year 10 is a lawsuit filed against Paul Loren for breach of contract. Paul Loren estimates the following range of outcomes for this lawsuit: 70% chance of damages of \$100 million, 20% chance of damages of \$500 million, and 10% chance of damages of \$1 billion.
- a. Prepare a balance sheet for Paul Loren for Year 10, following the format, terminology, and accounting methods required by U.S. GAAP. Ignore any income tax effects of any revisions to reported amounts.
 - b. How, if at all, would your answer to part a differ if Paul Loren used IFRS?

Income Statement: Reporting the Results of Operating Activities

1. Understand the classifications of revenues and expenses on the income statement.
2. Understand the timing of revenue and expense recognition and their measurement.
3. Understand the concept of comprehensive income and the relation between net income and comprehensive income.

LEARNING OBJECTIVES

The income statement reports **net income** (or **net loss**) for a time period, such as a quarter or a year. Net income (also called **earnings** or **profit**) equals revenues minus expenses plus gains minus losses.¹ This chapter focuses on revenues and expenses. **Revenues** reflect the increase in shareholders' equity resulting from the increase in net assets (assets less liabilities) that a firm receives from its customers when it sells goods or renders services. **Expenses** reflect the decrease in shareholders' equity resulting from the decrease in the net assets consumed in generating revenues. As a measure of performance, revenues reflect the value of goods sold and services rendered by a firm, and expenses reflect the efforts required to create and deliver those goods and services. Users of financial statements analyze net income because it summarizes how well a firm transforms efforts (expenses) into salable output (revenues), with larger net income indicating better performance.

This chapter considers the measurement principles and accounting procedures that underlie the recognition of revenues and expenses. Our discussion focuses on simple revenue recognition.² We also discuss typical ways income statements classify and display items. We conclude by contrasting comprehensive income with net income.

UNDERLYING CONCEPTS AND TERMINOLOGY

Chapter 3 introduces the income statement, one of the principal financial statements. The income statement is also called the *statement of operations*, the *statement of operating activity*, or the *statement of profit and loss*. Unlike the balance sheet, which displays assets, liabilities, and shareholders' equity at a point in time, the income statement reflects the results of operations during an accounting period. The accounting period is the time period between the beginning balance sheet and the ending balance sheet. For example, **Exhibit 1.2** shows Great Deal's income statement for

¹The FASB uses the term *earnings* in *Statement of Financial Accounting Concepts No. 5*, "Recognition and Measurement in Financial Statements of Business Enterprises," 1984, for example, in par. 33–44. The IASB uses the term *profit* in *International Accounting Standard 1*, "Presentation of Financial Statements," revised 2003, for example, in par. 82–88. Many preparers of financial statements use *net income* to refer to this concept, and we will follow this convention with the understanding that net income, profit, and earnings all refer to the same item.

²**Chapter 8** contains a more detailed discussion of the criteria firms use to decide when to recognize revenue (timing) and how much revenue to recognize (measurement).

the years ending February 27, 2013, February 28, 2012, and February 27, 2011. The income statement reflects *changes* in net assets *during* the one-year accounting period between the two balance sheet dates. Stated differently, the income statement presents a summary measure of the increments from revenues and the decrements from expenses that occurred *during* the accounting period. In contrast, the balance sheet displays the *levels* of assets, liabilities, and shareholders' equity *as of* the date of the report. The equation linking the balance sheet and income statement (discussed in **Chapter 3**) captures this distinction:

$$\begin{array}{r} \text{Retained Earnings} \\ \text{(beginning)} \end{array} + \text{Net Income} - \text{Dividends} = \begin{array}{r} \text{Retained Earnings} \\ \text{(ending)} \end{array}$$

or

$$\begin{array}{r} \text{Retained Earnings} \\ \text{(ending)} \end{array} - \begin{array}{r} \text{Retained Earnings} \\ \text{(beginning)} \end{array} = \text{Net Income} - \text{Dividends}$$

or

$$\text{Change in Retained Earnings} = \text{Net Income} - \text{Dividends}$$

This equation shows that the change in Retained Earnings equals the change in net assets, which is equal to net income adjusted for dividends. For the year ended February 27, 2013, Great Deal reports net income of \$1,317 million and dividends of \$234 million. Using the above equation, Great Deal's net income minus dividends for fiscal 2012 was \$1,083 million (= \$1,317 million – \$234 million), exactly the change in retained earnings between fiscal 2012 and fiscal 2011 calculated from its balance sheets (\$1,083 million = \$5,797 million – \$4,714 million).

INCOME STATEMENT DISPLAY

Income statements items are grouped by broad categories of revenues and expenses. The income statement begins with revenues followed by expenses. U.S. GAAP and IFRS requirements for the presentation of income statements are similar, except that:

- Other than separating revenues from expenses, U.S. GAAP provides little guidance about which items the firm must separately display or their order. IFRS requires separate display of revenues, financing costs (for example, interest expense), income tax expense, profit or loss for the period, and certain other items.
- Both U.S. GAAP and IFRS require the separate display of items whose size, nature, or frequency of occurrence is necessary for accurately portraying performance.
- Both U.S. GAAP and IFRS require separate display of items related to discontinued operations,³ as well as the portion of profit or loss attributable to the minority interest.⁴
- IFRS permits firms to present expenses by either nature or function. U.S. GAAP is silent on this issue, but the Securities and Exchange Commission requires registrants to classify expenses by function.⁵

To illustrate differences in income statement formats, we examine the income statements of Great Deal (**Exhibit 1.2** in **Chapter 1**) and Thames (**Exhibit 1.6** in **Chapter 1**).

REPORTING REVENUES

Income statements begin with revenues. For this reason, analysts often refer to revenue growth as “top-line” growth. In **Chapter 3** we define *revenues* (or *sales*, *sales revenues*) as the inflow

³Chapter 17 discusses discontinued operations.

⁴Chapter 14 discusses minority interest in more detail. Authoritative guidance uses the term “noncontrolling interest,” but in practice many firms use the term “minority interest.”

⁵All of the income statements presented in this textbook display expenses by function, such as administrative expense or cost of goods sold. Classification by nature groups expenses by their purpose—for example, compensation expense or insurance expense.

of net assets (for example, cash or receivables) received in exchange for providing goods and services. U.S. GAAP and IFRS allow significant latitude with respect to whether and how to aggregate revenues from multiple business lines (often referred to as *segments*) on the income statement. There is no requirement that a firm with multiple segments separately disclose *on the income statement* the revenues of each segment.⁶ Great Deal's income statement for the fiscal year ended February 27, 2013, reports revenues of \$49,694 million. Thames's income statement for the year ended December 31, 2013, reports revenues of €12,881.5 million.

REPORTING EXPENSES

Immediately below revenues, Great Deal and Thames report information about the cost of sales. **Cost of goods sold (cost of services rendered)** is the cost of products sold and services provided during the period. Great Deal reports cost of sales of \$37,534 million; Thames reports cost of goods sold of €10,633.4 million.

Common terminology refers to the difference between sales and cost of sales as **gross margin** or **gross profit**. Great Deal reports gross profit of \$12,160 million. Thames does not report this number, but we can calculate it to be €2,248.1 million (= €12,881.5 million – €10,633.4 million). Neither U.S. GAAP nor IFRS defines gross margin or requires its display on the income statement. However, because both sets of accounting standards require separate display of sales and cost of sales, you can always calculate the gross margin.

After cost of sales, the income statement typically shows deductions for other **operating expenses**. In addition to cost of sales, two common types of operating expenses are selling, general, and administrative expenses (SG&A) and research and development expenses (R&D). Great Deal reports SG&A expenses of \$9,873 million, whereas Thames reports SG&A expenses of €1,445.3 (the sum of marketing and selling expenses of €901.9 and general and administrative expenses of €543.4 million), as well as R&D expenses of €550.5 million.

Subtracting total operating expenses from sales yields **operating profit** or **operating income**. Neither U.S. GAAP nor IFRS requires separate display of operating profit. In addition, neither U.S. GAAP nor IFRS defines *operating* in the context of the income statement, so there is no list of items considered operating expenses.⁷ Items classified as operating expenses reflect management's judgment. Great Deal and Thames report operating income of \$2,235 million and €51.8 million, respectively.

Other (non-operating) items follow the reporting of operating expenses or operating profit. Most firms reporting under U.S. GAAP separately report financing costs, such as interest expense. IFRS requires the separate display of financing costs. Both U.S. GAAP and IFRS require the separate display of significant items that do not arise from the firm's core businesses. For example, selling the headquarters building might generate a gain that increases income. Selling the headquarters building is not part of the core business, so it would not be included in revenues. Instead, it would be included with other noncore items and reported below operating income, probably as Other Income.

Great Deal's list of non-operating items includes interest expense of \$94 million (which reduces income) and investment and other income of \$54 million (which increases income). Thames's non-operating items include interest income and interest expense, other financial income and expenses, and one-time gains and losses. The net effect of all non-operating items reduces Thames's profit by €476.1 million.

Subtracting non-operating expenses from operating income yields *profit (or income) before income taxes*. Multiplying this amount by the tax rate yields the amount of *income tax expense*. Subtracting income tax expense from income before taxes yields net income after tax.⁸

Sometimes a firm will sell a portion of its operations, such as a line of business. Accounting refers to these sold units as *discontinued operations*,⁹ and distinguishes them from the *continuing operations* of the firm. Both U.S. GAAP and IFRS require separate income statement display of **income from continuing operations** and **income from discontinued operations**. Separate

⁶Both U.S. GAAP and IFRS require the disclosure, *in the notes* to the financial statements, of selected information about business segments. The distinction we make here is that the income statement typically does not provide information about the operating results of business segments. **Chapter 17** discusses segment reporting.

⁷Both U.S. GAAP and IFRS, however, define the term *operating* for purposes of the statement of cash flows.

⁸We discuss how financial reporting presents information about income taxes in **Chapter 12**.

⁹Authoritative guidance reserves the label *discontinued operations* for the sale of entire lines of business, not individual assets. The IFRS definition and the U.S. GAAP definitions of discontinued operations differ and are discussed in **Chapter 17**.

display aids users of the income statement in predicting future earnings. The firm expects income from continuing operations to recur, whereas income from discontinued operations will not recur. For similar reasons, the balance sheet separately displays the assets and liabilities of discontinued operations.

To illustrate, **Exhibit 5.1** shows Wheaton Corporation's income statement for the year ended January 31, 2013 (fiscal 2012), and **Exhibit 5.2** shows its balance sheet for the same fiscal period. Wheaton's income statement shows a loss of \$79 million in fiscal 2012 from discontinued operations. Its fiscal 2012 balance sheet shows current assets and current liabilities of discontinued operations of \$140 million and \$92 million, respectively. Wheaton classifies these as current items because it expects to dispose of them within one year.

This chapter discusses income statements prepared by Great Deal and Wheaton using U.S. GAAP and by Thames using IFRS. These descriptions illustrate the diverse formats and account names used on income statements. Our discussions so far have focused on the *display* of income statement items and have left several questions unanswered:

1. What conditions must be met for a firm to record (recognize) revenue and expense?
2. How do firms measure revenues and expenses?

The next section discusses these questions.

EXHIBIT 5.1

Wheaton Corporation Consolidated Income Statements (Amounts in Millions of Dollars)

	Fiscal Years Ended January 31,		
	2013	2012	2011
Revenues:			
Net sales	\$405,046	\$401,087	\$373,821
Membership and other income	3,168	3,287	3,202
	<u>408,214</u>	<u>404,374</u>	<u>377,023</u>
Costs and expenses:			
Cost of sales	304,657	304,056	284,137
Operating, selling, general and administrative expenses	79,607	77,520	70,934
Operating income	23,950	22,798	21,952
Interest:			
Debt	1,787	1,896	1,863
Capital leases	278	288	240
Interest income	(181)	(284)	(309)
Interest, net	<u>1,884</u>	<u>1,900</u>	<u>1,794</u>
Income from continuing operations before income taxes	22,066	20,898	20,158
Provision for income taxes:			
Current	7,643	6,564	6,897
Deferred	(504)	581	(8)
	<u>7,139</u>	<u>7,145</u>	<u>6,889</u>
Income from continuing operations	14,927	13,753	13,269
Income (loss) from discontinued operations, net of tax	(79)	146	(132)
Consolidated net income	14,848	13,899	13,137
Less consolidated net income attributable to noncontrolling interest			
	<u>(513)</u>	<u>(499)</u>	<u>(406)</u>
Consolidated net income attributable to Wheaton	\$ 14,335	\$ 13,400	\$ 12,731

EXHIBIT 5.2

Wheaton Corporation
Consolidated Balance Sheets
(Amounts in Millions of Dollars)

	January 31,	
	2013	2012
ASSETS		
Current assets:		
Cash and cash equivalents	\$ 7,907	\$ 7,275
Receivables, net	4,144	3,905
Inventories	33,160	34,511
Prepaid expenses and other	2,980	3,063
Current assets of discontinued operations	140	195
Total current assets	<u>48,331</u>	<u>48,949</u>
Property and equipment:		
Land	22,591	19,852
Buildings and improvements	77,452	73,810
Fixtures and equipment	35,450	29,851
Transportation equipment	2,355	2,307
Property and equipment	137,848	125,820
Less accumulated depreciation	<u>(38,304)</u>	<u>(32,964)</u>
Property and equipment, net	99,544	92,856
Property under capital leases:		
Property under capital leases	5,669	5,341
Less accumulated amortization	<u>(2,906)</u>	<u>(2,544)</u>
Property under capital leases, net	2,763	2,797
Goodwill	16,126	15,260
Other assets and deferred charges	3,942	3,567
Total assets	<u>\$170,706</u>	<u>\$163,429</u>
LIABILITIES AND EQUITY		
Current liabilities:		
Short-term borrowings	\$ 523	\$ 1,506
Accounts payable	30,451	28,849
Accrued liabilities	18,734	18,112
Accrued income taxes	1,365	677
Long-term debt due within one year	4,050	5,848
Obligations under capital leases due within one year	346	315
Current liabilities of discontinued operations	92	83
Total current liabilities	<u>55,561</u>	<u>55,390</u>
Long-term debt	33,231	31,349
Long-term obligations under capital leases	3,170	3,200
Deferred income taxes and other	5,508	6,014
Redeemable noncontrolling interest	307	397
Commitments and contingencies	—	—
Equity:		
Preferred stock (\$0.10 par value)	—	—
Common stock (\$0.10 par value)	378	393
Capital in excess of par value	3,803	3,920
Retained earnings	66,638	63,660
Accumulated other comprehensive loss	<u>(70)</u>	<u>(2,688)</u>
Total Wheaton shareholders' equity	70,749	65,285
Noncontrolling interest	2,180	1,794
Total equity	<u>72,929</u>	<u>67,079</u>
Total liabilities and equity	<u>\$170,706</u>	<u>\$163,429</u>

REVENUE RECOGNITION AND MEASUREMENT

REVENUE RECOGNITION

Revenue recognition refers to the timing and measurement of revenues. Management applies the revenue recognition criteria to decide whether a given transaction results in recording revenues and the related expenses. Revenue recognition is among the most complex issues in financial reporting. This complexity results from two sources:

- First, misreporting of revenues is a common form of accounting fraud.
- Second, firms often bundle products and services and sell them in multiple-element arrangements. An example of a multiple-element arrangement is the sale of machinery with a five-year warranty, installation services, training for employees, and software upgrades.¹⁰

We distinguish revenues, which increase net assets, from other transactions that increase net assets but do not involve transactions with customers. For example, issuing common shares of stock for cash increases net assets, but it does not generate revenue. Exchanges of goods and services for assets that occur as part of core operations constitute revenues.

We also distinguish revenues from **gains**, and we distinguish expenses from **losses**. Earlier in this chapter we discussed the sale of a headquarters building at a gain. A gain means that the cash or other assets received exceed the building's carrying value at the time of sale. The gain increases net assets and increases income, but it is not a transaction with a customer that is part of core operations. Therefore, the gain is not revenue. Similarly, a loss decreases net assets and decreases net income, but is not part of the firm's core business and is not part of operating expenses. For example, Thames reports as a non-operating item a €1.0 million loss on the disposal of assets.

Revenue recognition involves decisions of both timing (when to recognize revenue) and measurement (the amount of revenue to recognize). With regard to timing, a firm could recognize revenue at the time it produced items to sell, or at the time it delivered items to customers, or at the time it collected cash from customers, or at some other time. U.S. GAAP and IFRS contain revenue recognition criteria that govern the timing of recording revenues.¹¹ For now, we introduce a simple analysis of revenue recognition criteria, to explain an important feature of accrual accounting and to illustrate the journal entries for recording revenues and expenses. As a general principle of accrual accounting, the firm recognizes revenue when a transaction meets two conditions:

- I. The seller has delivered all (or nearly all) of the goods and services it has agreed to provide.
- II. The seller has received cash or some other asset that it can convert to cash, for example, an account receivable.

Criterion I focuses on the seller's performance. Firms recognize revenues from many sales of goods and services at the time of sale because that is often when the seller has delivered all goods and services. Even if some items remain unperformed (for example, promises to provide warranty services and promises to accept customer returns), the seller can recognize revenues as long as it has substantially performed its obligations to the customer, and the seller can reasonably measure the cost of the unperformed items.

Criterion II focuses on measuring the amount of cash the seller will ultimately receive. The exchange price between the customer and seller represents the assets exchanged by the customer for goods and services and provides the measure of revenue.

APPLICATION OF REVENUE RECOGNITION

To understand the revenue recognition criteria and their importance for financial reporting, we consider several examples of transactions that involve the sale of products and services. These transactions may, or may not, result in recognizing revenues.

Example 1 Great Deal sold a television for \$1,000 to a customer who pays with cash. The television is marked down, and the customer cannot return or exchange it. Great Deal received

¹⁰We discuss the revenue recognition and measurements issues for multiple element arrangements in **Chapter 8**.

¹¹**Chapter 8** discusses these criteria.

cash, so the transaction meets criterion II. The transaction also meets criterion I because Great Deal has no additional obligations after the customer has taken the television. Great Deal would recognize revenue on this transaction and make the following journal entry:¹²

Cash	1,000	
Sales Revenue		1,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+1,000				+1,000	IncSt → RE

Sale of merchandise for \$1,000 cash.

Example 2 Great Deal sold a television for \$1,000 to a customer who paid with a Great Deal credit card. The television is marked down and the customer cannot return or exchange it. Great Deal has received a promise of cash payment (an account receivable), so the transaction meets criterion II.¹³ The transaction also meets criterion I because Great Deal has no additional obligations. Great Deal would recognize revenue on this transaction and make the following journal entry:

Accounts Receivable	1,000	
Sales Revenue		1,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+1,000				+1,000	IncSt → RE

Sale of merchandise on account for \$1,000.

Example 3 Great Deal sells gift cards. Great Deal has a liability because it has promised to provide merchandise to the holder of the gift card up to the amount stated on the card. Assume that gift cards expire five years after the issue date so that Great Deal has no obligation to provide merchandise after the expiration date. If Great Deal sells a gift card for \$1,000 on the first day of its fiscal year, Great Deal expects to deliver on its promise of providing merchandise during the next 60 months. Great Deal has received \$1,000 cash, so the transaction meets criterion II. However, Great Deal has not met criterion I. It has incurred an obligation of \$1,000 to perform in the future.¹⁴ At the time of the gift card purchase, Great Deal would record the following journal entry:

Cash	1,000	
Advances from Customers ¹⁵		1,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+1,000		+1,000			

At the time of the gift card purchase, to record the sale of the gift card for cash.

¹²Great Deal would also recognize cost of sales when it recognizes revenues. We discuss the cost of sales journal entries later in this chapter.

¹³We revisit the measurement of accounts receivable in **Chapter 8** when we take up the issue of customers who might not pay.

¹⁴This is an example of a deferred performance obligation. Deferred performance obligations are discussed further in **Chapter 8**.

¹⁵Great Deal calls this account “Unredeemed gift card liabilities” on its balance sheet.

Great Deal does not recognize revenue at the time it sold the gift card. It recognizes revenue as it delivers merchandise to the cardholder. If the cardholder used the card to purchase a \$700 computer monitor, Great Deal would make the following journal entry to recognize revenues:

Advances from Customers	700	
Sales Revenue		700

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		-700		+700	IncSt → RE

At the time of the computer monitor sale, to recognize the revenue on the sale of the monitor.

At the gift card's expiration date, Great Deal would recognize the remaining amount on the card as revenue with the following journal entry:¹⁶

Advances from Customers	300	
Sales Revenue		300

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		-300		+300	IncSt → RE

To recognize revenue on the unused portion of the gift card at the end of 60 months when the card has expired.

Example 4 Another buyer of a gift card paid for the gift card with a Great Deal credit card. The only difference is that the asset Great Deal received is an account receivable, not cash. Therefore, the revenue-related journal entries are identical to those shown for **Example 3** except that the first journal entry shows a debit to Accounts Receivable instead of a debit to Cash:

Accounts Receivable	1,000	
Advances from Customers		1,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+1,000		+1,000			

At the time of the gift card sale, to record the sale of the gift card on account.

In both **Example 1** and **Example 3**, Great Deal receives cash from a customer, so both transactions meet criterion II. The transaction in **Example 1** also meets criterion I because the customer has possession of the television, whereas the transaction in **Example 3** does not satisfy criterion I until the customer uses the gift card. Therefore, Great Deal recognizes revenue in **Example 1** but not in **Example 3**. In **Example 2** and **Example 4**, Great Deal did not receive cash from a customer. Even so, in both examples the transactions meet criterion II because Great Deal expects to collect the account receivable in cash. The transaction in **Example 2** also meets criterion I because the customer takes possession of the television. The transaction in **Example 4**, however, does not meet criterion I. Therefore, Great Deal recognizes revenue in **Example 2** but not in **Example 4**. **Examples 1** to **4** illustrate an important concept in accrual

¹⁶If the cardholder fails to use the entire \$1,000 amount by the expiration date, Great Deal will recognize as revenue any remaining amount on the card. This treatment is one of several possible treatments for unused gift card balances. In this example, there is a clear expiration date. Some gift cards have no expiration dates, and some states in the United States have laws that specify a minimum duration for gift cards or forbid expiration altogether. After some period, which varies by state laws, the value of an unused gift card becomes unclaimed property. Unclaimed property may revert to the firm or to the government, depending on state law. As a practical matter, many U.S. retailers establish their gift card operations in states whose laws will allow the retailer to keep unused gift card balances.

accounting—the timing of the receipt of cash from a customer does not affect the timing of revenue recognition. What matters is whether the seller has received assets that it can convert to cash and whether it has performed its obligations to deliver goods and services.

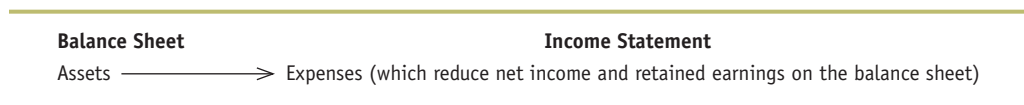
REVENUE MEASUREMENT

The seller measures revenue as the amount of cash, or the cash-equivalent value of non-cash assets, that it receives from customers. This amount is typically the exchange price between buyer and seller at the time of sale. If the firm has not performed all of its obligations, however, it will need to adjust the exchange price to reflect those unperformed obligations.

EXPENSE RECOGNITION AND MEASUREMENT

TIMING OF EXPENSE RECOGNITION

Assets provide future benefits, and expenses measure the consumption of those benefits. Timing of **expense recognition** focuses on *when* the firm consumes the benefits. The critical question is, “When does the firm consume the benefits of an asset?” That is, when does the asset leave the balance sheet and become an expense on the income statement?



CRITERIA FOR EXPENSE RECOGNITION

The firm recognizes an expense when either of the following conditions holds:

1. *The consumption of the asset results from a transaction that leads to the recognition of revenue.* For example, the recognition of revenue from the sale of merchandise consumes the benefits of the inventory asset and results in an increase in the expense called Cost of Goods Sold. The amount of this expense is determined by the **product costs** associated with the inventory. This matching of the cost of the item sold with the revenue from the sale (termed the **matching convention**) links the timing of some expenses to revenue recognition.
2. *The consumption of the asset results from the passage of time.* For example, the firm consumes benefits of this month’s rent on a warehouse during the current month. Therefore, the firm reports the cost as part of this month’s **period expenses**. Most administrative expenditures are period expenses.

RECOGNITION OF PRODUCT COSTS

A seller of goods can easily match the consumption of the benefits of the asset sold with revenues from its sale. Specifically, at the time of sale and revenue recognition, inventory leaves the seller’s balance sheet. The seller recognizes revenue along with a reduction in inventory, and records cost of goods sold expense equal to the amount by which inventory decreases.¹⁷

RECOGNITION OF PERIOD EXPENSES

Many expenditures benefit accounting periods and are not linked to specific revenue transactions. Common examples include the cost to manage the firm, including the president’s salary, accounting and information systems costs, and support activity costs such as legal services, employee training, and corporate planning. These *administrative costs* do not relate directly to products produced or sold. The firm recognizes them as expenses when it consumes their benefits in the period. The firm treats them, therefore, as period expenses.

¹⁷We discuss the accounting for inventory in **Chapter 9**.

Another example of a period expense is the cost of marketing or selling products, for example, salaries and commissions of the sales staff and costs to produce catalogs. The firm recognizes those costs as expenses in the period when it consumes them.

EXPENSE MEASUREMENT

Expenses measure the consumption of assets during an accounting period, so the basis for expense measurement is the same as the measurement of the consumed asset. If the firm measures an asset at acquisition cost on the balance sheet, it also measures expenses based on the acquisition cost of the asset consumed. **Examples 5** and **6** illustrate the concepts of product costs, period expenses, and expense measurement.

Example 5 In **Example 1**, Great Deal sold a television for \$1,000 cash. From **Example 1**, Great Deal recognizes revenue on this transaction, resulting in the following journal entry:

Cash	1,000	
Sales Revenue		1,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+1,000				+1,000	IncSt → RE

Sale of merchandise for \$1,000.

Great Deal must also show the expense associated with the television sold. If Great Deal originally purchased the television for \$650, Great Deal would record the following journal entry to recognize the expense associated with the sale of the television:

Cost of Goods Sold	650	
Inventory		650

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-650				-650	IncSt → RE

To record the reduction of inventory associated with the sale of merchandise.

This transaction affects Great Deal's income statement. It also affects Great Deal's balance sheet when revenue and expense accounts are closed to the Retained Earnings account. The revenue part of the transaction increases Retained Earnings by \$1,000, and the expense part of the transaction decreases Retained Earnings by \$650. The net effect increases Retained Earnings by \$350 (before taxes). Net assets also increase by \$350, the result of an increase in cash of \$1,000 and a decrease in inventory of \$650.

Example 6 Great Deal prints and mails advertisements to its preferred customers prior to annual sales events. Assume that these expenditures cost \$2 million per year. Although Great Deal management believes that spending \$2 million to promote the sales events will increase gross margin by at least \$2 million, it cannot establish a causal link between any specific promotional expenditure and the sale of a specific item. As a result, Great Deal treats the promotion costs as period expenses in the period incurred:

Advertising and Promotion Expenses	2,000,000	
Cash		2,000,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-2,000,000				-2,000,000	IncSt → RE

To record \$2 million of advertising and promotion costs.

► PROBLEM 5.1 FOR SELF-STUDY

Revenue and expense recognition. Crandall SA uses the accrual basis of accounting and recognizes revenues at the time it sells goods or renders services. For each transaction, indicate the amount of revenue or expense that Crandall recognizes *during April*, and show the journal entry or entries that Crandall would make *in April*.

- a. Collects €15,000 cash from customers during April for merchandise sold and delivered in March. The cost of the merchandise to the firm was €8,000.
- b. Sells merchandise to customers during April for €24,500 cash. The merchandise cost the firm €6,500.
- c. Sells to customers, on account, merchandise with a selling price of €105,000. The firm expects to collect the cash during May. The merchandise cost the firm €82,000 when it purchased the items from its supplier last month. The firm has not yet paid the supplier for the merchandise.
- d. Pays suppliers €45,500 during April for merchandise received by the firm from its suppliers and sold to customers during March for €109,000.
- e. Pays suppliers €50,000 during April for merchandise received from its suppliers and sold to customers during April. Crandall sold the merchandise for €90,400.
- f. Receives from suppliers and sells to customers during April merchandise that cost €20,000. The selling price of the merchandise to the customer was €38,000, all on account. The firm expects to pay the supplier during May.
- g. Receives from suppliers during April merchandise that cost €101,000 and that the firm expects to pay for during May. The firm also expects to sell the merchandise in May for €124,000.
- h. Receives €26,500 from customers for merchandise that the firm will deliver in May. The firm does not yet have the merchandise and expects to acquire it in May for €23,000.

COMPREHENSIVE INCOME

Previous sections of this chapter have discussed the recognition and measurement of revenues and expenses that result in net income. The selling of goods and the rendering of services to customers increases (decreases) both net assets and retained earnings in the amount of net income (net loss).

U.S. GAAP and IFRS require firms in some instances to change the carrying value of certain assets and liabilities. Both sets of accounting standards preclude the recognition of these changes in net income, and therefore in retained earnings. Instead, firms must include these changes in **other comprehensive income (OCI)**. Later chapters discuss the items that require this accounting treatment. For now, we introduce the concept of OCI and Accumulated Other Comprehensive Income (AOCI).

Example 7 Assume that U.S. GAAP and IFRS require firms to remeasure the amount of a particular asset from \$10 million to \$8 million because of economic events. Accounting rules further specify that the firm must include the \$2 million decrease in net assets (= \$10 million – \$8 million), in OCI, but not in net income. The firm would make the following journal entry:

Other Comprehensive Income (Decrease in Measurement of Asset)	2,000,000	
Asset		2,000,000

The sum of Net Income and Other Comprehensive Income is **comprehensive income**, which includes all changes in net assets for a period except for changes arising from transactions with owners.¹⁸

$$\text{Net Income} + \text{Other Comprehensive Income} = \text{Comprehensive Income}$$

Both U.S. GAAP and IFRS require firms to report the cumulative effect of other comprehensive income in a balance sheet account called **accumulated other comprehensive income (AOCI)**. Accumulated Other Comprehensive Income sums Other Comprehensive Income over time just as Retained Earnings sums Net Income less dividends over time. AOCI is a component of shareholders equity.

$$\text{Retained Earnings (beginning)} + \text{Net Income} - \text{Dividends} = \text{Retained Earnings (ending)}$$

$$\begin{array}{rcc} \text{Accumulated Other} & & \text{Accumulated Other} \\ \text{Comprehensive Income} & & \text{Comprehensive Income} \\ \text{(beginning)} & + & \text{(ending)} \\ & & \\ & + & \\ & & \end{array}$$

Both U.S. GAAP and IFRS require firms to present the items that are included in Other Comprehensive Income. Firms have a choice of two formats.¹⁹

1. A single statement of comprehensive income that shows *all* the changes in net assets. This statement includes both Net Income and Other Comprehensive Income.
2. A two-statement presentation that includes an income statement and a separate statement of comprehensive income.

SUMMARY

Net income or profit for a period is the difference between revenues from selling goods and services and the expenses incurred to generate those revenues, plus certain gains and losses of the period. U.S. GAAP and IFRS require the accrual basis of accounting, which separates the recognition of revenue from the receipt of cash. A seller recognizes revenues when it has performed its obligations to the customer and when it has received cash or an asset that is convertible to cash. The firm matches the revenues recognized with the costs of the products sold (product costs). The resulting expense is cost of goods sold. The firm recognizes other expenses in the period when it consumes the benefits of the assets (period expenses).

SOLUTION TO SELF-STUDY PROBLEM

SUGGESTED SOLUTION TO PROBLEM 5.1 FOR SELF-STUDY

(Revenue and expense recognition.)

- a. Crandall recognizes neither revenue nor expense in April. The firm makes a journal entry in April to recognize the cash collected from customers for sales made in March:

¹⁸Typical transactions with owners include dividends, share issuances, and share repurchases.

¹⁹In 2011, the FASB issued ASU No. 2011-05, *Presentation of Comprehensive Income*, updating ASC 220. ASU No. 2011-05 provides for this choice of two formats. The guidance is effective for fiscal periods beginning after December 31, 2011. Prior to this guidance, firms applying U.S. GAAP also had the option to display Other Comprehensive Income items as part of the statement of changes in shareholders equity.

Cash	15,000	
Accounts Receivable		15,000

b. In April Crandall recognizes revenue of €24,500 and expenses of €6,500:

Cash	24,500	
Sales Revenue		24,500
Cost of Goods Sold	6,500	
Merchandise Inventory		6,500

c. In April Crandall recognizes revenue of €105,000 and expenses of €82,000.

Accounts Receivable	105,000	
Sales Revenue		105,000
Cost of Goods Sold	82,000	
Merchandise Inventory		82,000

d. Crandall recognizes neither revenue nor expense in April. The firm makes the following journal entry made to recognize the cash payment made to suppliers:

Accounts Payable	45,500	
Cash		45,500

e. In April Crandall recognizes revenues of €90,400 and expenses of €50,000.

Merchandise Inventory	50,000	
Cash		50,000
Cash	90,400	
Sales Revenue		90,400
Cost of Goods Sold	50,000	
Merchandise Inventory		50,000

f. In April Crandall recognizes revenue of €38,000 and expenses of €20,000.

Merchandise Inventory	20,000	
Accounts Payable		20,000
Accounts Receivable	38,000	
Sales Revenue		38,000
Cost of Goods Sold	20,000	
Merchandise Inventory		20,000

g. Crandall recognizes neither revenue nor expense in April. The firm makes the following journal entry in April to recognize the receipt of merchandise and the obligation to pay for that merchandise:

Merchandise Inventory	101,000	
Accounts Payable		101,000

- h. Crandall recognizes neither revenue nor expense in April. The firm makes the following journal entry in April to recognize the receipt of cash from customers and the obligation it incurs for future delivery of merchandise:

Cash	26,500	
Advances from Customers		26,500

KEY TERMS AND CONCEPTS

Net income or net loss	Revenue recognition
Earnings	Gain
Profit	Loss
Revenues	Expense recognition
Expenses	Product costs
Cost of goods sold, cost of services rendered	Matching convention
Gross margin, gross profit	Period expense
Operating expenses	Other comprehensive income (OCI)
Operating income, operating profit	Comprehensive income
Income from continuing operations	Accumulated other comprehensive income (AOCI)
Income from discontinued operations	

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

- Review the meaning of the terms and concepts listed above in Key Terms and Concepts.
- “The measurement of assets and liabilities relates closely to the measurement of revenues and expenses.” Explain.
- Distinguish between a cost and an expense.
- Both interest expense on borrowing and dividends on common stock reduce net assets and reduce shareholders’ equity. Accountants treat interest as an expense in measuring net income but do not treat dividends on common stock as an expense. Explain the rationale for this apparent inconsistency.
- Why is it important to separate the income from discontinued operations from the income from continuing operations on the income statement?
- In an accrual accounting system, firms recognize revenues even if they have not received cash. What criteria must sales transactions meet in order for the seller to recognize revenues before collecting cash?
- A customer has paid the firm, in advance, for merchandise the firm will deliver next month. Why is the firm not permitted to recognize revenue when it receives the cash?

8. Why is it important to separate gains from revenues?
9. Why might it be difficult to compare two otherwise similar firms in terms of their operating profits?
10. A student says, “It is inconceivable to me that a firm could report increasing net income yet run out of cash.” Clarify this seeming contradiction.

EXERCISES

11. **Revenue recognition.** Neiman Marcus, a U.S. retailer, uses the accrual basis of accounting and follows U.S. GAAP. It recognizes revenue at the time it sells merchandise. Indicate the amount of revenue (if any) the firm recognizes during the months of February, March, and April in each of the following hypothetical transactions, in which Neiman Marcus does the following:
 - a. Collects \$800 cash from a customer during March for a custom-made suit that the firm will make and deliver to the customer in April.
 - b. Collects \$2,160 cash from customers for meals served in the firm’s restaurant during March.
 - c. Collects \$39,200 cash from customers during March for merchandise sold and delivered in February.
 - d. Sells merchandise to customers during March on account, for which the firm will collect \$59,400 cash from customers during April.
 - e. Rents space in its store to a travel agency for \$9,000 a month, effective March 1. Receives \$18,000 cash on March 1 for two months’ rent.
 - f. Same as part e, except that it receives the check for the March and April rent on April 1.
12. **Revenue recognition.** Fonterra Cooperative Group Limited (Fonterra), a New Zealand dairy cooperative, uses the accrual basis of accounting and recognizes revenue at the time it sells products or renders services. Fonterra applies New Zealand accounting standards and reports its results in millions of New Zealand dollars (NZ\$). In answering this problem, assume Fonterra uses IFRS. Indicate which of the following transactions or events immediately give rise to Fonterra’s recognition of revenue.
 - a. Fonterra has completed the pasteurization of an order of 13,000 liters of milk it will deliver to a grocery store chain next week. Fonterra has not yet delivered the milk or invoiced the grocery store. The selling price of the milk is NZ\$26,000.
 - b. Refer to part a, and assume that the grocery store paid Fonterra a deposit of NZ\$5,000 on the order of the milk.
 - c. Fonterra delivered the milk and billed the grocery store. The grocery store has not yet paid the invoice.
 - d. One day after delivery, the grocery store called Fonterra and reported that it has to destroy 3,000 liters of milk because it had spoiled sometime prior to its delivery. The grocer refuses to pay for these 3,000 liters.
 - e. Fonterra spent NZ\$10 million to develop a technique to transform a by-product of casein (a protein found in milk and cheese) into ethanol. Fonterra expects to use this technique to generate sales of at least NZ\$2 million over the next year.
 - f. Refer to part e, and assume that Fonterra signed contracts worth NZ\$400 million for ethanol sales.
13. **Expense recognition.** Sun Microsystems uses the accrual basis of accounting and recognizes revenue at the time it sells goods or renders services. It applies U.S. GAAP and reports in U.S. dollars. Indicate the amount of expenses (if any) the firm recognizes during the months of June, July, and August in each of the following hypothetical transactions. The firm does the following:
 - a. Pays \$180,000 on July 1 for one year’s rent on a warehouse beginning on that date.
 - b. Receives a utility bill on July 2 totaling \$4,560 for services received during June. It pays the utility bill during July.

- c. Purchases office supplies on account costing \$12,600 during July. It pays \$5,500 for these purchases during July and the remainder during August. Office supplies on hand on July 1 cost \$2,400, on July 31 cost \$9,200, and on August 31 cost \$2,900.
- d. Pays \$7,200 on July 15 for property taxes on office facilities for the current calendar year.
- e. Pays \$2,000 on July 15 as a deposit on a custom-made delivery van that the manufacturer will deliver on September 30.
- f. Pays \$4,500 on July 25 as an advance on the August salary of an employee.
- g. Pays \$6,600 on July 25 for advertisements that appeared in computer journals during June.
- 14. Expense recognition.** Tesco Plc. is a British-based grocer and retailer chain. It uses the accrual basis of accounting and recognizes revenue at the time it sells goods or renders services. It applies IFRS and reports in pounds sterling (£). Indicate the amount of expense recognized during October (if any) from each of the following hypothetical transactions or events. The firm does the following:
- a. Pays £440,000 on October 5 for commercials that appeared on British television during September.
- b. Pays £1,200,000 on October 6 for refrigeration units delivered to its stores on September 30. The firm expects the refrigerators to last for five years and have no salvage value.
- c. Pays £300,000 on October 10 for property taxes for the period from October 1 of this year to September 30 of next year.
- d. Pays £15,500 on October 15 for cleaning supplies purchased on October 10. Cleaning supplies on hand on October 1 cost £3,500 and on October 31 cost £5,400.
- e. Pays £4,000 on October 20 for repairs to a forklift truck on October 1. The truck had a remaining useful life of five years on October 1.
- f. Pays £100,000 on October 25 as a deposit on land Tesco plans to purchase for a new store.
- g. Pays £200,000 on October 31 as rent on a warehouse for October and November.
- 15. Relating net income to balance sheet changes.** Comparative balance sheet data for Bondier Corporation (Bondier), a Canadian airplane manufacturer, as of January 31, Year 8, and January 31, Year 7, appear in the following display, based on Bondier's financial reports as of January 31, Year 8. Bondier applies Canadian accounting standards and reports in millions of U.S. dollars. In answering these questions, assume Bondier uses either U.S. GAAP or IFRS; for the purposes of this problem, this choice will not matter.

Bondier Corporation
Balance Sheet Data
January 31, Year 7 and Year 8

	January 31	
	Year 8	Year 7
Total Assets	\$20,562	\$18,577
Liabilities	17,444	15,844
Common Stock	2,078	1,968
Retained Earnings	1,040	765

Bondier declared and paid dividends of \$30 million during the year ended January 31, Year 8. During the same year, the firm also reported a positive adjustment to Retained Earnings of \$12 million.

- a. Compute net income for the year ended January 31, Year 8, by analyzing the change in retained earnings.

b. Demonstrate that the following relation holds:

$$\text{Net Income} = \text{Increase in Assets} - \text{Increase in Liabilities} \\ - \text{Increase in Contributed Capital} + \text{Dividends} + \text{or} - \text{Adjustments}$$

16. Relating net income to balance sheet changes. Magtelkom, a Hungarian telecommunications company, reported the following balance sheet information for Year 11 and Year 12. Magtelkom applies IFRS and reports in millions of Hungarian forints (HUF).

Magtelkom
Balance Sheet Data
Year 11 and Year 12

	Year 12	Year 11
Total Assets	HUF1,135,578	HUF1,131,595
Total Liabilities.	553,885	538,428
Contributed Capital.	129,954	128,728
Minority Interest.	66,695	67,128
Retained Earnings.	385,044	?

During Year 12, Magtelkom declared and paid dividends of HUF72,729 million and made other adjustments, which increased retained earnings by HUF307 million.

- a. Compute Magtelkom’s balance in Retained Earnings for Year 11.
- b. Compute Magtelkom’s net income for Year 12.

17. Income statement relations. Selected income statement information for Novo Limited (Novo), a Hong Kong personal computer manufacturer, for the years ended March 31, Years 9 and 10. Novo applies Hong Kong financial reporting standards and reports its results in thousands of U.S. dollars. In answering this question, assume Novo uses either U.S. GAAP or IFRS; for purposes of this problem, this choice will not matter.

	Year 10	Year 9
Revenues.	\$16,351,503	\$13,978,309
Cost of Goods Sold	13,901,523	12,091,433
Selling and Administrative Expenses	1,103,713	1,033,296
Gross Profit	?	?
Profit Before Taxes	?	?
Advertising Expenses.	595,902	488,150
Research and Development Expense.	229,759	196,225
Other Income (Expense).	?	18,130
Income Tax Expense	47,613	26,197
Net Income	484,708	?

Compute the missing amounts for Year 9 and Year 10.

18. Income statement relations. Selected income statement information for Years 11, 12, and 13 for SwissTek, a Swiss engineering firm. SwissTek applies U.S. GAAP and reports its results in millions of U.S. dollars.

	Year 13	Year 12	Year 11
Sales of Products	\$24,816	?	\$17,622
Income Tax Expense	595	?	464

(continued)

	Year 13	Year 12	Year 11
Earnings Before Interest and Taxes	4,023	2,557	?
Sales of Services	4,367	3,778	3,342
Selling and Administrative Expenses	4,975	?	3,780
Cost of Services Sold	?	2,570	2,305
Income Before Taxes	?	2,076	1,199
Other Operating Income (Expense)	?	139	37
Interest and Other Financial Expense	286	?	407
Gross Profit	8,968	6,744	?
Cost of Products Sold	17,292	13,967	13,205
Other Non-operating Income (Expense)	?	(321)	(258)
Interest and Dividend Income	273	147	?
Net Income	3,757	1,390	?

Compute the missing amounts for each of the three years.

- 19. Income and equity relations.** Selected information based on the comparative balance sheets for James John Corporation (James John), a U.S. clothing designer, manufacturer, and retailer, for the years ended March 31, Years 10, 11, and 12, appears next. James John applies U.S. GAAP and reports its results in millions of U.S. dollars.

James John Corporation
Balance Sheet Data
March 31, Year 12, Year 11, and Year 10

	March 31		
	Year 12	Year 11	Year 10
Common Stock	?	?	\$ 1.1
Accumulated Other Comprehensive Income	?	\$(27.2)	0.0
Retained Earnings	\$1,742.3	?	1,090.3
Treasury Stock	?	(87.1)	(80.0)
Additional Paid-In Capital	872.5	783.6	?
Total Shareholders' Equity	2,334.9	?	1,675.7

James John issued no new shares of common stock after Year 10. In Year 11 James John reported net income of \$308.5 million and declared and paid cash dividends of \$19.6 million. In Year 12 James John paid \$234.4 million to repurchase shares of common stock. Compute the missing amounts for each of the three years.

- 20. Income and equity relations.** Selected information based on the comparative balance sheets and income statements of Palmgate Company (Palmgate), a U.S. manufacturer of consumer products, for the years ended December 31, Years 7, 8, and 9, appears in the following display. Palmgate applies U.S. GAAP and reports its results in millions of U.S. dollars.

Palmgate Company
Selected Financial Statement Information
December 31, Year 9, Year 8, and Year 7

	Year Ended December 31		
	Year 9	Year 8	Year 7
Income Statement Information:			
Net Income	\$ 1,737.4	\$ 1,353.4	\$ 1,351.4
Other Comprehensive Income	414.4	?	1.5
Balance Sheet Information:			
Common Stock	?	?	732.9

(continued)

	Year Ended December 31		
	Year 9	Year 8	Year 7
Accumulated Other Comprehensive Income	?	(2,081.2)	(1,804.7)
Unearned Compensation	(218.9)	(251.4)	(283.3)
Preferred Stock	197.5	222.7	253.7
Retained Earnings	10,627.5	?	8,968.1
Treasury Stock	?	?	(7,581.0)
Additional Paid-In Capital	1,517.7	1,218.1	?
Total Shareholders' Equity	?	?	1,350.1
Other Information:			
Dividends Declared and Paid	?	677.8	607.2
Cost of Share Repurchases	829.8	492.9	615.6
Common Shares Issued	0	0	0

Compute the missing amounts for each of the three years.

- 21. Accumulated other comprehensive income relations.** Selected information based on the comparative balance sheets for MosTechi Corporation (MosTechi), a Japanese electronics manufacturer, appears next for the years ended March 31, Years 6, 7, and 8. MosTechi applies U.S. GAAP and reports its results in millions of yen (¥).

MosTechi Corporation
Balance Sheet Data
March 31, Year 8, Year 7, and Year 6

	March 31		
	Year 8	Year 7	Year 6
Common Stock	¥ 626,907	¥ 624,124	¥ 621,709
Accumulated Other Comprehensive Income	?	?	?
Retained Earnings	?	1,602,654	1,506,082
Treasury Stock	?	(3,127)	(6,000)
Additional Paid-In Capital	1,143,423	1,136,638	1,134,222
Total Shareholders' Equity	3,351,500	?	2,870,338

MosTechi's other comprehensive income for Year 7 was ¥229,238; in Year 8 it was ¥40,944. During Year 8 MosTechi had net income of ¥126,328 and declared and paid dividends of ¥25,042. During Year 8 MosTechi reported a ¥3,807 decrease to retained earnings to adjust for the cumulative effect of an accounting change. Compute the missing amounts for each of the three years.

- 22. Accumulated other comprehensive income relations.** Selected information based on the comparative balance sheets for Solaronx Company (Solaronx), a U.S. defense manufacturer, appears in the following display for the years ended December 31, Years 10, 11, and 12. Solaronx applies U.S. GAAP and reports its results in millions of dollars.

Solaronx Company
Balance Sheet Data
December 31, Year 12, Year 11, and Year 10

	December 31		
	Year 12	Year 11	Year 10
Common Stock	\$ 5	\$ 5	\$ 5
Accumulated Other Comprehensive Income	?	?	(1,919)

(continued)

	December 31		
	Year 12	Year 11	Year 10
Retained Earnings	?	?	2,998
Treasury Stock	(816)	(543)	(73)
Additional Paid-In Capital	10,097	9,722	9,540
Total Shareholders' Equity	?	?	?

Solaronx's other comprehensive income for Year 12 was \$774, compared to (\$31) in Year 11 and \$275 in Year 10. In addition, in Year 12 Solaronx made a one-time adjustment of (\$1,338) to accumulated other comprehensive income. Comprehensive income for Year 12 was \$2,057, compared to \$840 in Year 11 and \$692 in Year 10. Dividends declared and paid increased from \$356 in Year 10, to \$394 in Year 11, to \$429 in Year 12. Compute the missing amounts for each of the three years.

- 23. Discontinued operations.** Selected information from PharmaCare's financial statements for the years ended December 31, Year 6 and Year 7, appear below. PharmaCare is a German pharmaceutical company that applies IFRS and reports its results in millions of euros (€).
- What portion of PharmaCare's total net income in Year 7 came from discontinued operations? How does this compare to Year 6?
 - What portion of PharmaCare's total assets in Year 7 is associated with discontinued operations? How does this compare to Year 6?
 - What explains the large decline in PharmaCare's assets held for discontinued operations in Year 7?

PharmaCare
Balance Sheet and Income Statement Data
December 31, Year 7 and Year 6

	December 31	
	Year 7	Year 6
Income from Continuing Operations (after taxes)	€ 2,306	€ 1,526
Income from Discontinued Operations (after taxes)	2,410	169
Assets Held for Discontinued Operations	84	2,925
Total Assets	51,378	55,891

- 24. Discontinued operations.** Selected financial information for Oratel S.A.E. (Oratel), an Egyptian telecommunications firm, is shown in the following display for the years ended December 31, Year 13 and Year 12. Oratel applies Egyptian accounting standards and reports its results in thousands of Egyptian pounds (£). In answering this question, assume that Oratel uses either U.S. GAAP or IFRS; for the purposes of this problem, this choice will not matter.

Oratel S.A.E.
Balance Sheet and Income Statement Data
December 31, Year 13 and Year 12

	December 31	
	Year 13	Year 12
Income from Continuing Operations (before taxes)	£ 9,293,448	£ 4,456,900
Assets Held for Discontinued Operations	?	7,327,709

(continued)

	December 31	
	Year 13	Year 12
Taxes on Income from Continuing Operations	2,571,426	?
Income from Discontinued Operations (net of tax)	?	1,020,213
Income from Continuing Operations (after tax)	?	3,595,713
Net Income	11,935,088	?
Assets Used in Continuing Operations.	34,348,838	?
Total Assets	39,492,853	34,209,746

Compute the missing amounts for each of the two years.

PROBLEMS

25. Income statement formats. Information from Cementex Corporation’s (Cementex) income statements for the years ended December 31, Year 9 and Year 10, is shown in the following display. Cementex is a Mexican construction firm that applies Mexican accounting standards and reports its results in millions of pesos (\$).

Cementex Corporation
Income Statement Data
December 31, Year 10 and Year 9

	December 31	
	Year 10	Year 9
Net Sales	\$236,669	\$213,767
Cost of Sales	157,696	?
Gross Profit	?	77,320
Administrative and Selling Expenses	33,120	28,588
Distribution Expenses	13,405	?
Other Expenses, net.	3,281	580
Operating Income	?	33,925
Financial Expenses	8,809	?
Financial Income	862	536
Income (Expense) from Financial Instruments	2,387	(161)
Other Financial Income (Expense)	6,647	4,905
Equity in Income of Associates	1,487	1,425
Profit Before Income Tax	?	34,845
Income Tax	?	?
Consolidated Profit	?	?
Portion of Profit Attributable to Minority Interest	837	?
Portion of Profit Attributable to Cementex Shareholders	?	27,855

Assume Cementex had an effective tax rate of 15.11% in Year 10 and 16.35% in Year 9.

- a. Compute the missing amounts for each of the two years.
 - b. Prepare, in good format, an income statement for Cementex for Year 9 and Year 10 assuming the firm applies IFRS.
- 26. Income statement formats.** Information from GoodLuck Brands’s income statements for the years ended December 31, Years 6, 7, and 8, is shown next. GoodLuck Brands is a U.S.-based manufacturer and distributor. The company applies U.S. GAAP and reports its results in millions of U.S. dollars.

	Year 8	Year 7	Year 6
Net Sales	\$8,769.0	\$7,061.2	\$6,145.2
Cost of Products Sold	4,618.9	3,843.0	3,342.1
Excise Taxes on Spirits and Wine	514.0	326.5	299.7
Advertising, Selling, and Administrative Expenses	2,070.1	1,694.4	1,433.6
Amortization of Intangibles	43.5	33.4	35.4
Restructuring Charges	21.2	—	9.8
Operating Income	1,501.3	1,163.9	1,024.6
Interest Expense	332.4	158.9	77.3
Other Financial Expense (Income)	(40.2)	78.9	(47.0)
Income Before Minority Interest and Taxes	1,209.1	926.1	994.3
Income Taxes	311.1	324.5	261.1
Minority Interests	67.9	20.0	17.2
Income from Continuing Operations	830.1	581.6	716.0
Income from Discontinued Operations, net tax.	—	39.5	67.8
Net Income	<u>\$ 830.1</u>	<u>\$ 621.1</u>	<u>\$ 783.8</u>

Prepare, in good format, income statements for GoodLuck Brands for Year 6, Year 7, and Year 8, assuming the firm applies IFRS.

27. **Correcting errors in income statement transactions.** Broyo Corporation (Broyo), a large paper company, reported the following income statement for its year ended December 31, Year 13. Broyo applies IFRS and reports its results in millions of euros.

	Year 13
Net Sales	€ 4,221
Cost of Products Sold	(3,110)
Gross Profit	1,111
Selling, General, and Administrative Expenses	(794)
Other Operating Income, net.	17
Share in Profits of Associated Companies	1
Operating Profit	335
Financial Income and Expenses, net.	(43)
Profit on Continuing Operations, before tax.	292
Income Taxes	(72)
Profit from Continuing Operations, after tax	220
Profit from Discontinued Operations, net of tax	17
Profit	<u>€ 237</u>
Portion of Profit Owned by Minority Interests	1
Portion of Profit Owned by Shareholders	236

Broyo supplied additional information about the following six transactions or events that happened during Year 13, with all euro amounts reported in millions.

- On October 5, Year 13, Broyo signed a sales agreement with Office Supplies International. The agreement calls for delivery of 50,000 boxes of paper at a total price of €200. On this date, Broyo recognized revenues of €200, and recognized cost of sales of €160. No deliveries under the contract had occurred by December 31, Year 13.
- On October 18, Year 13, Broyo signed a contract with a customer for €45. The customer provided a cash deposit at this time of €20, which Broyo recorded as revenues. Broyo did not recognize any expenses on October 18, Year 13.
- Broyo fulfilled all terms of the contract in part **b** on November 28, Year 13. Broyo's cost of the inventory delivered was €36. Because Broyo had recorded revenues in October, it made no entry on November 28.

- d. During the fourth quarter of Year 13, Broyo spent €11 on research and development. Those expenditures, which were focused on creating a new waterproof paper, were unsuccessful. Broyo capitalized the €11 as a development asset, which it plans to amortize, beginning in Year 14, over 10 years.
- e. On December 1, Year 13, Broyo delivered to a customer €266 of paper products, with a cost of €250. The customer promised to pay Broyo in January Year 14. Because Broyo had not received the cash by December 31, Year 13, it did not record anything for this transaction.
- f. On December 5, Year 13, Broyo sold one of its pulp plants for €100. Prior to the sale, the pulp plant had a balance sheet carrying value of €80. Broyo recorded the transaction as follows: debited cash for €100, debited plant and equipment for €80, credited cost of goods sold for €80, and credited revenues for €100.

For each transaction, determine whether revenues and expenses are overstated or understated. Ignore income tax effects.

- 28. Correcting errors in income statement transactions.** Dragonfly Limited (Dragonfly), a diversified electronics firm headquartered in Singapore, reported the following income statement information for its year ended December 31, Year 7. Dragonfly applies Singapore financial reporting standards and reports its results in thousands of Singapore dollars (\$). In answering this problem, assume Dragonfly uses either U.S. GAAP or IFRS; for purposes of this problem, this choice will not matter.

	Year 7
Sales	\$ 460,830
Cost of Sales	<u>(416,378)</u>
Gross Profit	44,452
Other Income	1,558
Selling and Marketing Costs	(20,714)
General and Administrative Costs	(20,254)
Development Costs	(1,232)
Finance Costs, net.	(6,692)
Gain on Sale of Land	6,546
Share in Results of Associated Companies	<u>(2)</u>
Profit Before Tax	3,662
Taxation	<u>(1,094)</u>
Profit (Loss)	<u>\$ 2,568</u>
Portion of Profit Owned by Minority Interests	(567)
Portion of Profit Owned by Shareholders	3,135

Assume that Dragonfly supplied additional information about the following six hypothetical transactions or events that happened during Year 7, with all monetary amounts reported in thousands of Singapore dollars.

- a. In January Year 7, Dragonfly collected \$1,000 cash from customers who had purchased items on credit in December Year 6. Dragonfly had delivered the items by mid-December Year 6. Dragonfly recognized January revenues of \$1,000.
- b. On February 2, Year 7, the firm agreed to supply a customer with \$25,000 of high-end electronics products. On this date, Dragonfly recognized revenues of \$25,000 and cost of sales of \$18,000 reflecting the carrying value of the high-end inventory. Dragonfly delivered on the agreement in September Year 7.
- c. On June 4, Year 7, Dragonfly sold some land it had purchased many years earlier, prior to the boom in the real estate market. The carrying value of the land on the firm's books was \$454, and Dragonfly sold it for \$7,000. Dragonfly recorded a gain on the sale of the land of \$6,546.
- d. During Year 7, the firm incurred \$1,232 in development costs associated with a new product that the firm had developed; the firm expensed these costs. The product design

and manufacture is nearly complete. The firm's auditor has decided that Dragonfly should have capitalized the development costs.

- e. In December Year 7, Dragonfly recognized interest income on investments in marketable securities of \$230. The firm included this income in sales revenues.
- f. Dragonfly spent \$15,000 for advertising in Year 7. Because Dragonfly management believed the advertising would result in future income, it capitalized the expenditures as an asset. No amortization of the asset has yet taken place.

For each transaction, determine whether revenues and expenses for Year 7 are over- or understated.

- 29. Classification and interpreting income statements.** SeaBreeze Inc., a Taiwan-based semiconductor manufacturer, reported the following information for Year 12. SeaBreeze Inc. applies IFRS and reports in millions of yuan (¥).

	Year 12
Revenues	¥ 1,891,466
Cost of Sales	<u>(1,737,427)</u>
Gross Profit	154,039
Selling, General, and Administrative Expenses	<u>(98,524)</u>
Profit Before Tax	55,515
Income Taxes	<u>(23,594)</u>
Net Income	<u>¥ 31,921</u>

Further information available to you reveals the following five items (all financial figures reported in millions of yuan).

- a. During Year 12 SeaBreeze had ¥10,000 in gains on sales of assets. The firm included the gains as part of Revenues.
- b. SeaBreeze included financial income of ¥25,800 as part of Revenues, and financial expenses of ¥12,000 as part of Cost of Sales.
- c. The firm included a ¥6,000 write-down of inventory in Selling, General, and Administrative Expenses. Normally in this industry, such a write-down is included in Cost of Sales.
- d. The firm included research and development expenditures of ¥34,000 in Cost of Sales. None of the expenditures related to proven technologies (and so were correctly not capitalized).
- e. During Year 12 the firm committed to a plan to discontinue part of its operations. The discontinued operations accounted for ¥22,000 of gross profit.

Evaluate the way SeaBreeze classified each of the five items on its income statement. If you disagree with the classification, state your reasoning and determine the effect on the firm's gross margin and net income from the alternative classification that you would recommend.

- 30. Classification and interpretation of income statements.** Dyreng Plc. (Dyreng), a Belgian-based construction firm, reported the following information for Year 11. Dyreng applies IFRS and reports in thousands of euros (€).

	Year 11
Revenues	€ 18,957.2
Cost of Sales	<u>(14,161.9)</u>
Gross Profit	4,795.3
Other Operating Income	107.9
Selling, General, and Administrative Expense	<u>(3,929.5)</u>
Other Operating Expenses	<u>(36.5)</u>

(continued)

	Year 11
Operating Profit	€ 937.2
Finance Costs	(347.2)
Income from Investments	<u>14.5</u>
Profit Before Taxes and Discontinued Operations	604.5
Income Tax Expense	<u>(203.7)</u>
Net Profit from Continuing Operations	400.8
Results of Discontinued Operations (net of tax)	<u>23.7</u>
Net Profit	<u>€ 424.5</u>

Further information available to you reveals the following six items, with all euro amounts reported in thousands.

- a. During Year 11 Dyreng signed an agreement with the City of London to build a new terminal at Gatwick airport. The construction will commence in Year 12. As evidence of its commitment to the project, the City of London gave Dyreng a deposit of €80 toward the contract price of €240. Dyreng recognized revenues in Year 11 of €240 on this transaction. Because Dyreng had not yet performed work, it recorded no costs of sales at the time it recognized the revenue.
- b. Dyreng recognized revenues of €700 in Year 11 related to a contract signed in Year 10. It had performed all the work in Year 10, but the customer did not remit payment until Year 11. It recognized the cost of the work performed, €660, as expense when it recognized the revenue.
- c. In Year 11 Dyreng consolidated its administrative functions and sold an office building for €560. The carrying value of the building was €600. The firm reported this transaction in revenues and cost of sales, respectively.
- d. After preparing its income statement for Year 11, Dyreng realized that €45 of income associated with discontinued operations was included in Other Operating Income. Ignore tax effects in evaluating this transaction.
- e. During Year 11 Dyreng completed a renovation project. The contract price was €450, and the firm expended €230 in materials, labor, and overhead costs. Dyreng sent the bill to the client, but because it did not receive payment in Year 11, the firm did not record this transaction in its income statement for Year 11.
- f. In Year 11, a firm offered to pay Dyreng to lease the advertising space on scaffolding that Dyreng was erecting for a renovation project. The client offered Dyreng €960 to lease the advertising space for one year. Dyreng accepted the offer and recorded €960 as a reduction of the cost of sales of the renovation project. At the end of Year 11, six months of the lease remained.

Evaluate the way Dyreng classified each of the six items on its income statement. If you disagree with this classification, state your reasoning and determine the effect on the firm's gross profit and pretax profit from continuing operations from the alternative classification that you would recommend.

31. Calculation of tax rates. A multinational computer equipment manufacturer reported the following amounts for two recent years (in millions of U.S. dollars). The firm applies U.S. GAAP.

	Year 10	Year 9
Revenues	\$ 88,396	\$ 87,548
Expenses	<u>(76,862)</u>	<u>(75,791)</u>
Income Before Income Taxes	11,534	11,757
Income Tax Expense	<u>(3,441)</u>	<u>(4,045)</u>
Net Income	<u>\$ 8,093</u>	<u>\$ 7,712</u>

- a. Compute the ratio of net income divided by revenues for each year.
- b. Compute the ratio of income before taxes divided by revenues for each year.
- c. Compute the ratio of income tax expense divided by income before taxes, a ratio called the *effective tax rate*.
- d. What do these ratios suggest as to the principal reason for the change in profitability between Year 10 and Year 9?

Statement of Cash Flows

1. Understand why using the accrual basis of accounting to prepare the balance sheet and income statement creates the need for a statement of cash flows.
2. Understand the types of transactions that result in cash flows from operating, investing, and financing activities.
3. Develop an ability to prepare a statement of cash flows from comparative balance sheets and an income statement.
4. Develop an ability to analyze the statement of cash flows.

LEARNING OBJECTIVES

What do Delta Airlines and Delphi have in common? Both firms filed for bankruptcy during the early 2000s. Firms filing for bankruptcy often operated profitably for many years preceding their bankruptcy. The bankruptcies occurred because these firms were unable to generate enough cash to cover operating costs and debt service payments. The ability to generate cash flows and to manage their timing is critical to the success of business enterprises. For this reason, U.S. GAAP and IFRS require that firms prepare a **statement of cash flows** showing the sources and uses of cash during the period. The statement of cash flows reports the impact of a firm's operating, investing, and financing activities on cash flows during the period. The statement of cash flows relates to, but differs from, the statement of financial position (balance sheet) and statement of operations (income statement).

NEED FOR A STATEMENT OF CASH FLOWS

How can a profitable firm run out of cash? Two explanations suggest answers.

1. **Net income for a particular period does not equal cash flow from operations.** Chapter 1 points out that most firms use the accrual basis of accounting to measure operating performance. This means that income does not equal cash flow for a given period. To understand why this is the case, recall the principles of revenue and expense recognition:
 - **Revenue recognition.** Firms typically recognize revenue at the time of sale, regardless of when they receive the cash from the sale. Some firms, such as airlines, receive cash *before* providing services and recognizing revenues. Other firms, such as manufacturers and distributors, receive cash *after* providing goods and recognizing revenues. Thus, revenues on the income statement do not generally equal cash received from customers for that period.
 - **Expense recognition.** Firms recognize expenses either in the period when they recognize associated revenues or in the period when they consume materials or services used in operations. The cash outflow related to a specific expense does not always occur in the period when the firm recognizes the expense. Thus, expenses on the income statement do not generally equal cash paid to suppliers of materials and services for that period.

Most of the cash outflows for operating expenses occur *before* the firm receives the cash inflows from a sale. This lag between cash outflows and cash inflows can lead to cash shortages, particularly for a growing firm. Consider the typical firm where cash disbursements to employees and suppliers precede cash collections from customers. The faster this firm grows (that is, the faster it hires more employees and rents more space to expand the business), the greater is the shortfall in cash. The firm might, for example, borrow funds from a bank to pay employees and suppliers while it waits to collect cash from customers.

These examples highlight the fact that, for any accounting period, the income statement does not reflect the cash flows for the period. Stated differently, using the accrual basis of accounting to measure net income creates the need for a separate financial statement that reports the impact of operations on cash flows. That statement helps the reader judge a firm's cash flow needs and how the firm has dealt with those needs.

2. Firms receive cash inflows and disburse cash outflows because of investing and financing activities. The income statement does not report many of a firm's investing and financing inflows and outflows directly. To understand how investing and financing flows affect income and cash differently, consider the following examples:

- Firms building their productive capacity generally use cash to acquire property, plant, and equipment. The firm *capitalizes* (that is, records an asset, not an expense) its expenditures for property, plant, and equipment in the period of acquisition. Later periods' income statements reflect the expensing of these costs, in the form of depreciation expense.
- Debt service payments require cash. Some of those payments are for interest expense, which the income statement will report. Other payments reflect principal repayments. These principal payments are not expenses, so they never appear on an income statement.
- Some firms use cash to pay dividends. Dividends are not expenses on the income statement. Dividends are distributions of net assets to owners.

Neither the balance sheet nor the income statement displays the firm's sources and uses of cash. A balance sheet reports the balance in the cash account at the beginning and end of the accounting period but does not explain why cash changed during the period. The income statement measures the increase (or decrease) in net assets from selling goods and providing services for more (or less) than their costs. Accrual accounting results in an increase in net assets when the firm earns income—but seldom is all this income in cash. The statement of cash flows helps a reader understand how a firm obtains and uses cash.

OVERVIEW OF THE STATEMENT OF CASH FLOWS

Exhibit 6.1 presents a statement of cash flows for Kellogg Group for the fiscal year ended December 31, 2013. We discuss the indirect and direct methods of computing cash flow from operations later in this chapter. To facilitate later discussions, we also provide Kellogg Group's balance sheets for fiscal years 2012 and 2013 (**Exhibit 6.2**) and its income statement for 2013 (**Exhibit 6.3**).

THE STATEMENT EXPLAINS THE REASONS FOR THE CHANGE IN CASH BETWEEN BALANCE SHEET DATES

The last few lines of Kellogg Group's statement of cash flows report the amount of cash on the firm's balance sheet at the beginning and the end of the period. These amounts are the same amounts reported on Kellogg Group's fiscal 2013 balance sheet as the beginning cash balance (\$524 million) and ending cash balance (\$255 million). Both U.S. GAAP and IFRS require that the statement of cash flows explain changes in cash and **cash equivalents**. Cash equivalents represent short-term, highly liquid investments in which a firm has temporarily placed excess cash. Throughout this text, we use the term *cash flows* to refer to flows of both cash and cash equivalents.¹ The remaining lines on the statements of cash flows show the inflows and outflows of

¹FASB, *Statement of Financial Accounting Standards No. 95*, "Statement of Cash Flows," 1987 (**Codification Topic 230**); IASB, *International Accounting Standard No. 7*, "Statement of Cash Flows," 1992.

EXHIBIT 6.1

Kellogg Group
Consolidated Statement of Cash Flows
 (amounts in millions of US\$)

Indirect Method		Direct Method	
	2013		2013
<i>Cash flows from operations:</i>		<i>Cash flows from operations:</i>	
Net Income	\$1,192	Sources of Cash:	
Add: Depreciation Expense	243	Receipts from Customers	\$12,690
Changes in working capital:		Uses of Cash:	
Accounts Receivable	(132)	Cash Paid for Goods Available for Sale	(7,049)
Inventories	27	Cash Paid for Selling, General, and Administrative Items . .	(3,554)
Accounts Payable	136	Cash Paid for Interest	(276)
Accrued Liabilities	(140)	Cash Paid for Income Taxes	(485)
Cash Flows from Operations	<u>\$1,326</u>	Cash Flows from Operations	<u>\$ 1,326</u>
<i>Cash flows from investing:</i>		<i>Cash flows from investing:</i>	
Capital Expenditures on Property, Plant, and Equipment	(525)	Capital Expenditures on Property, Plant, and Equipment	(525)
Purchases of Long-Term Investments	(264)	Purchases of Long Term Investments	(264)
Cash Flows Used in Investing	<u>\$ (789)</u>	Cash Flows Used in Investing	<u>\$ (789)</u>
<i>Cash flows from financing:</i>		<i>Cash flows from financing:</i>	
Payments on Bonds Payable	(233)	Payments on Bonds Payable	(233)
Dividends Paid	(573)	Dividends Paid	(573)
Cash Flows Used in Financing	<u>\$ (806)</u>	Cash Flows Used in Financing	<u>\$ (806)</u>
Change in Cash Flows	<u>\$ (269)</u>	Change in Cash Flows	<u>\$ (269)</u>
Beginning Cash Balance	<u>\$ 524</u>	Beginning Cash Balance	<u>\$ 524</u>
Ending Cash Balance	<u>\$ 255</u>	Ending Cash Balance	<u>\$ 255</u>

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cash during the period. These inflows and outflows explain the change in cash between the two balance sheet dates. Thus, the statement of cash flows reports flows or changes in cash over time, whereas the balance sheet reports the amount of cash at specified dates.

THE STATEMENT CLASSIFIES THE REASONS FOR THE CHANGE IN CASH AS AN OPERATING, OR INVESTING, OR FINANCING ACTIVITY

The inflows and outflows of cash during the year appear in the statement of cash flows in one of three categories: operating, investing, and financing. **Figure 6.1** presents the three types of cash flows, described next.

- 1. Operations** A financially healthy company generates sustained cash inflows from selling goods and providing services. The amount of cash flow from operations indicates the extent to which operating activities generate more cash than they use. A firm can use **cash flow from operations** to acquire buildings and equipment, pay dividends, retire long-term debt, and pay for other investing and financing activities.
- 2. Investing** The second section of the statement of cash flows shows the amount of **cash flow from investing activities**. The acquisition of noncurrent assets, particularly property, plant, and equipment, usually represents a major ongoing use of cash. A firm must replace such assets as they wear out or become obsolete, and it must acquire additional noncurrent assets if it wishes to grow. A firm may obtain part of the cash needed to acquire noncurrent assets from sales of existing noncurrent assets. Such cash inflows seldom, however, cover the cost of new asset acquisitions. Firms not experiencing rapid growth can often finance the acquisition of noncurrent assets with cash flow from operations. Rapidly growing firms must often borrow funds or issue common shares to finance these acquisitions.

EXHIBIT 6.2**Kellogg Group
Consolidated Balance Sheet
(amounts in millions of US\$)**

	2013	2012
CURRENT ASSETS		
Cash and Cash Equivalents	\$ 255	\$ 524
Accounts Receivable	1,143	1,011
Inventories	897	924
Total Current Assets	<u>\$2,295</u>	<u>\$2,459</u>
Property, Plant, and Equipment (Cost)	4,500	3,975
Accumulated Depreciation	1,567	1,324
Property, Plant, and Equipment (Net)	2,933	2,651
Long-Term Investments	2,138	1,874
Total Assets	<u>\$7,366</u>	<u>\$6,984</u>
CURRENT LIABILITIES		
Accounts Payable	561	425
Income Taxes and Interest Payable	78	78
Accrued Liabilities	102	242
Total Current Liabilities	<u>\$ 741</u>	<u>\$ 745</u>
Bonds Payable	1,789	2,022
Shareholders' Equity		
Retained Earnings	4,836	4,217
Total Shareholders' Equity	<u>\$4,836</u>	<u>\$4,217</u>
Total Liabilities and Shareholders' Equity	<u>\$7,366</u>	<u>\$6,984</u>

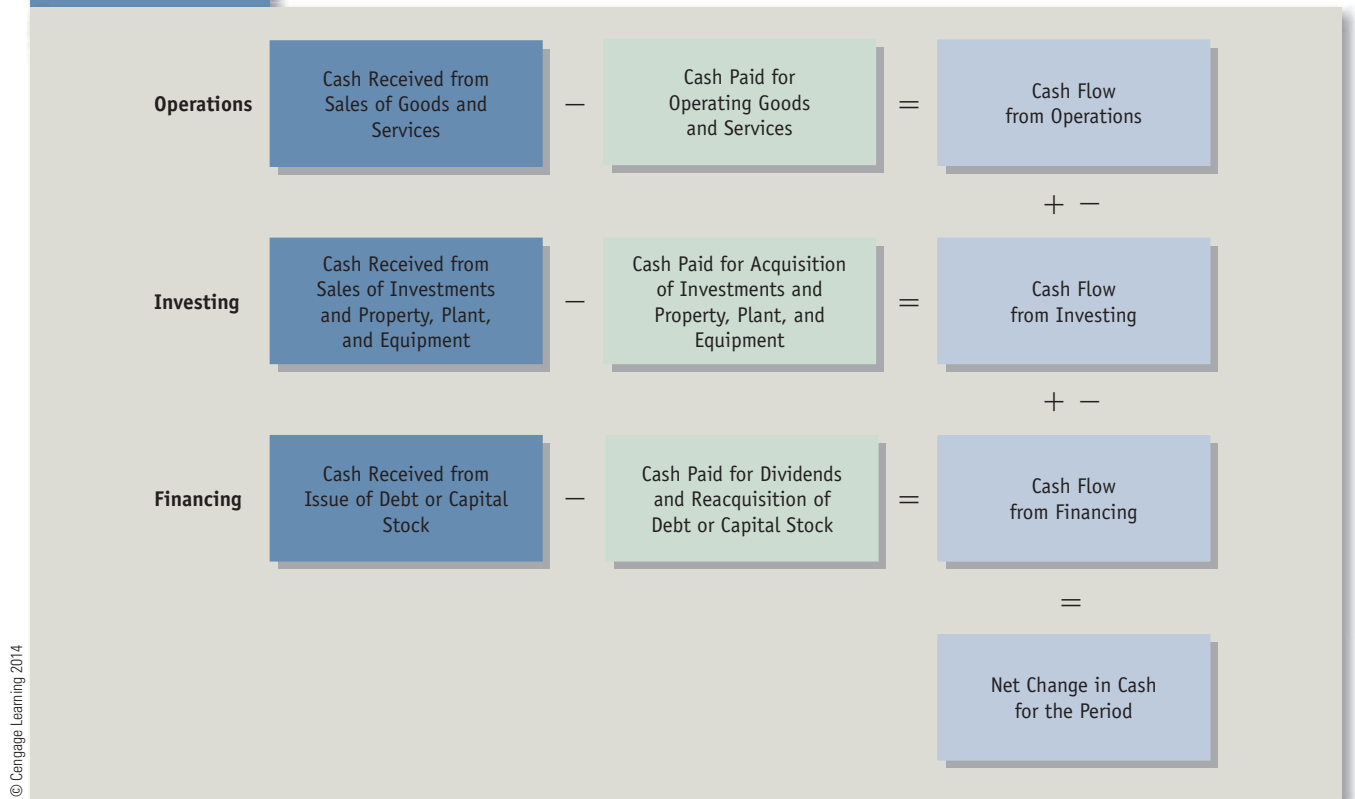
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EXHIBIT 6.3**Kellogg Group
Consolidated Statement of Earnings
(amounts in millions of US\$, except per-share data)**

	2013
Sales Revenues	\$12,822
Cost of Goods Sold	(7,212)
Depreciation Expense	(243)
Selling, General, and Administrative Expense	(3,414)
Operating Profit	<u>\$ 1,953</u>
Interest Expense	(276)
Earnings Before Income Tax	<u>\$ 1,677</u>
Income Tax Expense	(485)
Net Income	<u>\$ 1,192</u>

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FIGURE 6.1



3. **Financing** Third, a firm obtains cash from borrowing and from issuing shares of stock. It uses cash to pay dividends to shareholders, to repay borrowing, and to reacquire outstanding shares of stock. These amounts appear as **cash flow from financing activities** in the statement of cash flows.

Ambiguities in Classifying Cash Flows Cash flows do not always fit neatly into one of these three categories. For example, you might think of cash received from investments in securities—received in the form of interest and dividends—as coming from operating activities. The logic for this treatment is that interest and dividends appear as revenues in the income statement. Alternatively, you might view cash received from interest and dividends as coming from investing activities. The logic for this treatment is that cash flows related to the purchase and sale of investments in some securities appear as investing activities in the statement of cash flows. U.S. GAAP requires firms to classify cash receipts from interest and dividends as an operating activity and to classify cash flows related to the purchase and sale of investments in securities as an investing activity. IFRS permits firms to classify cash received from interest and dividends as operating, or investing, or financing activities, provided the classification is consistently applied across periods.

Similar ambiguities arise with interest expense. Classifying the cash outflow for interest expense as an operating activity would achieve consistency with its inclusion in the income statement as an expense. In contrast, classifying the cash outflow for interest expense as a financing activity would achieve consistency with the classification of debt issues and retirements as a financing activity. U.S. GAAP requires firms to classify cash payments for interest expense as an operating activity. IFRS permits firms to select the classification (operating, or investing, or financing) for cash payments of interest expense, again requiring consistent classification from period to period. Under both U.S. GAAP and IFRS, issuing or repaying debt is a financing activity, as is paying cash dividends.

Finally, certain purchases and sales of securities can be either an investing activity or an operating activity, and increases and decreases in certain short-term borrowings can be either an operating activity or a financing activity.

▶ PROBLEM 6.1 FOR SELF-STUDY

Classifying cash flows by type of activity. Indicate whether each of the following transactions of the current period would appear as an operating, investing, or financing activity in the statement of cash flows. If any transaction would not appear in the statement of cash flows, suggest the reason. Assume the firm uses U.S. GAAP.

- a. Disbursement of \$96,900 to merchandise suppliers.
- b. Receipt of \$200,000 from issuing common shares.
- c. Receipt of \$49,200 from customers for sales made this period.
- d. Receipt of \$22,700 from customers this period for sales made last period.
- e. Receipt of \$1,800 from a customer for goods the firm will deliver next period.
- f. Disbursement of \$16,000 for interest expense on debt.
- g. Disbursement of \$40,000 to acquire land.
- h. Issue common shares with market value of \$60,000 to acquire land.
- i. Disbursement of \$25,300 as compensation to employees for services rendered this period.
- j. Disbursement of \$7,900 to employees for services rendered last period but not paid for last period.
- k. Disbursement of \$53,800 for a patent purchased from its inventor.
- l. Acquisition of a building by issuing a note payable to a bank.
- m. Disbursement of \$19,300 as a dividend to shareholders.
- n. Receipt of \$12,000 from the sale of equipment that originally cost \$20,000 and had \$8,000 of accumulated depreciation at the time of sale.
- o. Disbursement of \$100,000 to redeem bonds at maturity.
- p. Disbursement of \$40,000 to acquire shares of IBM common stock.
- q. Receipt of \$200 in dividends from IBM relating to the shares of common stock acquired in transaction **p** above.

READING AND INTERPRETING THE INFORMATION IN THE STATEMENT OF CASH FLOWS

Refer to **Exhibit 6.1**. Kellogg Group reported positive cash flow from operations in 2013 in the amount of \$1,326 million. This amount exceeded Kellogg Group's cash outflows for investing purposes of \$789 million. Business terminology refers to the excess of cash flow from operations over cash flow used for investing as **free cash flow**.² Kellogg Group's free cash flow for fiscal 2013 was \$537 (= \$1,326 – \$789) million.

Firms use free cash flow for various purposes. For example, to repay borrowing, pay a dividend, repurchase common shares, or add to cash on the balance sheet. In the most recent year, Kellogg Group reports that it paid dividends on common stock (\$573 million) and repaid bonds payable (\$233 million). Kellogg Group's net cash outflow for financing activities was \$806 million, or \$269 million more than its free cash flow. Thus, as the last rows of **Exhibit 6.1**

²*Free cash flow* is not a technical term in accounting. It is a term that financial analysts and investment bankers use, and has various definitions. Be sure you understand the definition as others use it.

show, Kellogg Group's cash balance declined by \$269 million, from \$524 million at the beginning of 2013 to \$255 million at the end of 2013. This decline is also evident from a comparison of the cash balances on Kellogg Group's balance sheet (**Exhibit 6.2**).

PRESENTATION FORMATS FOR THE STATEMENT OF CASH FLOWS

Both U.S. GAAP and IFRS permit flexibility with respect to the display of information in the statement of cash flows. There are, however, the following requirements:

- Firms must report cash flows from operations, investing, and financing for the current year and the prior two years.
- Firms must report the beginning and ending cash balances, and the change in the cash balance. The change in cash must reconcile to the sum of the cash inflows and outflows from operating, investing, and financing activities.
- Within the investing and financing cash flow categories, the presentation for most items should not net cash inflows against cash outflows. Instead, the firm must show the gross (that is, not netted) cash inflows and cash outflows. Gross reporting requires, for example, that firms show the amount of cash spent to acquire property, plant, and equipment for the year separately from the amount of cash received on sales of property, plant, and equipment during the year.³
- The operating, investing, and financing sections of the statement of cash flows do not report *nonmonetary*, sometimes called *non-cash, transactions*. Nonmonetary transactions affect assets and liabilities on the balance sheet but do not result in cash inflows or cash outflows. Examples include the acquisition of equipment in exchange for shares of stock or the conversion of a firm's debt into common shares. Firms must disclose nonmonetary transactions in the body of the statement of cash flows, or in a separate schedule, or in a note.

To illustrate these requirements refer to Great Deal, Inc.'s statement of cash flows (**Exhibit 1.3**) and to Thames Limited's statement of cash flows (**Exhibit 1.7**). Both firms

- Separately report cash flows from operating, investing, and financing activities;
- Reconcile beginning and ending cash balances to the change in cash flows during the year; and
- Use the indirect method of reporting cash flows, which calculates cash flow from operations by reference to net income. We discuss the indirect method later in this chapter.

THE STATEMENT OF CASH FLOWS RECONCILES NET INCOME WITH CASH FLOW FROM OPERATIONS

Your first exposure to constructing a statement of cash flows occurred in **Chapter 3**. There you analyzed every entry (change) in the Cash account and placed each change in a statement of cash flows. You did not classify cash flows into operating, investing, or financing activities. Although both U.S. GAAP and IFRS state a preference for the presentation of cash flows from operations as you derived them in **Chapter 3** (the direct method), most firms present cash flows from operations as a reconciliation of net income to operating cash flow (the indirect method).

1. **Direct method** The direct method of presenting the cash from operations section of the statement of cash flows reports the amounts of cash received from customers less cash disbursed to suppliers, employees, lenders, and taxing authorities. The right panel of **Exhibit 6.1** shows Kellogg Group's statement of cash flows using the direct method.
2. **Indirect method** The indirect method of presenting the cash from operations section of the statement of cash flows begins with net income for a period and presents adjustments to net income for revenues and expenses not matched with cash receipts from customers or disbursement to suppliers of goods and services in the current period. The left panel of **Exhibit 6.1** shows Kellogg Group's statement of cash flows using the indirect method.

³Because gross reporting provides more information than net reporting, standard setters view gross reporting as providing a better representation of the firm's operating, investing, and financing activities.

Most firms report cash flow from operations using the indirect method. Before the FASB or IASB expressed preference for the direct method, most firms used the indirect method, so both preparers and users were familiar with it.⁴ Experienced financial analysts who use the statement of cash flows generally understand the adjustments required to convert net income to cash flow from operations. Our experience in teaching the statement of cash flows indicates that on initial exposure to the statement of cash flows, some students have difficulty understanding these adjustments, and therefore, find the direct method easier to understand. We illustrate the computation of cash flow from operations using both the indirect method (because it is widely used) and the direct method (because it may be easier to understand). The two methods differ with respect to their derivation of cash flow from operations and are identical with respect to their derivations of cash flow from investing and cash flow from financing:

Statement of Cash Flows	
Cash Flow from Operations (CFO) using indirect method	Cash Flow from Operations (CFO) using direct method
Cash Flow from Investing (CFI)	Cash Flow from Investing (CFI)
Cash Flow from Financing (CFF)	Cash Flow from Financing (CFF)
Change in Cash = CFO + CFI + CFF	Change in Cash = CFO + CFI + CFF

PREPARING THE STATEMENT OF CASH FLOWS

A firm could prepare its statement of cash flows directly from entries in its Cash account, including classifying each transaction affecting cash as an operating, or investing, or financing activity. As the number of transactions affecting cash increases, this approach becomes cumbersome. Most firms design their accounting systems to accumulate the information needed to prepare income statements and balance sheets. They transform information from the income statement and balance sheet into a statement of cash flows. We present a T-account work sheet for transforming balance sheet and income statement information and for preparing the statement of cash flows. This approach relies on understanding the formula for calculating the change in cash from the balance sheet, described next.

THE CASH CHANGE EQUATION

To understand the preparation of a statement of cash flows, you must understand how changes in cash relate to changes in non-cash accounts. The accounting equation states

Balance Sheet Equation (Eq.1)

$$\begin{array}{l} \text{Assets} \\ \text{Cash} + \text{Non-cash Assets} \end{array} = \text{Liabilities} + \text{Shareholders' Equity}$$

This equation must be true for balance sheets constructed at the start of the period and at the end of the period. If the start-of-period and end-of-period balance sheets maintain the accounting equation, then the following equation must also hold:

$$\text{(Eq.2)} \quad \begin{array}{l} \text{Change} \\ \text{in Cash} \end{array} + \begin{array}{l} \text{Change in} \\ \text{Non-cash} \\ \text{Assets} \end{array} = \begin{array}{l} \text{Change in} \\ \text{Liabilities} \end{array} + \begin{array}{l} \text{Change in} \\ \text{Shareholders'} \\ \text{Equity} \end{array}$$

Rearranging terms in this equation, we obtain the equation for the change in cash:

$$\text{Cash Change Equation (Eq.3)} \quad \begin{array}{l} \text{Change} \\ \text{in Cash} \end{array} = \begin{array}{l} \text{Change in} \\ \text{Liabilities} \end{array} + \begin{array}{l} \text{Change in} \\ \text{Shareholders'} \\ \text{Equity} \end{array} - \begin{array}{l} \text{Change in} \\ \text{Non-cash} \\ \text{Assets} \end{array}$$

⁴If the firm uses the direct method, it must also provide a separate reconciliation of net income to cash flows from operations. The reconciliation can appear either at the bottom of the statement of cash flows or in a separate note.

The left-hand side of the **cash change equation (Eq. 3)** represents the change in cash. The right-hand side of the equation reflects changes in all non-cash accounts and must also equal the change in cash. The equation states that the change in cash (left-hand side) equals the change in liabilities plus the change in shareholders' equity minus the change in non-cash assets (right-hand side). For example, a bank loan increases cash and increases a liability, whereas the issue of common stock increases cash and increases shareholders' equity. Each of these transactions increases both sides of **Equation 3**.

Paying cash to acquire non-cash assets, for example, inventory or equipment, decreases cash and increases non-cash assets. Increases in non-cash assets have a negative sign on the right-hand side of the equation, so paying cash to acquire assets decreases both sides of **Equation 3**. We identify the causes of the change in cash by studying the changes in non-cash accounts and classifying each change as operating or investing or financing activities. The preceding italicized sentence provides the overview of the procedures that underlie the T-account work sheet for the statement of cash flows.

T-ACCOUNT WORK SHEET

The **T-account work sheet** does not show accounts as they appear in the firm's general ledger. Rather, it is like scratch paper, used for computations that are not part of the formal record-keeping system. We use the T-account work sheet to show the effects of transactions on the Cash account. Given the large number of transactions affecting the Cash account during a period, most firms prepare the statement of cash flows after they have prepared the income statement and the balance sheet. This section presents a step-by-step procedure for preparing the statement of cash flows from the balance sheet and the income statement.

Step 1 Obtain balance sheets for the beginning and end of the period covered by the statement of cash flows and an income statement for that period. We use the comparative balance sheets of Kellogg Group for December 31, 2012 and 2013 (**Exhibit 6.2**) and its income statement for fiscal 2013 (**Exhibit 6.3**).

Step 2 Prepare a T-account work sheet. An example based on the Kellogg Group for fiscal 2013 appears in **Exhibit 6.4**. The top of the work sheet shows a master T-account titled Cash, subdivided into three sections labeled Operations, Investing, and Financing. The number at the top of each T-account is the beginning balance; the number at the bottom is the ending balance. The beginning and ending cash amounts for Kellogg Group are \$524 million and \$255 million, respectively, and correspond to the amounts reported in its balance sheet (**Exhibit 6.2**). The check marks indicate the figures are balances. The master T-account, Cash, represents the left-hand side of **Equation 3** for the change in cash.

After preparing the master T-account for Cash (the top of **Exhibit 6.4**), complete the work sheet by preparing T-accounts for each liability, shareholders' equity, and non-cash asset account. The lower portion of **Exhibit 6.4** shows the T-accounts for each of Kellogg Group's non-cash accounts that changed during fiscal 2013. The balance in the account Income Taxes and Interest Payable did not change so the work sheet does not include a T-account for this item. Enter the beginning and ending balances in each account, from the balance sheet (see **Exhibit 6.2**). The sum of the changes in these individual T-accounts expresses the right-hand side of **Equation 3** for the change in cash.

Cash Change Equation (Eq. 3)

$$\text{Change in Cash} = \text{Change in Liabilities} + \text{Change in Shareholders' Equity} - \text{Change in Non-cash Assets}$$

Step 3 Explain the change in the master Cash T-account between the beginning and the end of the period. We do this by accounting for the cash effect of the change in each non-cash account during the period. First, reconstruct the entries originally recorded in the accounts during the period. Enter those entries into the same accounts on the T-account work sheet. Second, classify the entries in the master account for cash as an operating, or investing, or financing activity. The net change in all non-cash accounts provides the information needed to account for the change in cash, the left-hand side of **Equation 3**. If the reconstructed

$$\text{Beginning Retained Earnings} + \text{Net Income} - \text{Dividends} = \text{Ending Retained Earnings}$$

or

$$\text{Dividends} = \text{Beginning Retained Earnings} + \text{Net Income} - \text{Ending Retained Earnings}$$

For Kellogg Group:

$$\begin{aligned} \text{Dividends} &= \$4,217 \text{ million} + \$1,192 \text{ million} - \$4,836 \text{ million} \\ &= \$573 \text{ million} \end{aligned}$$

The analytic entry to record the information about net income is as follows:

(1)	Cash (Operations: Net Income)	1,192	
	Retained Earnings		1,192
	Analytic entry recorded in T-account work sheet.		

All the journal entries that together record the process of earning \$1,192 million in net income are equivalent to the following single journal entry:

Net Assets (= All Assets Minus All Liabilities)	1,192	
Retained Earnings		1,192

Change in Cash	=	Change in Liabilities	+	Change in Shareholders' Equity	-	Change in Non-cash Assets
+1,192				+1,192		
(Opns.)						

Summary entry equivalent to recording earnings of \$1,192 million.

The preceding journal entry summarizes all the effects on the balance sheet of the firm's income earning activities, as one debit to Net Assets. Both the T-account work sheet and the cash flow from operations section of an actual statement of cash flows, for the indirect method, start with the provisional assumption that all earnings produce cash from operations. Subsequent additions and subtractions adjust for transactions where that assumption is invalid. Thus, in analytic entry **(1)**, the debit shows a provisional increase in cash from operations equal to net income for the period.

Cash Change Equation (Eq. 3)

$$\text{Change in Cash} = \text{Change in Liabilities} + \text{Change in Shareholders' Equity} - \text{Change in Non-cash Assets}$$

Not all expenses decrease cash. To calculate cash from operations, we must add back to net income the amounts of expenses that do not use cash this period but instead use non-cash net assets in this period. An example is depreciation expense, illustrated in entry **(2)**:

(2)	Cash (Operations: Depreciation Expense Addback)	243	
	Accumulated Depreciation		243
	Analytic entry recorded in T-account work sheet.		

Depreciation expense, subtracted in calculating net income, did not reduce cash this period. Some time ago, Kellogg Group used cash to acquire the property, plant, and equipment it now depreciates. The use of cash appeared on the statement of cash flows for the earlier period, as

an investing use of cash. (We revisit this use of cash when we consider the analytical entry for the Property, Plant, and Equipment account.) The analytic entry for depreciation expense adds back depreciation expense to net income in calculating cash flow from operations.

Next, we record the supplementary information concerning dividends of \$573 million declared and paid:

(3)	Retained Earnings	573	
	Cash (Financing: Dividends; Subtraction)		573
	Analytic entry recorded in T-account work sheet.		

Dividends reduce retained earnings and cash. Paying cash dividends is a financing activity on the statement of cash flows.

Once the T-account work sheet reflects the supplementary information, we must make inferences about the reasons for the remaining changes in the non-cash balance sheet accounts.⁵ Explanations for the changes in non-cash accounts appear below, in balance sheet order.

The Accounts Receivable account shows an increase of \$132 (= \$1,143 – \$1,011) million. The analytic entry to record this information in the work sheet is as follows:

(4)	Accounts Receivable	132	
	Cash (Operations: Subtractions)		132
	Analytic entry recorded in T-account work sheet.		

The firm's operations of the period generated sales, but not all of these sales resulted in an increase in cash. Some of the sales increased accounts receivable. Because we start the statement of cash flows with net income (provisionally assuming that all sales generated cash), we must subtract the portion of revenues that did not produce cash in arriving at cash from operations. The portion of revenues that did not produce cash equals the excess of sales on account over cash collections from customers. This amount equals the change in Accounts Receivable. The amount of the increase (decrease) in accounts receivable is the amount that must be subtracted from (added to) net income to calculate cash from operations.

The next non-cash account that changed, Inventory, shows a decline of \$27 (= \$897 – \$924) million. The analytic entry in the work sheet to explain the change in Inventory is as follows:

(5)	Cash (Operations: Addition)	27	
	Inventory		27
	Analytic entry recorded in T-account work sheet.		

Kellogg Group reduced the amount of inventory on its balance sheet. To calculate cash from operations, we must add to net income the decrease in inventories during the year. If inventories had increased, we would subtract the amount of the increase.

The next non-cash account, Property, Plant, and Equipment (PPE), shows an increase of \$525 (= \$4,500 – \$3,975) million. Point (2) of the supplemental information states that Kellogg Group had no sales, disposals, or impairments of PPE during 2013. The only remaining transaction that could affect the PPE account is the purchase of new PPE during 2013. The amount of the purchase must equal the increase in this account, \$525 million. The analytic entry is as follows:

(6)	Property, Plant, and Equipment (Cost)	525	
	Cash (Investing: Acquisitions of Property, Plant, and Equipment) . . .		525
	Analytic entry recorded in T-account work sheet.		

⁵The preparer of a statement of cash flows for an actual firm will use information in the firm's accounting records regarding the change in each account.

The next non-cash account, Long-Term Investments, increased \$264 (= \$2,138 – \$1,874) million during 2013. Absent other information, we assume Kellogg Group acquired long-term investments for cash during 2013. The analytic entry is as follows:

(7)	Long-Term Investments	264	
	Cash (Investing: Acquisition of Long-Term Investments)		264
	Analytic entry recorded in T-account work sheet.		

The next non-cash account, Accounts Payable, increased in 2013 from \$425 million to \$561 million at the end of the year, \$136 million. The analytic entry to explain this increase is as follows:

(8)	Cash (Operations: Additions)	136	
	Accounts Payable		136
	Analytic entry recorded in T-account work sheet.		

To understand this analytic entry, assume that Kellogg Group increased its accounts payable because it purchased a resource (such as inventory) on credit. At the end of 2013, Kellogg Group acquired the resource but has not yet paid the supplier. Kellogg Group’s cash from operations is, therefore, higher this year by the amount of the increase in accounts payable.

The next non-cash account showing a change is Accrued Liabilities. The analytic entry to explain the decrease in the amount of Accrued Liabilities is as follows:

(9)	Accrued Liabilities	140	
	Cash (Operations: Subtraction)		140
	Analytic entry recorded in T-account work sheet.		

The reasoning behind this analytic entry is the opposite as for analytic entry (8). Accrued liabilities declined by \$140 (= \$102 – \$242) million, indicating that Kellogg Group reduced this liability (by paying cash) more than it increased resources acquired from creditors. (Acquiring resources from creditors increases Accounts Payable.) The net effect is an outflow of cash from operations by the amount of the decrease, \$140 million.

Bonds Payable, the final non-cash account with a change not yet explained, shows a decrease of \$233 (= \$1,789 – \$2,022) million for fiscal 2013. We infer that Kellogg Group used cash to repay some of its bonds payable during the year. The analytic entry is as follows:

(10)	Bonds Payable	233	
	Cash (Financing: Paid Bonds Payable)		233
	Analytic entry recorded in T-account work sheet.		

Exhibit 6.5 presents the completed T-account work sheet for Kellogg Group for 2013. The 10 analytic entries explain all changes in the non-cash T-accounts and show annotations in the components of change in the Cash account.

Step 4 In the final step, we use the information in the master T-account for cash in the completed work sheet to prepare a statement of cash flows. **Exhibit 6.1** presents the Kellogg Group statement of cash flows. We describe the preparation of the statement of cash flows—under both the direct and indirect methods—in the next section.

DIRECT METHOD OF PREPARING THE STATEMENT OF CASH FLOWS

In this section, we describe how to prepare the cash flow from operations section of the statement of cash flows using the direct method. The panel on the right-hand side of **Exhibit 6.1** displays the statement of cash flows derived using the direct method. The derivation of the direct method follows the three steps shown in the three panels in **Exhibit 6.8**.

EXHIBIT 6.5**Kellogg Group
T-Account Work Sheet (with Changes in Non-cash Accounts)**

Cash	
✓	524
Operations	
Net Income	(1) 1,192
Depreciation Expense: Addback	(2) 243
Decreased Inventory	(5) 27
Increased Accounts Payable	(8) 136
Investing	
	525 (6)
	264 (7)
Financing	
	573 (3)
	233 (10)
✓	255

Accounts Receivable	Inventory	Property, Plant, and Equipment (Cost)
✓ 1,011	✓ 924	✓ 3,975
(4) 132	27 (5)	(6) 525
✓ 1,143	✓ 897	✓ 4,500

Accumulated Depreciation	Long-Term Investments	Accounts Payable
1,324 ✓	1,874 ✓	425 ✓
243 (2)	264 (8)	136 (8)
1,567 ✓	2,138 ✓	561 ✓

Accrued Liabilities	Bonds Payable	Retained Earning
320 ✓	2,022 ✓	4,217 ✓
140 (9)	(10) 233	(3) 573
180 ✓	1,789 ✓	1,192 (1)
		4,836 ✓

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PROBLEM 6.2 FOR SELF-STUDY

Preparing a T-account work sheet for a statement of cash flows. Exhibit 6.6 presents a comparative balance sheet for Robbie Corporation as of December 31, 2012 and 2013. Exhibit 6.7 shows the income statement for 2013. During 2013 the firm sold no property, plant, and equipment. It declared and paid dividends of \$2,000. Prepare a T-account work sheet for the preparation of a statement of cash flows for 2013. Use the format shown in Exhibit 6.5.

Step 1 Copy the income statement into the left-hand box.

Step 2 Copy into the middle box all the additions and subtractions in the *operations section* of the master Cash account in the T-account work sheet, including the \$1,192 of net

EXHIBIT 6.6

**Robbie Corporation
Comparative Balance Sheet
December 31, 2013 and 2012
(Problem 6.2 for Self-Study)
(all amounts in thousands of US\$)**

	December 31	
	2013	2012
ASSETS		
Current Assets		
Cash	\$ 25	\$ 10
Accounts Receivable	22	15
Merchandise Inventories	18	20
Total Current Assets	<u>\$ 65</u>	<u>\$ 45</u>
Noncurrent Assets		
Property, Plant, and Equipment	\$ 66	\$ 50
Less Accumulated Depreciation	(31)	(25)
Total Property, Plant, and Equipment	<u>\$ 35</u>	<u>\$ 25</u>
Total Assets	<u>\$100</u>	<u>\$ 70</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current Liabilities		
Accounts Payable for Merchandise	\$ 37	\$ 30
Total Current Liabilities	\$ 37	\$ 30
Long-Term Debt		
Bonds Payable	18	10
Total Liabilities	<u>\$ 55</u>	<u>\$ 40</u>
Shareholders' Equity		
Common Stock	\$ 20	\$ 10
Retained Earnings	25	20
Total Shareholders' Equity	<u>\$ 45</u>	<u>\$ 30</u>
Total Liabilities and Shareholders' Equity	<u>\$100</u>	<u>\$ 70</u>

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EXHIBIT 6.7

**Robbie Corporation
Income Statement
For 2013
(Problem 6.2 for Self-Study)
(all amounts in thousands of US\$)**

Sales Revenue	\$ 180
Cost of Goods Sold	(140)
Selling and Administrative Expenses	(25)
Depreciation Expense	(6)
Interest Expense	(2)
Net Income	<u>\$ 7</u>

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income shown below the box. Place the number next to the income statement item to which the addition or subtraction relates. For example, place the Accounts Receivable subtraction next to Sales Revenue, the Depreciation adjustment next to Depreciation Expense, and so on. To do this, you need to understand which income statement item a given addition or subtraction refers to. In placing the number in column **(b)**, use parentheses if the number represents

EXHIBIT 6.8

**Kellogg Group
Deriving Direct Method Cash Flow from Operations
Using Data from T-Account Work Sheet**

Each step is a separate panel. Later versions condense all work into a single panel.

1. Copy Income Statement and Cash Flow from Operations

Operations	Changes in Related Balance Sheet Accounts From T-Account Work Sheet			
	(a)	(b)	(c)	(d)
Sales Revenues	\$12,822			
Cost of Goods Sold	(7,212)			
Depreciation Expense	(243)			
Selling, General and Administrative Expense	(3,414)			
Interest Expense	(276)			
Income Tax Expense	(485)			
Net Income	<u>\$ 1,192</u>			
		<u>\$ 1,326</u>	= Cash Flow from Operations Derived via Indirect Method	<u>\$ —</u>

2. Copy Information from T-Account Work Sheet Next to Related Income Statement Item

Operations	Changes in Related Balance Sheet Accounts from T-Account Work Sheet			
	(a)	(b)	(c)	(d)
Sales Revenues	\$12,822	(132)	= Accounts Receivable Increase	
Cost of Goods Sold	(7,212)	27	= Inventory Decrease	
Depreciation Expense	(243)	136	= Accounts Payable Increase	
Selling, General, and Administrative Expense	(3,414)	243	= (Expense Not Using Cash)	
Interest Expense	(276)	(140)	= Accrued Liabilities Decrease	
Income Tax Expense	(485)		Income Taxes and Interest Payable (no change in balance sheet account)	
Net Income	<u>\$ 1,192</u>	<u>\$1,192</u>	= Net Income	
		<u>\$1,326</u>	= Cash Flow from Operations via Indirect Method	<u>\$ —</u>

3. Sum Across Rows to Derive Direct Receipts and Expenditures

Operations	(a)	Copy from T-Account Work Sheet (b)	Changes in Related Balance Sheet Accounts from T-Account Work Sheet (c)	Direct Method (d)	
				Direct Method (d)	From Operations: Receipts Less Expenditures
Sales Revenues	\$12,822	(132)	= Accounts Receivable Increase	\$12,690	= Receipts from Customers
Cost of Goods Sold	(7,212)	27	= Inventory Decrease	(7,049)	= Payments for Goods Available for Sale
Depreciation Expense	(243)	136	= Accounts Payable Increase	—	
Selling, General, and Administrative Expense	(3,414)	243	= (Expense Not Using Cash)		
Interest Expense	(276)	(140)	= Accrued Liabilities Decrease	(3,554)	= Payments for Selling, General, and Administrative Items
Income Tax Expense	(485)		Income Taxes and Interest Payable (no change in balance sheet account)	(276)	= Payments for Interest Expense
Net Income	<u>\$ 1,192</u>	<u>\$1,192</u>	= Net Income	(485)	= Payments for Income Taxes
		<u>\$1,326</u>	= Cash Flow from Operations via Indirect Method	<u>\$ 1,326</u>	= Cash Flow from Operations via Direct Method

Note that the information in column (b) is cash flow from operations derived with the indirect method.

a decrease in cash; no parentheses means the number represents an increase in cash. Add the numbers in column (b) to check that you have shown the indirect method's computation of cash flow from operations. Column (b) resembles the cash flow from operations section of the statement of cash flows prepared using the indirect method, except that the numbers have a different order—net income is at the bottom, not at the top—and the other numbers are in income statement order.

Step 3 Add across the numbers in columns (a) and (b), and write the sums in column (d). Label the sum as either Receipts or Payments, and describe the nature of the receipt or payment. Add the numbers in column (d). If you have done the work correctly, the sum in column (d) will match the sum in column (b) and will equal cash flow from operations.

INDIRECT METHOD OF PREPARING THE STATEMENT OF CASH FLOWS

The indirect method applies to the cash from operations section of the statement of cash flows. The indirect method begins with reported net income, and adjusts net income to derive cash flow from operations. We illustrate the adjustments and the calculation of cash flow from operations under the indirect method using the data provided for Kellogg Group. Kellogg Group's statement of cash flows for fiscal 2013, prepared using the indirect method, is shown in the panel on the left-hand side of **Exhibit 6.1**.

The first line shows Kellogg Group's net income, \$1,192 million, from the income statement (**Exhibit 6.3**). The first adjustment to net income is to add non-cash depreciation expense of \$243 million (the third line of Kellogg Group's income statement in **Exhibit 6.3**). To understand this adjustment, note that Kellogg Group used cash in some earlier period to acquire a building or equipment. In that prior period, it reported the use of cash as an investing activity. Depreciation appears as an expense on the income statement because it reflects the use of a portion of the buildings and equipment whose service life extends over many years. Accounting recognizes a portion of the cost of these assets as depreciation expense each period. Depreciation expense decreases shareholders' equity and increases accumulated depreciation, which decreases net assets.⁶ The journal entry that the firm would make to recognize depreciation expense is:

Depreciation Expense	243	
Accumulated Depreciation		243
Journal entry to record depreciation expense of \$243 million for the year.		

Depreciation expense does not use cash. This is evident by the fact that cash is not credited in the above journal entry. The amount of depreciation expense does, however, reduce net income.

The indirect method starts with net income, which includes a subtraction for depreciation expense (the third line of **Exhibit 6.3** shows this subtraction). Because depreciation expense reduces net income but does not use cash, adding the depreciation expense amount back to net income yields an amount that is closer to cash flows. Thus, under the indirect method, the adjustment that adds back depreciation removes the effect of a non-cash expense, in calculating operating cash flows.⁷

The remaining adjustments to net income relate to changes in working capital items. In particular, **Exhibit 6.1** shows subtractions of \$132 million for accounts receivable and \$140 million for accrued liabilities and additions of \$27 million for inventories and \$136 million for accounts payable. We explain one of these adjustments—accounts receivable—and leave the others for later chapters.

⁶The accounting for long-lived assets is discussed in **Chapter 10**. We introduce depreciation expense and accumulated depreciation here because they are central to the statement of cash flows.

⁷To see this another way, imagine a firm whose only activity for a period was the recording of depreciation expense of \$100—nothing else. That firm would show negative net income, a loss, of \$100 and no change in cash. Cash flow from operations is zero. So, the reconciliation must start with the net loss of -\$100, then add back the \$100 depreciation expense, in order to reconcile the -\$100 net loss with the zero cash flow from operations. Later chapters explain why the change in the balance sheet account for accumulated depreciation rarely equals the income statement amount for depreciation expense.

Recall that accounts receivable represent the amount that customers who purchased on credit owe at the balance sheet date. To derive the amount of cash Kellogg Group collected from its customers during 2013, it is helpful to understand the following:

- **Cash collected from *prior* period credit sales.** Kellogg Group made sales in earlier periods as well in the current period. Kellogg Group received cash *this* period from customers who purchased in *prior* periods. The revenue from those *prior* sales appeared in the *prior* period's income statement. Those sales increased Kellogg Group's accounts receivable in the prior period and were followed by a decrease in accounts receivable *this* period when Kellogg Group collected the cash.
- **Cash sales *this* period and credit sales *this* period that were also paid *this* period.** Kellogg Group received additional cash from customers who (a) paid cash *this* period and (b) purchased on credit and paid *this* period. Both cases result in no change in accounts receivable from the beginning to the end of 2013.
- **Credit sales *this* period that have not yet been paid.** Kellogg Group made credit sales in 2013 that it will collect in future periods.

Exhibit 6.2 shows that, as a result of the above transactions, Kellogg Group's accounts receivable increased by \$132 (= \$1,143 – \$1,011) million during 2013. Thus, the amount of cash Kellogg Group collected from customers in 2013 equals its sales revenues for 2013 (\$12,822 million, reported in **Exhibit 6.3**), reduced by the increase in accounts receivable during this period (or increased by the decrease in accounts receivable during this period).⁸ Thus, Kellogg Group collected \$12,690 million cash from customers in 2013 (\$12,822 million sales revenue – \$132 million increase in accounts receivable).⁹

To reflect the amount of cash collected from customers, the indirect method adjusts net income for the difference between revenues recognized (\$12,822 million) and the amount of cash collected (\$12,690 million). That difference is the change in accounts receivable during the period. Under the indirect method, the firm will subtract from income an increase in accounts receivable and add to income a decrease in accounts receivable to arrive at cash flow from operations.

The following summarizes the adjustments to net income required under the indirect method to account for changes in working capital items:

Working Capital Account	Adjustment to Net Income Required to Derive Cash Flow from Operations Under the Indirect Method
Change in Current Asset:	
Increase	Subtraction of the amount of the increase
Decrease	Addition of the amount of the decrease
Change in Current Liability:	
Increase	Addition of the amount of the increase
Decrease	Subtraction of the amount of the decrease

To understand that the indirect and direct methods calculate the same amount of cash from operations, consider the following summary. The indirect method starts with net income, equal to revenues minus expenses. Then, it adjusts net income for revenues or expenses that produce or use cash in amounts different from the revenue or expense item. The direct method lists each revenue amount that increases cash and each expense amount that reduces cash.

⁸To see this another way, consider two unrealistic assumptions. First, assume that during a period a firm collects no cash from any of the accounts receivable on its balance sheet at the beginning of the period. Then, the amount of cash the firm receives from customers equals sales revenue less the increase in accounts receivable. Second, assume that a firm has historically made sales on account but that in the current period it makes all its sales for cash and collects some of the accounts receivable on its balance sheet at the beginning of the period. Then, the amount of cash it receives during the period equals sales revenue plus the decrease in accounts receivable.

⁹This is the same amount reported as Receipts from Customers under the direct method (right-hand panel of **Exhibit 6.1**).

PROBLEM 6.3 FOR SELF-STUDY

Deriving the statement of cash flows from a T-account work sheet. Refer to **Problem 6.2 for Self-Study** and its solution, including **Exhibit 6.13**.

- a. Using the information in the T-account worksheet in **Exhibit 6.13** and the format of **Exhibit 6.8**, derive cash flows from operations, using the direct method, for Robbie Corporation for 2013.
- b. Prepare the cash from operations section of Robbie Corporation’s statement of cash flows for 2013 using the direct method.
- c. Prepare the cash from operations section of Robbie Corporation’s statement of cash flows for 2013 using the indirect method.
- d. Prepare the cash from investing section and the cash from financing section of Robbie Corporation’s statement of cash flows for 2013.
- e. Reconcile the net cash flow of Robbie Corporation in 2013 with the change in the cash account shown on its balance sheet.

EXTENSION OF THE ILLUSTRATION TO MORE COMPLEX TRANSACTIONS

The illustration for Kellogg Group is simpler than the typical published statement of cash flows in at least four respects:

- 1. Only a few balance sheet accounts require explanation.
- 2. Several more complex transactions that affect cash flow from operations do not arise.
- 3. Each transaction recorded in Step 3 involves only one debit and one credit.
- 4. Except for the Retained Earnings account, each explanation of a non-cash account change involves only one analytic entry on the work sheet.

Most of the complications that arise in interpreting published statements of cash flows relate to accounting events that later chapters discuss. We illustrate here one complication, arising from an asset sale. We first assume the firm sold some of its equipment during the year at its *carrying value*. That is, we assume the cash proceeds from the sale equal the acquisition cost of the asset less the accumulated depreciation on the asset. With this assumption, there is no gain or loss on the sale.

Sale of Equipment with No Gain or Loss Reconsider the Kellogg Group example, assuming that Kellogg Group sold some equipment during 2013 for \$13 million cash. It originally paid \$20 million for this equipment, and the accumulated depreciation on the equipment was \$7 million. The entry made during the year to record the sale of the equipment was as follows:

Cash	13	
Accumulated Depreciation	7	
Buildings and Equipment (Cost)		20
Journal entry for sale of equipment at carrying value.		

Further assume the net decrease in cash for 2013 is still \$269 million. To reflect the new information about the sale of the asset, we add one new journal entry (1a), replace journal entry (6) with (6a), and replace analytic entry (2) with (2a). The following analytic entry in the T-account work sheet recognizes the effect of the sale of equipment:

(1a) Cash (Investing: Sale of Equipment)	13	
Accumulated Depreciation	7	
Property, Plant, and Equipment (Cost)		20
Analytic entry recorded in T-account work sheet.		

The debit to Cash (Investing: Sale of Equipment) shows the proceeds of the sale. As a result of analytic entry (1a), the T-accounts for Property, Plant, and Equipment (Cost) and Accumulated Depreciation appear as follows:

Property, Plant, and Equipment (Cost)		Accumulated Depreciation	
✓ 3,975		(1a) 7	1,324 ✓
✓ 4,500	20 (1a)		1,567 ✓

We can now analyze the change in the Property, Plant, and Equipment (Cost) account: the T-account requires a net debit amount of \$525 million to balance. The T-account indicates a credit (entry 1a) of \$20 million to recognize the sale of equipment. To explain the net increase in the Property, Plant, and Equipment (Cost) account, given the decrease of \$20 million, it must be the case that Kellogg Group acquired new PPE for \$545 (= \$525 + \$20) million during 2013.

The reconstructed analytic entry, which replaces analytic entry (6), and which completes the explanation of the change in this account is as follows:

(6a)	Property, Plant, and Equipment (Cost)	545	
	Cash (Investing: Acquisition of Property, Plant, and Equipment)		545
	Analytic entry recorded in T-account work sheet.		

Likewise, to explain the change in the T-account for Accumulated Depreciation, we consider the net credit change of \$243 million and the debit entry of \$7 million (1a), to recognize the sale of the asset. Thus, depreciation expense for 2013 must have been \$250 (= \$243 + \$7) million. The reconstructed analytic entry, which replaces analytic entry (2) and which completes the explanation of the change in the Accumulated Depreciation account is as follows:

(2a)	Cash (Operations: Depreciation Expense Addback)	250	
	Accumulated Depreciation		250
	Analytic entry recorded in T-account work sheet.		

The increase in depreciation expense, \$7 million, reduces income, from \$1,192 to \$1,185 (= \$1,192 - \$7) million. There is no effect on cash from operations. Exhibit 6.9 presents a revised T-account work sheet for Kellogg Group incorporating the new information on the sale of equipment.

Loss on Sale of Equipment Now assume that during 2013 Kellogg Group sold the equipment discussed previously for \$12 million, instead of \$13 million. The entry made to record the sale of the equipment is as follows:

	Cash	12	
	Loss on Sale of Equipment	1	
	Accumulated Depreciation	7	
	Buildings and Equipment (Cost)		20

This entry removes from the accounting records all amounts related to the equipment sold including its acquisition cost of \$20 million and the \$7 million of accumulated depreciation recognized while Kellogg Group used the equipment. The entry also records the cash Kellogg Group received from sale of the equipment. The difference between the cash proceeds and the carrying value of the equipment is a loss of \$1 [= \$12 - (\$20 - \$7)] million. This loss reduces net income by \$1 million.

The following analytic entry on the T-account work sheet would recognize the effect of the sale of equipment for \$12 million:

EXHIBIT 6.9

**Kellogg Group
Revised T-Account Work Sheet**

Cash	
✓	524
Operations	
Net Income	(1) 1,185
Depreciation Expense: Addback	(2a) 250
Decreased Inventory	(5) 27
Increased Accounts Payable	(8) 136
Investing	
Proceeds from Sale of Property, Plant, and Equipment	(1a) 13
	545 (6a)
	264 (7)
Financing	
	573 (3)
	233 (10)
✓	255

Accounts Receivable		Inventory		Property, Plant, and Equipment (Cost)	
✓	1,011	✓	924	✓	3,975
(4)	132		27 (5)	(6)	525
✓	1,143	✓	897	✓	4,500
					20 (1a)

Accumulated Depreciation		Long-Term Investments		Accounts Payable	
	1,324 ✓		1,874 ✓		425 ✓
(1a)	7		264 (8)		136 (8)
	1,567 ✓		2,138 ✓		561 ✓

Accrued Liabilities		Bonds Payable		Retained Earnings	
	320 ✓		2,022 ✓		4,217 ✓
	140 (9)	(10)	233	(3)	573
	180 ✓		1,789 ✓		1,185 (1)
					4,829 ✓

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(1a) Cash (Investing: Sale of Equipment)	12	
Cash (Operations: Loss on Sale of Equipment Addback)	1	
Accumulated Depreciation	7	
Property, Plant, and Equipment (Cost)		20
Analytic entry recorded in T-account work sheet.		

The debit to Cash (Investing: Sale of Equipment) shows the \$12 million proceeds of the sale. The debit to Cash (Operations: Loss on Sale of Equipment Addback) for \$1 million adds back to net income the loss on the sale of equipment. Like the depreciation expense addback, the debit to Cash (Operations: Loss on Sale of Equipment Addback) does not represent an operating source of cash. The addback offsets the subtraction of the loss in computing net income. The loss reduced income but did not use cash this period. The firm spent cash

sometime in the past, and it disposed of the assets purchased with that cash for an amount less than their carrying value.

The impact of selling the equipment at a loss on various lines of the statement of cash flows is as follows:

OPERATIONS	
Net Income (Loss on Sale of Equipment)	\$(1)
Loss on Sale of Equipment Addback	<u>1</u>
Cash Flow from Operations.	<u>\$ 0</u>
INVESTING	
Proceeds from Sale of Equipment	<u>\$12</u>
Change in Cash from Sale of Equipment.	<u><u>\$12</u></u>

One might view the recognition of a loss on the sale of equipment as indicating that the firm recorded insufficient depreciation during prior periods. If Kellogg Group had known for certain that it would receive \$12 million for the equipment, it would have recognized another \$1 million of depreciation expense during the periods when it used the equipment. Then, the sale of the equipment would then have resulted in no gain or loss.

Gain on Sale of Equipment Extending this illustration still further, assume that Kellogg Group received \$15 million cash when it sold the equipment. The entry to record this sale is as follows:

Cash	15	
Accumulated Depreciation	7	
Property, Plant, and Equipment (Cost)		20
Gain on Sale of Equipment		<u>2</u>
Journal entry to record sale of equipment.		

This entry, like the one to record the sale at a loss, removes the balance sheet amounts for the cost of the equipment and its accumulated depreciation, and records the cash proceeds. In this case the cash proceeds exceed the carrying value of the equipment, resulting in a gain. This gain increases net income by \$2 million.

The following analytic entry in the T-account work sheet would recognize the effect of the sale of equipment for \$2 million:

(1a) Cash (Investing: Sale of Equipment)	15	
Accumulated Depreciation	7	
Property, Plant, and Equipment (Cost)		20
Cash (Operations: Gain on Sale of Equipment Subtraction)		<u>2</u>
Analytic entry recorded in T-account work sheet.		

The debit to Cash (Investing: Sale of Equipment) shows the \$2 million proceeds of the sale. The credit to Cash (Operations: Gain on Sale of Equipment Subtraction) reduces net income for the gain on the sale of equipment that did not provide an operating cash inflow. Unless we subtract the \$2 million gain in the operations section of the work sheet, we overstate the amount of cash inflow from this transaction, as the following analysis summarizes:

OPERATIONS	
Net Income (Gain on Sale of Equipment)	\$ 2
Subtraction for Gain on Sale of Equipment Not Providing an Operating Cash Inflow.	<u>\$(2)</u>
Cash Flow from Operations	<u>\$ 0</u>
INVESTING	
Proceeds from Sale of Equipment	<u>\$15</u>
Change in Cash from Sale of Equipment.	<u><u>\$15</u></u>

PROBLEM 6.4 FOR SELF-STUDY

Preparing a statement of cash flows. Exhibit 6.10 presents a comparative balance sheet for Gordon Corporation as of December 31, 2012 and 2013. Exhibit 6.11 presents the income statement for 2013. Supplemental information pertaining to Gordon Corporation follows:

- During 2013 the company declared and paid dividends of \$120,000.
- During 2013 the company sold buildings and equipment that originally cost \$55,000 and had accumulated depreciation at the time of sale of \$30,000.
- a. Prepare a T-account work sheet for the preparation of the statement of cash flows for 2013 using the indirect method for cash flows from operations.
- b. Derive a presentation for cash flows from operations using the format of Exhibit 6.8.
- c. Present a statement of cash flows for 2013 using the direct method for cash flows from operations.

EXHIBIT 6.10

**Gordon Corporation
Comparative Balance Sheet
December 31, 2013 and 2012
(Problem 6.4 for Self-Study)
(all amounts in thousands of US\$)**

	December 31	
	2013	2012
ASSETS		
Current Assets		
Cash	\$ 40	\$ 70
Accounts Receivable	420	320
Merchandise Inventories	470	360
Prepayments	70	50
Total Current Assets	<u>\$1,000</u>	<u>\$ 800</u>
Property, Plant, and Equipment		
Land	\$ 250	\$ 200
Buildings and Equipment (Net of Accumulated Depreciation of \$840 in 2013 and \$800 in 2012)	1,150	1,000
Total Property, Plant, and Equipment	<u>\$1,400</u>	<u>\$1,200</u>
Total Assets	<u>\$2,400</u>	<u>\$2,000</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current Liabilities		
Accounts Payable	\$ 440	\$ 320
Income Taxes Payable	80	60
Other Current Liabilities	360	170
Total Current Liabilities	<u>\$ 880</u>	<u>\$ 550</u>
Noncurrent Liabilities		
Bonds Payable	200	250
Total Liabilities	<u>\$1,080</u>	<u>\$ 800</u>
Shareholders' Equity		
Common Stock	\$ 540	\$ 500
Retained Earnings	780	700
Total Shareholders' Equity	<u>\$1,320</u>	<u>\$1,200</u>
Total Liabilities and Shareholders' Equity	<u>\$2,400</u>	<u>\$2,000</u>

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EXHIBIT 6.11

**Gordon Corporation
Income Statement
For 2013
(Problem 6.4 for Self-Study)
(all amounts in thousands of US\$)**

Revenues	\$1,600
Less:	
Cost of Goods Sold	(900)
Depreciation Expense	(70)
Selling and Administrative Expense	(255)
Interest Expense	(30)
Loss on Sale of Buildings and Equipment	(15)
Income Tax Expense	<u>(130)</u>
Net Income	<u>\$ 200</u>

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USING INFORMATION FROM THE STATEMENT OF CASH FLOWS

The statement of cash flows provides information that helps the reader assess (1) the impact of operations on liquidity and (2) the relations among cash flows from operating, investing, and financing activities.

IMPACT OF OPERATIONS ON LIQUIDITY

Perhaps the most important omission from the balance sheet and the income statement is how the operations of a period affected cash flows. Increased earnings do not always generate increased cash flow from operations. When increased earnings result from expanding operations, the firm usually has decreased cash flow from operations. A growing, successful firm may have increasing amounts for accounts receivable and inventories, resulting in a lag between earnings and cash flows. The need to wait for the collection of accounts receivable but to acquire and pay for additional inventory in anticipation of future sales can lead to negative cash from operations. Growing businesses often use financing from issuing debt or common shares to meet their cash needs. A failure to obtain long-term financing can lead to chronic liquidity problems.

On the other hand, increased cash flow can accompany reduced earnings. Consider, for example, a firm that is experiencing operating problems and reduces the scope of its activities. Although such a firm likely will report reduced net income or even losses, it might experience positive cash flow from operations. The positive cash flow results from its collecting accounts receivable from prior periods while it does not replace inventories, thus saving cash.

RELATIONS AMONG CASH FLOWS FROM OPERATING, INVESTING, AND FINANCING ACTIVITIES

The relations among the cash flows from each of the three principal business activities differ depending on the characteristics of the firm's products and its maturity, for example a new and rapidly growing firm versus a stable and mature firm. Consider each of the four following patterns of cash flows.

Cash Flows from:	Firm A	Firm B	Firm C	Firm D
Operations	\$ (3)	\$ 7	\$15	\$ 8
Investing	(15)	(12)	(8)	(2)
Financing	<u>18</u>	<u>5</u>	<u>(7)</u>	<u>(6)</u>
Net Cash Flow	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$ 0</u>

Firm A is a new, rapidly growing firm that is not yet profitable. It experiences buildups of its accounts receivable and inventories and, thus, has negative cash flow from operations. To sustain its growth, **Firm A** invests in plant and equipment and relies on external sources of cash to finance both its operating and its investing activities.

Firm B is a more seasoned firm than **Firm A**, but one that is still growing. It operates profitably and generates positive cash flow from operations. This cash flow from operations, however, falls short of the amount needed to finance acquisitions of plant and equipment. **Firm B** therefore requires external financing.

Firm C illustrates the cash flow pattern of a mature, stable firm. It generates sufficient cash flow from operations to acquire new plant and equipment, to repay financing from earlier periods, and, perhaps, to pay dividends.

Firm D is a firm in the early stages of decline. Its cash flow from operations is positive, perhaps because of decreases in accounts receivable and inventories. In the later stages of decline, its cash flow from operations may turn negative. A declining firm reduces its capital expenditures and uses some of its cash flow from operations to retire outstanding debt and shares. It may also use cash to invest in developing new products or to enter other industries.

These four cases do not, of course, cover all of the patterns of cash flows found in financial reports. They illustrate how the characteristics of a firm's products and industry can affect the interpretation of information in the statement of cash flows.

INTERPRETATIVE ISSUES INVOLVING THE STATEMENT OF CASH FLOWS

Some analysts view cash flow from operations as equally important, or more important, than net income as a performance measure and in doing valuations.¹⁰ Interpreting cash from operations as a measure of operating performance requires considering cash flows along two dimensions:

1. Their timing.
2. Their classification and disclosure in the statement of cash flows and related notes.

TIMING OF OPERATING CASH FLOWS

Firms have some choice as to when they disburse cash. Delaying payments to suppliers during the last few days of an accounting period conserves cash and thereby increases cash flow from operations for that period. The cash payments during the early part of the next period reduce cash flow from operations in that period. Thus, delaying payment increases cash flow from operations during the first period and decreases cash flow from operations during the second period. The firm can repeat the process at the end of the second period—delaying payments from then to the third period—to offset the negative cash flow effects of the payments made early in the second period. A growing firm that delays payments at the end of every period reports larger cash flow from operations each period than if it had not delayed making the cash payments at the end of every period. Such a firm is, in effect, obtaining short-term financing from its suppliers. Absent contracts or other agreements that preclude delayed payments, this business practice is legal. Sufficiently delayed payments might harm a firm's reputation or its credit rating.

CLASSIFICATION AND DISCLOSURE OF TRANSACTIONS

Earlier in this chapter we discussed certain ambiguities in the classification of cash flows. Other ambiguous classifications involve complex financial instruments that are beyond the scope of this textbook. Still others involve transactions that you have not yet seen. An analyst who wishes to use cash flows from operations as an indicator of performance should be aware that classification decisions can affect cash from operations, perhaps significantly.

¹⁰When performing a valuation (for example, of a firm), it is important to distinguish between one-time and recurring items. The statement of cash flows often presents operating items in a way that makes interpreting this recurring/non-recurring distinction difficult. Rather, one needs to study the income statement items, as **Chapter 17** describes.

Example 1 Distinguishing cash flows to acquire inventory from cash flows for investing activities. Suppose a firm purchases items such as films and games for short-term rentals to customers. The useful lives of these items range from about six months to two years.

- Are these items inventory? If so, cash paid to acquire the items is an operating cash flow.
- Or, are the items noncurrent assets? If so, the cash paid is an investing cash flow.

The firm does not sell the items; it rents them. Accounting practice classifies the cash payments to acquire the rental items as part of operations. The classification does not affect total cash paid by the firm to acquire rental items. Cash from operations is larger if the firm classifies the expenditure as an acquisition of noncurrent assets.

Example 2 Many auto dealers finance a portion of their inventories by borrowing from banks. These arrangements are commonly known as “floor plan financing.” Is a floor plan financing an operating cash flow, because it functions like accounts payable in financing inventories, or is it a financing cash flow? Accounting practice classifies the arrangements as financing. The classification does not affect total cash flows nor does it affect the substance of the financing arrangement, but it does affect cash from operations.

► PROBLEM 6.5 FOR SELF-STUDY

Effect of transactions on the statement of cash flows. Exhibit 6.12 shows a simplified statement of cash flows for a period. Numbers appear on 11 of the lines in the statement. Other lines (indicated with an “S”) are various subtotals and grand totals; ignore these
(continued)

EXHIBIT 6.12

Simplified Statement of Cash Flows (Problem 6.5 for Self-Study)

OPERATIONS	
Cash Receipts from Customers	(1)
Less: Cash Payments to Suppliers, Employees, and Others	–(2)
Cash Flow from Operations [= (1) – (2)]	<u>–S1</u>
Reconciliation of Net Income to Cash Flow from Operations	
Net Income	(3)
Additions to Net Income to Compute Cash Flow from Operations	<u>+(4)</u>
Subtractions from Net Income to Compute Cash Flow from Operations	<u>–(5)</u>
Cash Flow from Operations [= (3) + (4) – (5)]	<u>S1</u>
INVESTING	
Proceeds from Dispositions of “Investing” Assets	+(6)
Cash Used to Acquire “Investing” Assets	<u>–(7)</u>
Cash Flow from Investing [= (6) – (7)]	<u>S2</u>
FINANCING	
Cash Provided by Increases in Debt or Capital Stock	+(8)
Cash Used to Reduce Debt or Capital Stock	–(9)
Cash Used for Dividends	<u>–(10)</u>
Cash Flow from Financing [= (8) – (9) – (10)]	<u>S3</u>
Net Change in Cash [= S1 + S2 + S3]	(11)
Cash, Beginning of the Period	<u>S4</u>
Cash, End of the Period [= (11) + S4]	<u>S5</u>

in the remainder of the problem. Assume that the accounting cycle is complete for the period and that the firm has prepared all of the financial statements. It then discovers that it has overlooked a transaction. It records that transaction in the accounts and corrects all of the financial statements. For each of the following transactions, indicate which of the numbered lines of the statement of cash flows change, and state the amount and direction of the change. If net income, line (3), changes, be sure to indicate whether it decreases or increases. Ignore income tax effects.

(*Hint:* First, construct the entry the firm would make in its accounts to record the transaction. Then, for each line of the journal entry, identify the line of **Exhibit 6.12** that the transaction affects.)

- a. Depreciation expense of \$2,000 on an office computer.
- b. Purchase of machinery for \$10,000 cash.
- c. Declaration of a cash dividend of \$6,500 on common stock; the firm paid the dividend by the end of the fiscal year.
- d. Issue of common shares for \$12,000 cash.
- e. Proceeds of the sale of an investment in another firm's common shares, a noncurrent asset, for \$15,000 cash; the firm sold the investment for its book value of \$15,000.

SUMMARY

The statement of cash flows reports the effects of a firm's operating, investing, and financing activities on cash flows. Information in the statement helps readers to understand the following concepts:

1. The effect of operations on the liquidity of a firm.
2. The level of capital expenditures needed to support ongoing and growing levels of activity.
3. The major changes in the financing of a firm.

Preparing the statement of cash flows requires analyzing changes in balance sheet accounts during the period, as represented by the cash change equation (**Eq. 3**). As an outcome of the balance sheet equation, the net change in cash equals the net change in all non-cash accounts.

The statement of cash flows usually presents cash flow from operations in the indirect format, beginning with net income for the period. The indirect format adjusts net income for revenues not providing cash, for expenses not using cash, and for changes in working capital accounts. The result is cash flow from operations. Some firms use the direct method to present cash flow from operations, listing all receipts generated by revenue transactions and subtracting all expenditures for expenses that use cash during the current period. The cash flows from investing activities and financing activities appear after cash flow from operations.

Interpreting a statement of cash flows requires an understanding of the economic characteristics of the industries in which a firm conducts its activities, including capital intensity, growth characteristics, and similar factors.

SOLUTIONS TO SELF-STUDY PROBLEMS

SUGGESTED SOLUTION TO PROBLEM 6.1 FOR SELF-STUDY

(Classifying cash flows by type of activity.)

- a. Operating
- b. Financing

- c. Operating
- d. Operating
- e. Operating
- f. Operating
- g. Investing
- h. Item does not affect cash flows during the current period and would therefore not appear in the statement of cash flows. The firm must disclose this transaction in a separate schedule or a note to the financial statements.
- i. Operating
- j. Operating
- k. Investing
- l. Item does not affect cash flows during the current period and would therefore not appear in the statement of cash flows. The firm must disclose this transaction in a separate schedule or note to the financial statements.
- m. Financing
- n. Investing
- o. Financing
- p. Investing
- q. Operating

SUGGESTED SOLUTION TO PROBLEM 6.2 FOR SELF-STUDY

(Robbie Corporation; preparing a T-account work sheet for a statement of cash flows.)

Exhibit 6.13 presents a completed T-account work sheet for Robbie Corporation.

SUGGESTED SOLUTION TO PROBLEM 6.3 FOR SELF-STUDY

(Robbie Corporation; deriving the statement of cash flows from a T-account work sheet.)

- a. **Exhibit 6.14** derives the direct method presentation for cash flows from operations from the T-account work sheet in **Exhibit 6.13**.
- b. Robbie Corporation's statement of cash flows derived under the direct method is as follows:

Sources of Cash:	
Receipts from Customers	\$ 173,000
Uses of Cash:	
Cash Paid for Merchandise	(131,000)
Cash Paid for Selling, General, and Administrative	(25,000)
Cash Paid for Interest Charges	<u>(2,000)</u>
Cash Flow from Operations	<u>\$ 15,000</u>

- c. Robbie Corporation's statements of cash flows derived under the indirect method is shown below:

Net Income	\$ 7,000
Depreciation Expense (Addition)	6,000
Adjustments for Changes in Working Capital:	
Increase in Accounts Receivable (Subtraction)	(7,000)
Decrease in Inventory (Addition)	2,000
Increase in Accounts Payable (Addition)	<u>7,000</u>
Cash Flow from Operations	<u>\$15,000</u>

EXHIBIT 6.13

Robbie Corporation
T-Account Work Sheet
(Problem 6.2 for Self-Study)
(all amounts in thousands of US\$)

Cash	
✓	10
Operations	
(2)	2
(4)	6
(5)	7
(8)	7
Investing	
	16 (3)
Financing	
(6)	8
(7)	10
✓	25

Accounts Receivable		Merchandise Inventories		Property, Plant, and Equipment	
✓	15	✓	20	✓	50
(1)	7		2 (2)	(3)	16
✓	22	✓	18	✓	66

Accumulated Depreciation		Accounts Payable for Merchandise		Bonds Payable	
	25 ✓		30 ✓		10 ✓
	6 (4)		7 (5)		8 (6)
	31 ✓		37 ✓		18 ✓

Common Stock		Retained Earnings	
	10 ✓		20 ✓
	10 (7)	(9)	2
	20 ✓		7 (8)
			25 ✓

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- d. Robbie Corporation's cash flows from investing and financing for 2013 is as follows:

Cash Flow from Investing	
Purchased Property, Plant and Equipment	\$ (16,000)
Cash Flow from Investing	<u>\$(16,000)</u>
Cash Flow from Financing	
Issued Bonds Payable	\$ 8,000
Issued Common Stock	10,000
Paid Dividends on Common Stock	(2,000)
Cash Flow from Financing	<u>\$ 16,000</u>

- e. Net change in Robbie Corporation's cash flows for 2013 follows:

Cash Flow from Operations (Direct or Indirect Method)	\$ 15,000
Cash Flow from Investing	(16,000)
Cash Flow from Financing	16,000
Net Cash Flow	<u>\$15,000</u>
Cash Balance, Beginning of 2013	\$ 10,000
Cash Balance, End of 2013	<u>\$25,000</u>

EXHIBIT 6.14

Robbie Corporation
Deriving Direct Method Cash Flow from Operations
Using Data from T-Account Work Sheet
(Problem 6.3 for Self-Study)

1. Copy Income Statement and Cash Flow from Operations
2. Copy Information from T-Account Work Sheet Next to Related Income Statement Item
3. Sum Across Rows to Derive Direct Receipts and Expenditures

Operations	(a)	Indirect Method (b)	Changes in Related Balance Sheet Accounts from T-Account Work Sheet (c)	Direct Method (d)	From Operations: Receipts Less Expenditures
Sales Revenues	\$ 180,000	\$(7,000)	= Accounts Receivable Increase (1)	\$ 173,000	Receipts from Customers
Cost of Goods Sold	(140,000)	2,000	= Inventory Decrease (2)	\$(131,000)	Payments for Merchandise
		7,000	= Accounts Payable for Merchandise Increase (5)		
Selling and Administrative Expenses	(25,000)		(No balance sheet account changes.)	(25,000)	Payments for Selling and Administrative Services
Depreciation Expense	(6,000)	6,000	(Expense Not Using Cash) (4)	—	
Interest Expense	(2,000)	—	Interest Payable (no change in balance sheet)	(2,000)	Payments for Interest
Net Income	\$ 7,000	\$ 7,000	= Net Income Totals	\$ 15,000	= Cash Flow from Operations Derived via Direct Method
		\$15,000	= Cash Flow from Operations Derived via Indirect Method		

Note that the information in column (b) is cash flow from operations derived with the indirect method, with items in a different order.

SUGGESTED SOLUTION TO PROBLEM 6.4 FOR SELF-STUDY

(Gordon Corporation; preparing a statement of cash flows.)

Exhibit 6.15 presents a completed T-account work sheet for Gordon Corporation. Exhibit 6.16 derives a direct method presentation of cash flows for operations. Exhibit 6.17 presents a formal statement of cash flows.

SUGGESTED SOLUTION TO PROBLEM 6.5 FOR SELF-STUDY

(Effect of transactions on the statement of cash flows.) Preparing the journal entry for each transaction aids in understanding the effect on the 11 numbered lines in Exhibit 6.12.

- a. Depreciation Expense 2,000
 Accumulated Depreciation 2,000

Change in Cash	=	Change in Liabilities	+	Change in Shareholders' Equity	-	Change in Non-cash Assets
0		0		-2,000		-2,000

This entry has no impact on operating cash flows, so it has no effect on lines (1) and (2). It involves a debit to an income statement account, so line (3) decreases by \$2,000. Depreciation expense reduces net income but does not affect cash line (11). Thus, line (4) increases by \$2,000 for the addback of depreciation expense to net income. This addback eliminates the effect of depreciation on both cash flow from operations and cash.

- b. Machinery 10,000
 Cash 10,000
 (continued)

EXHIBIT 6.15

Gordon Corporation
T-Account Work Sheet
(Problem 6.4 for Self-Study)
(all amounts in thousands of US\$)

Cash	
✓ 70	
Operations	
(1) 200	100 (5)
(4) 70	110 (6)
(3) 15	20 (7)
(10) 120	
(11) 20	
(12) 190	
Investing	
(3) 10	50 (8)
	245 (9)
Financing	
(14) 40	120 (2)
	50 (13)
✓ 40	
<hr/>	
Accounts Receivable	
✓ 320	
(5) 100	
✓ 420	
Merchandise Inventory	
✓ 360	
(6) 110	
✓ 470	
Prepayments	
✓ 50	
(7) 20	
✓ 70	
<hr/>	
Land	
✓ 200	
(8) 50	
✓ 250	
Buildings and Equipment	
✓ 1,800	
(9) 245	55 (3)
✓ 1,990	
Accumulated Depreciation	
	800 ✓
(3) 30	70 (4)
	840 ✓
<hr/>	
Accounts Payable	
	320 ✓
	120 (10)
	440 ✓
Income Taxes Payable	
	60 ✓
	20 (11)
	80 ✓
Other Current Liabilities	
	170 ✓
	190 (12)
	360 ✓
<hr/>	
Bonds Payable	
	250 ✓
(13) 50	
	200 ✓
Common Stock	
	500 ✓
	40 (14)
	540 ✓
Retained Earnings	
(2) 120	700 ✓
	200 (1)
	780 ✓

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Change in Cash	=	Change in Liabilities	+	Change in Shareholders' Equity	-	Change in Non-cash Assets
-10,000 (Invst.)		0		0		+10,000

This entry does not involve receipts from customers nor payments to suppliers, so it does not affect lines (1) and (2). It involves a credit to Cash, so line (11) decreases by \$10,000. Because line (11) is the net change in cash for the period, some other line must change as well. Acquisitions of equipment represent Investing activities, so line (7) increases by \$10,000. Note that line (7) has a negative sign, so this means an increase to an amount subtracted; increasing this line reduces cash.

EXHIBIT 6.16

Gordon Corporation
Deriving Direct Method Cash Flow from Operations Using Data
from T-Account Work Sheet
(Problem 6.4 for Self-Study)
(all amounts in thousands of US\$)

1. Copy Income Statement and Cash Flow from Operations
2. Copy Information from T-Account Work Sheet Next to Related Income Statement Item
3. Sum Across Rows to Derive Direct Receipts and Expenditures

Operations	(a)	Indirect Method (b)	Changes in Related Balance Sheet Accounts from T-Account Work Sheet (c)	Direct Method (d)	From Operations: Receipts Less Expenditures
Revenues	\$1,600	\$(100)	= Accounts Receivable Increase	\$1,500	Receipts from Customers
Cost of Goods Sold	(900)	120	= Accounts Payable Increase	(890)	Payments for Merchandise
		(110)	= Merchandise Inventory Increase	—	
Depreciation Expense	(70)	70	(Expense Not Using Cash)		
Selling and Administrative Expenses	(255)	190	= Other Current Liabilities Increase	(85)	Payments for Selling and Administrative Services
		(20)	= Prepayment Increase		
Interest Expense	(30)	—	= Interest Payable (no change in balance sheet)	(30)	Payments for Interest
Loss on Disposal of Buildings and Equipment	(15)	15	(Loss Not Using Cash)	—	
Income Tax Expense	(130)	20	= Income Taxes Payable Increase	(110)	Payments for Income Taxes
Net Income	\$ 200	\$ 200	= Net Income Totals	\$ 385	= Cash Flow from Operations Derived via Direct Method
		\$ 385	= Cash Flow from Operations Derived via Indirect Method		

Note that the information in column (b) is cash flow from operations derived with the indirect method, with items in a different order.

c.	Retained Earnings	6,500	
	Cash		6,500

Change in Cash	=	Change in Liabilities	+	Change in Shareholders' Equity	-	Change in Non-cash Assets
-6,500 (Finan.)		0		-6,500		0

This entry involves a credit to Cash, so line (11) decreases by \$6,500. Dividends are a financing activity, so line (10) increases by \$6,500.

d.	Cash	12,000	
	Common Stock		12,000

Change in Cash	=	Change in Liabilities	+	Change in Shareholders' Equity	-	Change in Non-cash Assets
+12,000 (Finan.)		0		+12,000		0

The debit to Cash means that line (11) increases by \$12,000. Issuing stock is a financing transaction, so line (8) increases by \$12,000.

EXHIBIT 6.17

Gordon Corporation
Statement of Cash Flows
For 2013
(Problem 6.4 For Self-Study)
(all amounts in thousands of US\$)

OPERATIONS

Receipts from Customers	\$1,500	
Payments to Suppliers of Merchandise	(890)	
Payments for Selling and Administrative Expenses	(85)	
Payments to Lenders for Interest	(30)	
Payments for Income Taxes	<u>(110)</u>	
Cash Flow from Operating Activities		\$ 385

RECONCILIATION OF NET INCOME TO CASH PROVIDED BY OPERATIONS

Net Income	\$ 200	
Additions:		
Depreciation Expense	70	
Loss on Sale of Equipment	15	
Increase in Accounts Payable	120	
Increase in Income Taxes Payable	20	
Increase in Other Current Liabilities	190	
Subtractions:		
Increase in Accounts Receivable	(100)	
Increase in Merchandise Inventories	(110)	
Increase in Prepayments	<u>(20)</u>	
Cash Flow from Operations	<u>\$ 385</u>	

INVESTING

Acquisition of Land	\$ (50)	
Sale of Buildings and Equipment	10	
Acquisition of Buildings and Equipment	<u>(245)</u>	
Cash Used for Investing		(285)

FINANCING

Common Stock Issued	\$ 40	
Dividends Paid	(120)	
Repayment of Bonds	<u>(50)</u>	
Cash Used for Financing		(130)
Net Decrease in Cash		\$ (30)
Cash, Beginning of 2013		70
Cash, End of 2013		<u>\$ 40</u>

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e.	Cash	15,000	
	Investment in Securities		15,000

Change in Cash	=	Change in Liabilities	+	Change in Shareholders' Equity	-	Change in Non-cash Assets
+15,000 (Finan.)		0		0		-15,000

The debit to Cash means that line (11) increases by \$15,000. Selling investments in securities is an investing activity, so line (6) increases by \$15,000.

KEY TERMS AND CONCEPTS

Statement of cash flows	Free cash flow
Cash equivalents	Direct method
Cash flow from operations	Indirect method
Cash flow from investing activities	cash change equation
Cash flow from financing activities	T-account work sheet

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

- Review the meaning of the terms and concepts listed in Key Terms and Concepts.
- “One can most easily accomplish the reporting objective of the income statement under the accrual basis of accounting and the reporting objective of the statement of cash flows by issuing a single income statement using the cash basis of accounting.” Evaluate this proposal.
- “The accrual basis of accounting creates the need for a statement of cash flows.” Explain.
- “The statement of cash flows provides information about changes in the structure of a firm’s assets and sources of financing.” Explain.
- A student remarked: “The direct method of computing cash flow from operations is easier to understand than the indirect method. Why do the majority of firms follow the indirect method in preparing their statements of cash flows?” Respond to this student.
- The statement of cash flows classifies cash expenditures for interest expense as an operating activity but classifies cash expenditures to redeem debt as a financing activity. Explain this apparent paradox.
- Under U.S. GAAP, the statement of cash flows classifies cash expenditures for interest on debt as an operating activity but classifies cash expenditures for dividends to shareholders as a financing activity. Explain this apparent paradox.
- The statement of cash flows classifies changes in accounts payable as an operating activity but classifies changes in short-term bank borrowing as a financing activity. Explain this apparent paradox.
- The acquisition of equipment by assuming a mortgage is a transaction that firms cannot report in their statement of cash flows but must report in a supplemental schedule or note. Of what value is information about this type of transaction? What is the reason for its exclusion from the statement of cash flows?
- One writer stated, “Depreciation expense is a firm’s chief source of cash for growth.” A reader criticized this statement by replying, “The fact remains that if companies had elected, in any year, to charge off \$10 million more depreciation than they did charge off, they would not thereby have added one dime to the total of their cash available for expanding plants or for increasing inventories or receivables. Therefore, to speak of depreciation expense as a source of cash is incorrect and misleading.” Comment on these statements, taking into account income tax effects.
- A firm generated net income for the current year, but cash flow from operations was negative. How can this happen?
- A firm operated at a net loss for the current year, but cash flow from operations was positive. How can this happen?
- The sale of equipment for an amount of cash greater than the carrying value of the equipment results in a cash receipt equal to the carrying value of the equipment plus the gain on the sale, which appears in income. How might the accountant treat this transaction in the statement of cash flows? Consider both the direct and indirect methods.

EXERCISES

14. **Derive sales revenue from data in the statement of cash flows and balance sheet.** Microchem Corporation reported a balance of €5,196 million in accounts receivable at the beginning of the year and €5,334 million at the end of the year. Its statement of cash flows using the direct method reported cash collections from customers of €33,551 million for the year. Assuming that Microchem Corporation makes all sales on account, compute the amount of sales during the year.
15. **Derive cost of goods sold from data in the statement of cash flows.** The section showing cash flow from operations, using the indirect method, for Electropin Company reported an increase in inventories during the year of \$1,753 million and no change in accounts payable for inventories. The direct method would show cash payments for inventory, purchased and manufactured, totaling \$64,713 million. Compute Electropin's cost of goods sold for the year.
16. **Derive cost of goods sold from data in the statement of cash flows.** The section showing cash flow from operations, using the indirect method, for Taylor Stores reported an increase in inventories of \$5.7 million during the year. It reported also that the balance in accounts payable for inventories increased by \$5.9 million. The direct method would show cash payments for merchandise inventory purchased of \$646.9 million. Compute Taylor's cost of goods sold for the year.
17. **Derive wages and salaries expense from data in the statement of cash flows.** Yoshi Group reported in its reconciliation of net income to cash flow from operations a decrease in wages and salaries payable of ¥21 million during the year. It provided data showing that cash payments for wages and salaries to employees for the year were ¥8,853 million. Compute the amount of Yoshi Group's wages and salaries expense for the year.
18. **Derive cash disbursements for dividends.** JAJ Incorporated reported a balance in retained earnings of \$26,571 million at the beginning of the year and \$28,132 million at the end of the year. Its dividends payable account increased by \$233 million during the year. It reported net income for the year of \$5,030 million. How much cash did JAJ disburse for dividends during the year? Indicate where this information would appear in the simplified statement of cash flows in **Exhibit 6.12**.
19. **Effect of borrowing and interest on statement of cash flows.** Gillette Limited borrowed £250 million on October 1 by issuing bonds. The debt carries an annual interest rate of 6%, which it must pay on April 1 and October 1 of each year. The debt matures 20 years after its issue date. Gillette's accounting period ends on December 31 of each year. Using the format of **Exhibit 6.12**, indicate the effects of all these transactions on Gillette's statement of cash flows for the year of issue, when the bonds were outstanding from October 1 through December 31.
20. **Effect of income taxes on statement of cash flows.** Radion Corporation reported a balance in Income Taxes Payable of \$78.1 million at the beginning of the year, \$60.1 million at the end of the year, and income tax expense for the year of \$161.5 million. Using the format of **Exhibit 6.12**, indicate the effects of all these transactions on Radion's statement of cash flows for the year.
21. **Effect of rent transactions on statement of cash flows.** Jennings Company reported a balance in its Prepaid Rent (Advances to Landlord) account of \$1,200 on January 1, 2014, for use of the building for the month of January 2014. On February 1, 2014, the firm paid \$18,000 as the annual rental for the period from February 1, 2014, to January 31, 2015. It recorded this rental payment by debiting Prepaid Rent (Advances to Landlord) and crediting Cash for \$18,000. At the end of 2014, the firm made all proper adjusting entries to correctly report balance sheet and income statement amounts. Using the format of **Exhibit 6.12**, indicate the effects of all these transactions on the firm's statement of cash flows for 2014.
22. **Calculating components of cash inflow from operations.** **Exhibit 6.18** provides items from the financial statements of Infotech Corporation, a systems engineering firm, for the year. How much cash did Infotech collect from its customers during the year?
23. **Calculating components of cash outflow from operations.** Refer to **Exhibit 6.18**, which provides items from the financial statements of Infotech Corporation.
 - a. How much cash did Infotech pay during the year to its suppliers of goods?

EXHIBIT 6.18

Infotech Corporation
Data from Income Statement for Current Year
(Exercises 22 and 23)
(all amounts in thousands of US\$)

Sales	\$ 14,508
Cost of Goods Sold	(11,596)
Depreciation Expense	(114)
Other Expenses, Including Salaries and Wages Expense	(2,276)
Income Taxes	<u>(210)</u>
Net Income	<u><u>\$ 312</u></u>

DATA FROM BEGINNING- AND END-OF-YEAR BALANCE SHEETS

Accounts Receivable	\$782	Decrease
Inventories	66	Decrease
Prepayments for Other Costs	102	Decrease
Accounts Payable for Inventories	90	Increase
Current Liabilities for Wages and Salaries Payable	240	Decrease

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b. How much cash did Infotech pay during the year to its employees and suppliers of other services?

24. **Spreadsheet for understanding the relation between changes in income statement items and changes in items in the statement of cash flows.** The spreadsheet on the textbook’s Web site contains a dynamic version of the spreadsheet reproduced below:

	A	B	C
1			Lines in Schematic
2			Statement of
3	Income Statement		Cash Flows
4	Revenues matched with cash inflows this period	\$ 25	Line (1)
5	Revenues and gains with no cash inflows this period	1	
6	Expenses matched with expenditures this period	(15)	Line (2)
7	Expenses and losses with no cash outflow this period	<u>(4)</u>	
8	Net Income	<u><u>\$ 7</u></u>	Line (3)
9	Direct Method for Deriving Cash Flow from Operations		
10	Revenues matched with cash inflows this period	\$ 25	Line (1)
11	Expenses and losses with no cash outflow this period	<u>(15)</u>	Line (2)
12	Cash Flow from Operations	<u><u>\$ 10</u></u>	S1
13	Indirect Method for Deriving Cash Flow from Operations		
14	Net Income	\$ 7	Line (3)
15	Addback Expenses and Losses not Using Cash this Period	4	Line (4)
16	Subtract Revenues not Producing Receipts this Period	<u>(1)</u>	Line (5)
17	Cash Flow from Operations	<u><u>\$ 10</u></u>	S1

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In the dynamic version of this spreadsheet available on the Web site, you can change any of the numbers in the yellow shaded section and see the effect of the change in the statement of cash flows section for cash flows from operations.

a. Download the spreadsheet and change the first line of the income statement from \$25 to \$27, increasing income by \$2. What is the effect on S1?

- b. Go back to the original configuration. Change only the second line of the income statement from \$1 to \$5, increasing income by \$4. What are the effects on lines (1) – (5) and S1 of the cash flows from operations sections?
 - c. Go back to the original configuration. Now, make two changes: change the third line of the income statement from (\$15) to (\$17) and at the same time, change the fourth line from (\$4) to (\$2), leaving income unchanged. What are the effects on lines (1) – (5) and S1 of the cash flows from operations sections?
- 25. Working backward from changes in the Buildings and Equipment account.** The comparative balance sheets of Dearing Incorporated show a balance in the Buildings and Equipment account at cost year-end of \$17,369 million; a year earlier, the balance was \$16,825 million. The Accumulated Depreciation account shows a balance of \$5,465 million at year-end and of \$4,914 million a year earlier. The statement of cash flows reports that expenditures for buildings and equipment during the year totaled \$1,314 million. The income statement indicates a depreciation charge of \$1,253 million during the year. The firm sold buildings and equipment during the year at their carrying value.
- Calculate the acquisition cost and accumulated depreciation of the buildings and equipment that Dearing sold for cash during the year and the proceeds from the disposition.
- 26. Preparing a statement of cash flows from changes in balance sheet accounts.** The comparative balance sheets of Includ Airlines show the following information for a recent year (amounts in thousands of US\$):

	Change	Amount	Direction
Cash		\$ 40,308 ^a	Increase
Accounts Receivable		15,351	Decrease
Inventories		15,117	Increase
Prepayments		16,776	Increase
Property, Plant, and Equipment (at Cost)		1,134,644 ^b	Increase
Accumulated Depreciation		264,088 ^b	Increase
Other Non-operating Assets		8,711	Increase
Accounts Payable		660	Decrease
Other Current Liabilities		114,596	Increase
Long-Term Debt		244,285	Increase
Other Non-operating Liabilities		140,026	Increase
Common Stock		96,991	Increase
Retained Earnings		340,879 ^c	Increase

^aCash was \$378,511 at the beginning of the year and \$418,819 at the end of the year.

^bInclud Airlines did not sell any property, plant, and equipment during the year.

^cNet income was \$474,378.

- a. Prepare a statement of cash flows for Includ Airlines for the year. Treat changes in non-operating assets as investing transactions and changes in non-operating liabilities as financing transactions.
 - b. Discuss briefly the pattern of cash flows from operating, investing, and financing activities for Includ Airlines for the year.
- 27. Calculating and interpreting cash flow from operations.** The following items appear in the financial statements of Bamberger Enterprises for a recent year (amounts in thousands of US\$):

Sales	\$ 14,600
Depreciation Expense	(210)
Income Taxes	(200)
Other Expenses	(13,900)
Net Income	<u>\$ 290</u>

The changes in the current asset and current liability accounts were as follows:

Accounts Receivable	\$780	Decrease
Inventories	80	Decrease
Prepayments	100	Decrease
Accounts Payable	90	Increase
Other Current Liabilities	240	Decrease

- Compute the amount of cash flow from operations.
- Comment on the major reasons why cash flow from operations exceeds net income.

28. Calculating and interpreting cash flow from operations. Selected data for Finanka, a Finnish cellular phone manufacturer, appear below (amounts in millions of euros):

	2013	2012	2011	2010
Net Income (Loss)	€3,847	€2,542	€1,689	€1,032
Depreciation Expense	1,009	665	509	465
Increase (Decrease) in:				
Accounts Receivable	2,304	982	1,573	272
Inventories	422	362	103	121
Prepayments	(49)	33	17	(77)
Accounts Payable	458	312	140	90
Other Current Liabilities	923	867	1,049	450

- Compute the amount of cash flow from operations for each of the four years using the indirect method.
- Discuss briefly the most important reasons why cash flow from operations differs from net income or net loss for each year.

29. Calculating and interpreting cash flows. Market Star is a marketing services firm that creates advertising copy for clients and places the advertising in television, magazines, and other media. Accounts receivable represent amounts owed by clients, and accounts payable represent amounts payable to various media. Market Star has purchased other marketing services firms in recent years. Selected data for Market Star for three recent years appear next (amounts in millions of US\$):

	2013	2012	2011
Net Income	\$ 499	\$ 363	\$279
Depreciation and Amortization Expense	226	196	164
Increase (Decrease) in Accounts Receivable	514	648	238
Increase (Decrease) in Inventories	98	13	35
Increase (Decrease) in Prepayments	125	(10)	64
Increase (Decrease) in Accounts Payable	277	786	330
Increase (Decrease) in Other Current Liabilities	420	278	70
Acquisition of Property, Plant, and Equipment	150	130	115
Acquisition of Investments in Securities (noncurrent)	885	643	469
Dividends Paid	122	104	88
Long-Term Debt Issued	599	83	208
Common Stock Issued (Reacquired)	(187)	(252)	42

- Prepare a comparative statement of cash flows for Market Star for the three years. Use the indirect method of computing cash flow from operations.
- Discuss the relation between net income and cash flow from operations and the pattern of cash flows from operating, investing, and financing activities during the three years.

- 30. Effects of gains and losses from sales of equipment on cash flows.** Exhibit 6.19 presents an abbreviated statement of cash flows for Largay Corporation for the current year (amounts in thousands of US\$). After preparing this statement of cash flows for the current year, you discover that the firm sold an item of equipment on the last day of the year but failed to record it in the accounts or to deposit the check received from the purchaser. The equipment originally cost \$50,000 and had accumulated depreciation of \$40,000 at the time of sale. Recast the statement of cash flows in the exhibit, assuming that Largay Corporation sold the equipment for cash in the following amounts (ignore income taxes):
- \$10,000
 - \$12,000
 - \$8,000
- 31. Effect of various transactions on the statement of cash flows.** Exhibit 6.12 shows a simplified statement of cash flows for a period. Numbers appear on 11 of the lines in the statement. Other lines are various subtotals and grand totals; ignore these in the remainder of the problem. Assume that the accounting cycle is complete for the period and that the firm has prepared all of the financial statements. It then discovers that it has overlooked a transaction. It records that transaction in the accounts and corrects all of the financial statements. For each of the following transactions, indicate which of the numbered lines of the statement of cash flows change, and state the amount and direction of the change. If net income, line (3), changes, be sure to indicate whether it decreases or increases. Ignore income tax effects. (*Hint:* First, construct the entry the firm would enter in the accounts to record the transaction in the accounts. Then, for each line of the journal entry, identify the line of Exhibit 6.12 affected.)
- Amortization of a patent, treated as an expense, \$600.
 - Acquisition of a factory site financed by issuing capital stock with a market value of \$50,000 in exchange.
 - Purchase of inventory on account for \$7,500; assume inventory had increased for the year before the firm recorded this overlooked transaction.
 - Purchase of inventory for cash of \$6,000; assume inventory had increased for the year before the firm recorded this overlooked transaction.

EXHIBIT 6.19

**Largay Corporation
Statement of Cash Flows
Current Year
(Exercise 30)
(all amounts in thousands of US\$)**

OPERATIONS	
Net Income	\$100
Depreciation Expense	15
Changes in Working Capital Accounts	<u>(40)</u>
Cash Flow from Operations	\$ 75
INVESTING	
Acquisition of Buildings and Equipment	(30)
FINANCING	
Repayment of Long-Term Debt	<u>(40)</u>
Change in Cash	\$ 5
Cash, Beginning of Year	<u>27</u>
Cash, End of Year	<u><u>\$ 32</u></u>

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- e. Uninsured fire loss of merchandise inventory totaling \$1,500; assume inventory had increased for the year before the firm recorded this overlooked transaction.
- f. Collection of an account receivable totaling \$1,450; assume accounts receivable had increased for the year before the firm recorded this overlooked transaction.
- g. Issue of bonds for \$10,000 cash.
- h. Sale of equipment for cash at its carrying value of \$4,500.

PROBLEMS

32. Inferring cash flows from financial statement data. Exhibit 6.20 presents data from the financial statements for Heidi's Hide-Out, a bar and video-game club, with private party rooms for rent. Heidi's deals with

- Many employees, to some of whom it has made advances on wages and to some of whom it owes wages for past work;
- Many landlords, to some of whom it has made advance payments and to some of whom it owes rent for past months;
- Many customers, some of whom have paid for special parties not yet held and some of whom have not yet paid for parties already held; and
- Many suppliers of goods, including food and beverages, some of whom Heidi's has paid for orders not yet received and some of whom have delivered goods for which Heidi's has not yet paid.

Heidi's and its customers, suppliers, and employees settle all transactions with cash, never with non-cash assets.

EXHIBIT 6.20

Heidi's Hide-Out Selected Detail from Financial Statements Current Year (Problem 32)

	Beginning of Year	End of Year
BALANCE SHEETS		
Cash	\$22,000	\$ 10,000
Accounts Receivable from Retail Customers	8,000	8,900
Inventory of Retail Merchandise	11,000	10,000
Advances to Employees	1,000	1,500
Advances to Landlords (Prepaid Rent)	5,000	5,600
Advances to Suppliers of Retail Merchandise	10,000	10,500
Total Assets	<u>\$57,000</u>	<u>\$ 46,500</u>
Accounts Payable to Suppliers of Retail Merchandise	\$ 8,000	\$ 7,700
Advances from Retail Customers	9,000	10,000
Rent Payable to Landlords	6,000	5,300
Wages Payable to Employees	2,000	1,800
Shareholders' Equity	32,000	21,700
Total Liabilities and Shareholders' Equity	<u>\$57,000</u>	<u>\$ 46,500</u>
INCOME STATEMENT FOR THE YEAR		
Sales Revenue from Retail Customers		\$ 120,000
Cost of Retail Merchandise Sold	\$90,000	
Rent Expense	33,000	
Wage Expense	<u>20,000</u>	
Less: Total Expenses		\$(143,000)
Net Income (Loss)		<u>\$ (23,000)</u>

- a. Calculate the amount of cash received from retail customers during the current year.
 - b. Calculate the amount of cash Heidi's paid landlords during the current year for the rental of space.
 - c. Calculate the amount of cash Heidi's paid employees during the current year.
 - d. Calculate the amount of cash Heidi's paid suppliers of retail merchandise, which includes the food and beverages it sells to retail customers, during the current year.
- 33. Inferring cash flows from balance sheet and income statement data.** (Based on a problem prepared by Stephen A. Zeff.) You work for the Plains State Bank as an analyst specializing in the financial statements of small businesses seeking loans from the bank. Digit Retail Enterprises Inc. provides you with its balance sheet for December 31, 2012 and 2013 (**Exhibit 6.21**), and its income statement for 2013 (**Exhibit 6.22**). Digit Retail Enterprises, Inc., acquired no new property, plant, and equipment during the year.
- a. Calculate the amount of cash received from customers during 2013.
 - b. Calculate the acquisition cost of merchandise purchased during 2013.
 - c. Calculate the amount of cash paid to suppliers of merchandise during 2013.
 - d. Calculate the amount of cash paid to salaried employees during 2013.

EXHIBIT 6.21

**Digit Retail Enterprises, Inc.
Balance Sheet
(Problem 33)**

	December 31, 2013	December 31, 2012
ASSETS		
Current Assets		
Cash	\$ 50,000	\$ 36,000
Accounts Receivable	38,000	23,000
Notes Receivable	—	7,500
Interest Receivable	—	100
Merchandise Inventory	65,000	48,000
Prepaid Insurance	12,000	9,000
Prepaid Rent	—	2,000
Total Current Assets	<u>\$165,000</u>	<u>\$125,600</u>
Property, Plant, and Equipment		
At Cost	\$ 90,000	\$100,000
Less Accumulated Depreciation	(35,000)	(20,000)
Net	<u>\$ 55,000</u>	<u>\$ 80,000</u>
Total Assets	<u>\$220,000</u>	<u>\$205,600</u>
LIABILITIES AND SHAREHOLDER'S EQUITY		
Current Liabilities		
Accounts Payable—Merchandise Suppliers	\$ 20,000	\$ 18,000
Salaries Payable	2,800	2,100
Rent Payable	3,000	—
Advances from Customers	6,100	8,500
Note Payable	5,500	—
Dividends Payable	2,600	4,200
Other Current Liabilities	3,700	1,300
Total Current Liabilities	<u>\$ 43,700</u>	<u>\$ 34,100</u>
Shareholders' Equity		
Common Stock	\$164,500	\$160,000
Retained Earnings	11,800	11,500
Total Shareholders' Equity	<u>\$176,300</u>	<u>\$171,500</u>
Total Liabilities and Shareholders' Equity	<u>\$220,000</u>	<u>\$205,600</u>

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EXHIBIT 6.22
**Digit Retail Enterprises, Inc.
Income Statement
For 2013
(Problem 33)**

Sales Revenue	\$270,000
Gain on Sale of Property, Plant, and Equipment	3,200
Interest Revenue	200
Total Revenues	<u>\$273,400</u>
Less Expenses:	
Cost of Goods Sold	\$145,000
Salaries Expense	68,000
Rent Expense	12,000
Insurance Expense	5,000
Depreciation Expense	20,000
Other Expenses	13,800
Total Expenses	<u>\$263,800</u>
Net Income	<u>\$ 9,600</u>

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- e. Calculate the amount of cash paid to insurance companies during 2013.
- f. Calculate the amount of cash paid to landlords for space rented during 2013.
- g. Calculate the amount of dividends paid during 2013.
- h. Calculate the amount of cash received when property, plant, and equipment were sold during 2013.
- 34. Preparing and interpreting a statement of cash flows using a T-account work sheet.** Condensed financial statement data for Hale Company for the current year appear in **Exhibits 6.23** and **6.24**. During the current year, the firm sold for \$5,000 equipment costing \$15,000 with \$10,000 of accumulated depreciation.

EXHIBIT 6.23
**Hale Company Comparative
Balance Sheet
(Problem 34)**

	January 1	December 31
ASSETS		
Cash	\$ 52,000	\$ 58,000
Accounts Receivable	93,000	106,000
Inventory	151,000	162,000
Land	30,000	30,000
Buildings and Equipment (Cost)	790,000	830,000
Less Accumulated Depreciation	(460,000)	(504,000)
Total Assets	<u>\$ 656,000</u>	<u>\$ 682,000</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Accounts Payable for Inventory	\$ 136,000	\$ 141,000
Interest Payable	10,000	8,000
Mortgage Payable	120,000	109,000
Common Stock	250,000	250,000
Retained Earnings	140,000	174,000
Total Liabilities and Shareholders' Equity	<u>\$ 656,000</u>	<u>\$ 682,000</u>

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EXHIBIT 6.24

**Hale Company
Statement of Income and Retained Earnings
Current Year
(Problem 34)**

Sales Revenues		\$1,200,000
Expenses		
Cost of Goods Sold	\$788,000	
Wages and Salaries	280,000	
Depreciation	54,000	
Interest	12,000	
Income Taxes	<u>22,000</u>	
Total Expenses		<u>\$1,156,000</u>
Net Income		\$ 44,000
Dividends on Common Stock		<u>(10,000)</u>
Addition to Retained Earnings for Year		\$ 34,000
Retained Earnings, January 1		<u>140,000</u>
Retained Earnings, December 31		<u>\$ 174,000</u>

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- a. Prepare a statement of cash flows for Hale Company for the year using the indirect method of computing cash flow from operations. Support the statement with a T-account work sheet.
 - b. Derive a presentation of cash flows from operations using the direct method.
 - c. Present a statement of cash flows for Hale Company using the direct method for cash flows from operations. Include reconciliation of net income to cash flow from operations.
 - d. Comment on the pattern of cash flows from operations, investing, and financing activities.
- 35. Preparing and interpreting a statement of cash flows using a T-account work sheet.** Financial statement data for Dickerson Manufacturing Company for the current year appear in **Exhibit 6.25**. Additional information includes the following:
- (1) Net income for the year was \$568,000; dividends declared and paid were \$60,000.
 - (2) Depreciation expense for the year was \$510,000 on buildings and machinery.
 - (3) The firm sold for \$25,000 machinery originally costing \$150,000 with accumulated depreciation of \$120,000.
 - (4) The firm retired bonds during the year at their book value.
- a. Prepare a statement of cash flows for Dickerson Manufacturing Company for the year using the indirect method to compute cash flow from operations. Support the statement with a T-account work sheet.
 - b. Comment on the pattern of cash flows from operating, investing, and financing activities.
- 36. Preparing direct method of deriving cash flow from operations from data in published annual report.** GTI, Inc., manufactures parts, components, and processing equipment for electronics and semiconductor applications in the communication, computer, automotive, and appliance industries. Its sales tend to vary with changes in the business cycle since the sales of most of its customers are cyclical. **Exhibit 6.26** presents balance sheets for GTI as of December 31, 2011, 2012, and 2013, and **Exhibit 6.27** presents income statements for 2012 and 2013. Notes to the firm's financial statements reveal the following (amounts are in thousands of U.S. dollars):
- (1) Depreciation expense, included in Administration Expenses, was \$641 in 2012 and \$625 in 2013.
 - (2) Other Noncurrent Assets represent patents. Patent amortization, included in Administrative Expenses, was \$25 in 2012 and \$40 in 2013.
 - (3) Changes in Other Current Liabilities and Other Noncurrent Liabilities are both operating transactions relating to Administrative Expenses.

EXHIBIT 6.25**Dickerson Manufacturing Company
Comparative Balance Sheet
(Problem 35)**

	January 1	December 31
ASSETS		
Current Assets		
Cash	\$ 358,000	\$ 324,000
Accounts Receivable	946,000	1,052,000
Inventory	1,004,000	1,208,000
Total Current Assets	<u>\$ 2,308,000</u>	<u>\$ 2,584,000</u>
Noncurrent Assets		
Land	\$ 594,000	\$ 630,000
Buildings and Machinery	8,678,000	9,546,000
Less Accumulated Depreciation	<u>(3,974,000)</u>	<u>(4,364,000)</u>
Total Noncurrent Assets	<u>\$ 5,298,000</u>	<u>\$ 5,812,000</u>
Total Assets	<u>\$ 7,606,000</u>	<u>\$ 8,396,000</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current Liabilities		
Accounts Payable	\$ 412,000	\$ 558,000
Taxes Payable	274,000	290,000
Other Short-Term Payables	<u>588,000</u>	<u>726,000</u>
Total Current Liabilities	<u>\$ 1,274,000</u>	<u>\$ 1,574,000</u>
Noncurrent Liabilities		
Bonds Payable	<u>1,984,000</u>	<u>1,934,000</u>
Total Liabilities	<u>\$ 3,258,000</u>	<u>\$ 3,508,000</u>
Shareholders' Equity		
Common Stock	\$ 1,672,000	\$ 1,704,000
Retained Earnings	<u>2,676,000</u>	<u>3,184,000</u>
Total Shareholders' Equity	<u>\$ 4,348,000</u>	<u>\$ 4,888,000</u>
Total Liabilities and Shareholders' Equity	<u>\$ 7,606,000</u>	<u>\$ 8,396,000</u>

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- a. Prepare a T-account work sheet for the preparation of a statement of cash flows for GTI for 2012 and 2013.
 - b. Prepare a statement of cash flows for GTI for 2012 and 2013. Present cash flows from operations using the indirect method.
 - c. Present a derivation of cash flows from operations for 2012 using the direct method.
 - d. Discuss the relation between net income and cash flow from operations and the pattern of cash flows from operating, investing, and financing activities.
- 37. Interpreting a statement of cash flows based on the direct method for presenting cash flow from operations.** Exhibit 6.28 shows the consolidated income statements for Carter Corporation for three recent years. Carter uses the direct method for presenting its cash flows from operations, which appears in Exhibit 6.29.
- a. What was the change in accounts receivable during 2013?
 - b. Accounts payable for inventories increased by \$181.4 during 2013. What was the change in inventories during 2013?
 - c. By how much did the amount paid for interest during 2013 differ from interest expense? Give the amount and indicate whether the amount paid exceeded, or was less than, expense.
 - d. Note that income increased by a bit more than 10% between 2011 and 2012 but nearly doubled between 2012 and 2013. What cause(s) can you suggest for this dramatic change?
- 38. Interpreting a statement of cash flows based on the direct method for presenting cash flow from operations.** Refer to information about Carter Corporation in the preceding problem.

EXHIBIT 6.26

**GTI, Inc.
Balance Sheets
(Problem 36)
(all amounts in thousands of US\$)**

	December 31		
	2013	2012	2011
ASSETS			
Cash	\$ 367	\$ 475	\$ 430
Accounts Receivable	2,545	3,936	3,768
Inventories	2,094	2,966	2,334
Prepayments	<u>122</u>	<u>270</u>	<u>116</u>
Total Current Assets	\$ 5,128	\$ 7,647	\$ 6,648
Property, Plant, and Equipment (net)	4,027	4,598	3,806
Other Noncurrent Assets	<u>456</u>	<u>559</u>	<u>193</u>
Total Assets	<u>\$ 9,611</u>	<u>\$12,804</u>	<u>\$10,647</u>
LIABILITIES AND SHAREHOLDERS' EQUITY			
Accounts Payable (to suppliers of inventory)	\$ 796	\$ 809	\$ 1,578
Notes Payable to Banks	2,413	231	11
Other Current Liabilities	<u>695</u>	<u>777</u>	<u>1,076</u>
Total Current Liabilities	\$ 3,904	\$ 1,817	\$ 2,665
Long-Term Debt	2,084	4,692	2,353
Other Noncurrent Liabilities	<u>113</u>	<u>89</u>	<u>126</u>
Total Liabilities	<u>\$ 6,101</u>	<u>\$ 6,598</u>	<u>\$ 5,144</u>
Preferred Stock	\$ 289	\$ 289	\$ —
Common Stock	86	85	83
Additional Paid-in Capital	4,394	4,392	4,385
Retained Earnings	<u>(1,259)</u>	<u>1,440</u>	<u>1,035</u>
Total Shareholders' Equity	<u>\$ 3,510</u>	<u>\$ 6,206</u>	<u>\$ 5,503</u>
Total Liabilities and Shareholders' Equity	<u>\$ 9,611</u>	<u>\$12,804</u>	<u>\$10,647</u>

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EXHIBIT 6.27

**GTI, Inc.
Income Statements
(Problem 36)
(all amounts in thousands of US\$)**

	2013	2012
Sales	\$ 11,960	\$ 22,833
Cost of Goods Sold	(11,031)	(16,518)
Selling and Administrative Expenses	(3,496)	(4,849)
Interest Expense	(452)	(459)
Income Tax Expense	<u>328</u>	<u>(590)</u>
Net Income (Loss)	\$ (2,691)	\$ 417
Dividends on Preferred Stock	<u>(8)</u>	<u>(12)</u>
Net Income (Loss) Available to Common Shareholders	<u>\$ (2,699)</u>	<u>\$ 405</u>

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EXHIBIT 6.28
Carter Corporation
Consolidated Statements of Operations
(Problems 37 and 38)

In millions, except per share amounts	2013	2012	2011
Net revenues	\$76,329.5	\$43,821.4	\$37,006.7
Cost of revenues	<u>60,221.8</u>	<u>32,079.2</u>	<u>27,312.1</u>
Gross profit	16,107.7	11,742.2	9,694.6
Total operating expenses	<u>11,314.4</u>	<u>9,300.6</u>	<u>7,675.1</u>
Operating profit	4,793.3	2,441.6	2,019.5
Interest expense, net.	<u>434.6</u>	<u>215.8</u>	<u>110.5</u>
Earnings before income tax provision	4,358.7	2,225.8	1,909.0
Income tax provision	<u>1,721.7</u>	<u>856.9</u>	<u>684.3</u>
Net earnings	2,637.0	1,368.9	1,224.7
Preference dividends, net of income tax benefit.	14.2	13.9	14.1
Net earnings available to common shareholders.	<u>\$ 2,622.8</u>	<u>\$ 1,355.0</u>	<u>\$ 1,210.6</u>
BASIC EARNINGS PER COMMON SHARE:			
Net earnings	<u>\$ 1.97</u>	<u>\$ 1.65</u>	<u>\$ 1.49</u>
Weighted average common shares outstanding	<u>1,328.2</u>	<u>820.6</u>	<u>811.4</u>
DILUTED EARNINGS PER COMMON SHARE:			
Net earnings	<u>\$ 1.92</u>	<u>\$ 1.60</u>	<u>\$ 1.45</u>
Weighted average common shares outstanding	<u>1,371.8</u>	<u>853.2</u>	<u>841.6</u>
Dividends declared per common share	<u>\$ 0.22875</u>	<u>\$ 0.15500</u>	<u>\$ 0.14500</u>

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EXHIBIT 6.29
Carter Corporation
Excerpts from Statements of Cash Flows
Cash Flow from Operations Presented with the Direct Method
(Problems 37 and 38)
(all amounts in millions of US\$)

	2013	2012	2011
CASH FLOWS FROM OPERATING ACTIVITIES:			
Cash receipts from revenues	\$ 61,986.3	\$ 43,273.7	\$ 36,923.1
Cash paid for inventory	(45,772.6)	(31,422.1)	(26,403.9)
Cash paid to other suppliers and employees.	(10,768.6)	(9,065.3)	(8,186.7)
Interest and dividends received	33.6	15.9	6.5
Interest paid	(468.2)	(228.1)	(135.9)
Income taxes paid	(1,780.8)	(831.7)	(591.0)
Net cash provided by operating activities	<u>3,229.7</u>	<u>1,742.4</u>	<u>1,612.1</u>

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- What was the change in accounts receivable during 2012?
 - Inventories increased by \$624.1 during 2012. What was the change in accounts payable for inventories during 2012?
 - By how much did the amount paid for interest during 2012 differ from interest expense? Give the amount and indicate whether the amount paid exceeded, or was less than, expense.
- 39. Working backward through the statement of cash flows.** Quintana Company presents the balance sheet shown in **Exhibit 6.30** and the statement of cash flows shown in **Exhibit 6.31** for 2013. The firm sold investments, equipment, and land for cash at their net book value. The accumulated depreciation of the equipment sold was \$20,000.
- Prepare a balance sheet for the beginning of the year, January 1, 2013.

EXHIBIT 6.30

**Quintana Company
All Balance Sheet Accounts
December 31, 2013
(Problem 39)**

ASSETS	
Cash	\$ 25,000
Accounts Receivable	220,000
Merchandise Inventories	320,000
Land	40,000
Buildings and Equipment (at cost)	500,000
Less Accumulated Depreciation	(200,000)
Investments (noncurrent)	<u>100,000</u>
Total Assets	<u>\$1,005,000</u>
 LIABILITIES AND SHAREHOLDERS' EQUITY	
Accounts Payable	\$ 280,000
Other Current Liabilities	85,000
Bonds Payable	100,000
Common Stock	200,000
Retained Earnings	<u>340,000</u>
Total Liabilities and Shareholders' Equity	<u>\$1,005,000</u>

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EXHIBIT 6.31

**Quintana Company
Statement of Cash Flows
For 2013
(Problem 39)**

OPERATIONS	
Net Income	\$ 200,000
Additions:	
Depreciation Expense	60,000
Increase in Accounts Payable	25,000
Subtractions:	
Increase in Accounts Receivable	(30,000)
Increase in Merchandise Inventories	(40,000)
Decrease in Other Current Liabilities	<u>(45,000)</u>
Cash Flow from Operations	\$ 170,000
 INVESTING	
Sale of Investments	\$ 40,000
Sale of Buildings and Equipment	15,000
Sale of Land	10,000
Acquisition of Buildings and Equipment	<u>(130,000)</u>
Cash Flow from Investing	(65,000)
 FINANCING	
Common Stock Issued	\$ 60,000
Bonds Issued	40,000
Dividends Paid	<u>(200,000)</u>
Cash Flow from Financing	(100,000)
Net Change in Cash	<u>\$ 5,000</u>

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- 40. Interpreting the statement of cash flows.** Exhibit 6.32 presents a statement of cash flows for Swoosh Shoes, Inc., for three years.
- Why did Swoosh experience increasing net income but decreasing cash flow from operations during this three-year period?
 - What is the likely explanation for the changes in Swoosh's cash flow from investing during the three-year period?
 - How did Swoosh finance its investing activities during the three-year period?
 - Evaluate the appropriateness of Swoosh's use of short-term borrowing during 2013.
- 41. Interpreting the statement of cash flows.** Exhibit 6.33 presents statements of cash flows for Spokane Paper Group, a forest products company, for three recent years. During this period, it faced financial difficulty, which you can see by noting the pattern of losses increasing with time.
- Spokane Paper Group operated at a net loss each year but generated positive cash flow from operations. Explain.
 - What is the likely explanation for the changes in Spokane Paper Group's cash flow from investing activities during the three-year period?
 - What is the likely explanation for the changes in long-term financing during 2011 and 2012?

EXHIBIT 6.32

Swoosh Shoes, Inc.
Statement of Cash Flows
(Problem 40)
(all amounts in millions of US\$)

	2013	2012	2011
OPERATIONS			
Net Income	\$ 287	\$ 243	\$ 167
Depreciation and Amortization	34	17	15
Other Addbacks and Subtractions.	<u>3</u>	<u>5</u>	<u>(5)</u>
Working Capital Provided by Operations	\$ 324	\$ 265	\$ 177
(Increase) Decrease in Accounts Receivable	(120)	(105)	(38)
(Increase) Decrease in Inventories.	(275)	(86)	(25)
(Increase) Decrease in Other Operating Current Assets	(6)	(5)	(2)
Increase (Decrease) in Accounts Payable	59	36	21
Increase (Decrease) in Other Current Operating Liabilities	<u>32</u>	<u>22</u>	<u>36</u>
Cash Flow from Operations	<u>\$ 14</u>	<u>\$ 127</u>	<u>\$ 169</u>
INVESTING			
Sale of Property, Plant, and Equipment.	\$ 2	\$ 1	\$ 3
Acquisition of Property, Plant, and Equipment	(165)	(87)	(42)
Acquisition of Investment	<u>(48)</u>	<u>(3)</u>	<u>(1)</u>
Cash Flow from Investing	<u>\$ (211)</u>	<u>\$ (89)</u>	<u>\$ (40)</u>
FINANCING			
Increase in Short-Term Debt	\$ 269	—	—
Increase in Long-Term Debt	5	\$ 1	—
Issue of Common Stock	3	2	\$ 3
Decrease in Short-Term Debt.	—	(8)	(96)
Decrease in Long-Term Debt	(10)	(2)	(4)
Dividends	<u>(41)</u>	<u>(26)</u>	<u>(22)</u>
Cash Flow from Financing	<u>\$ 226</u>	<u>\$ (33)</u>	<u>\$ (119)</u>
Change in Cash	\$ 29	\$ 5	\$ 10
Cash, Beginning of Year	<u>89</u>	<u>84</u>	<u>74</u>
Cash, End of Year	<u>\$ 118</u>	<u>\$ 89</u>	<u>\$ 84</u>

EXHIBIT 6.33

**Spokane Paper Group
Statement of Cash Flows
(Problem 41)
(all amounts in millions of US\$)**

	2013	2012	2011
OPERATIONS			
Net Income (Loss)	\$ (63)	\$ (77)	\$ (154)
Depreciation	236	268	266
Other Addbacks (Subtractions)	41	(43)	(56)
(Increase) Decrease in Accounts Receivable	(68)	—	(46)
(Increase) Decrease in Inventories	6	(31)	(3)
Increase (Decrease) in Accounts Payable	55	15	9
Increase (Decrease) in Other Current Liabilities	<u>9</u>	<u>(1)</u>	<u>50</u>
Cash Flow from Operations	<u>\$ 216</u>	<u>\$ 131</u>	<u>\$ 66</u>
INVESTING			
Sale of Property, Plant, and Equipment	\$ 171	\$ 24	\$ 202
Acquisition of Property, Plant, and Equipment	(271)	(222)	(283)
Other Investing Transactions	<u>(75)</u>	<u>9</u>	<u>(31)</u>
Cash Flow from Investing	<u>\$ (175)</u>	<u>\$ (189)</u>	<u>\$ (112)</u>
FINANCING			
Increase (Decrease) in Short-Term Borrowing	\$ 25	\$ 27	\$ (54)
Increase in Long-Term Debt	139	84	131
Increase in Preferred Stock	—	287	191
Decrease in Long-Term Debt	(116)	(269)	(164)
Dividends	(84)	(67)	(55)
Other Financing Transactions	<u>2</u>	<u>(2)</u>	<u>(5)</u>
Cash Flow from Financing	<u>\$ (34)</u>	<u>\$ 60</u>	<u>\$ 44</u>
Change in Cash	\$ 7	\$ 2	\$ (2)
Cash, Beginning of Year	<u>22</u>	<u>20</u>	<u>22</u>
Cash, End of Year	<u>\$ 29</u>	<u>\$ 22</u>	<u>\$ 20</u>

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- 42. Interpreting statement of cash flow relations.** Exhibit 6.34 presents statements of cash flow for eight companies for the same year:
- American Airlines (airline transportation)
 - American Home Products (pharmaceuticals)
 - Interpublic Group (advertising and other marketing services)
 - Procter & Gamble (consumer products)
 - Reebok (athletic shoes)
 - Texas Instruments (electronics)
 - Limited Brands (specialty retailing)
 - Upjohn (pharmaceuticals)

Discuss the relation between net income and cash flow from operations, and the pattern of cash flows from operating, investing, and financing activities for each firm.

- 43. Interpreting direct and indirect methods.** Refer to Exhibit 6.35 for Fierce Fighters Corporation, which shows excerpts from its Statements of Cash Flows, with cash flow from operations presented with the indirect method, for three recent years. We use these years to illustrate a period of successively decreasing cash flows from operations. The columns labeled *Change* and shaded purple do not appear in the original.

Statements of Cash Flows for Selected Companies
(Problem 42)
(all amounts in millions of US\$)

EXHIBIT 6.34

	American Airlines	American Home Products	Interpublic Group	Procter & Gamble	Reebok	Texas Instruments	Limited Brands	Upjohn
Operations								
Net Income (Loss)	\$ (110)	\$ 1,528	\$ 125	\$ 2,211	\$ 254	\$ 691	\$ 455	\$ 491
Depreciation	1,223	306	61	1,134	37	665	247	175
Other Addbacks (Subtractions)	166	71	23	196	(4)	(9)	—	7
(Increase) Decrease in Receivables	37	14	(66)	40	(65)	(197)	(102)	6
(Increase) Decrease in Inventories	(27)	(157)	16	25	(82)	(60)	(74)	(21)
Increase (Decrease) in Payables	34	325	59	98	35	330	118	63
Increase (Decrease) in Other Current Liabilities	54	(185)	(15)	(55)	(2)	112	110	(11)
Cash Flow from Operations	\$ 1,377	\$ 1,902	\$ 203	\$ 3,649	\$ 173	\$ 1,532	\$ 754	\$ 710
Investing								
Capital Expenditures (net)	\$ (2,080)	\$ (473)	\$ (79)	\$ (1,841)	\$ (62)	\$ (1,076)	\$ (430)	\$ (224)
Sale (Acquisition) of Marketable Securities	290	24	3	23	—	(47)	—	(287)
Sale (Acquisition) of Other Businesses	—	(9,161)	—	(295)	—	—	(60)	308
Other Investing	36	(5)	(85)	105	(4)	—	—	(1)
Cash Flow from Investing	\$ (1,754)	\$ (9,615)	\$ (161)	\$ (2,008)	\$ (66)	\$ (1,123)	\$ (490)	\$ (204)
Financing								
Increase (Decrease) in Short-Term Borrowing	\$ (380)	\$ 8,640	\$ 35	\$ (281)	\$ 37	\$ (1)	\$ (322)	\$ 5
Increase in Long-Term Debt	730	—	42	414	—	1	150	15
Increase in Capital Stock	1,081	38	19	36	13	110	17	—
Decrease in Long-Term Debt	(1,069)	—	(15)	(797)	(3)	(88)	—	(46)
Acquisition of Treasury Stock	—	(314)	(37)	(14)	(112)	—	—	(32)
Dividends	(49)	(903)	(36)	(949)	(25)	(79)	(102)	(264)
Other Financing	82	11	(14)	1	(12)	4	—	37
Cash Flow from Financing	\$ 395	\$ 7,472	\$ (6)	\$ (1,590)	\$ (102)	\$ (53)	\$ (257)	\$ (285)
Change in Cash	\$ 18	\$ (241)	\$ 36	\$ 51	\$ 5	\$ 356	\$ 7	\$ 221
Cash, Beginning of Year	45	1,937	256	2,322	79	404	34	281
Cash, End of Year	\$ 63	\$ 1,696	\$ 292	\$ 2,373	\$ 84	\$ 760	\$ 41	\$ 502

- a. Using **Exhibit 6.35**, write a short (no more than 50 words) explanation of why Fierce Fighters' cash flow from operations declined by about 20% per year between 2011 and 2012 and then again between 2012 and 2013. If you cannot explain, then suggest why that might be.
 - b. Now refer to **Exhibit 6.36** for Fierce Fighters, which shows excerpts from its Statements of Cash Flows, with cash flow from operations presented with the direct method, for the same three years as in part a. Write a short (no more than 50 words) explanation of why Fierce Fighter's cash flow from operations declined by about 20% per year between 2011 and 2012 and then again between 2012 and 2013. If you cannot explain, then suggest why that might be.
 - c. Which method of presenting cash flow from operations do you find easier to interpret?
- 44. Issues in manipulating cash flows from operations.** Top financial management wants to increase cash flow from operations. It asks you to implement the following strategies. Which of these, if implemented, will increase cash flow from operations contrasted to the amount if you do not implement the strategy for the firm? Comment on the wisdom and suitability of these strategies.
- a. The firm delays maintaining equipment until after the start of the next period.
 - b. The firm delays purchasing new equipment until after the start of the next period.

EXHIBIT 6.35

Fierce Fighters Corporation
Data Taken from Consolidated Statements of Cash Flows
(Shaded Columns Showing Changes Do Not Appear in Original)
(Problem 43)
(all amounts in millions of US\$)

Indirect Method

Years ended December 31	2013		2012		2011
Cash Provided by Operating Activities		Change		Change	
Net Income	\$ 427	(181)	\$ 608	141	\$ 467
Adjustments to Reconcile Net Income to Net Cash Provided by Operations:					
Depreciation	266	91	175	(18)	193
Amortization of Intangible Assets	379	173	206	10	196
Common Stock Issued to Employees	46	38	8	6	2
Loss on Disposal of Discontinued Operations	—	(56)	56	56	—
Loss (Gain) on Sales of Property, Plant, and Equipment	(7)	(20)	13	(8)	21
Retiree Benefits Income	(269)	223	(492)	(243)	(249)
Decrease (Increase) in Accounts Receivable	1,273	1,952	(679)	(849)	170
Inventoried Costs	(28)	(105)	77	(95)	172
Prepaid Expenses and Other Current Assets	17	45	(28)	(73)	45
Increase (Decrease) in Advances from Customers on Long-Term Contracts	(648)	(1,314)	666	645	21
Accounts Payable and Accruals	(696)	(783)	87	89	(2)
Provisions for Contract Losses	(65)	(85)	20	28	(8)
Deferred Income Taxes	174	(171)	345	115	230
Income Taxes Payable	(13)	(41)	28	(30)	58
Retiree Benefits	(75)	17	(92)	37	(129)
Other Non-cash Transaction					
Net Cash Provided by Operating Activities	36	24	12	(8)	20
	<u>\$ 817</u>	<u>(193)</u>	<u>\$1,010</u>	<u>(197)</u>	<u>\$1,207</u>

The changes are from right to left, from 2011 to 2012 and from 2012 to 2013. Each number in a change column is the difference: number to the left of the change minus the number to the right of the change.

EXHIBIT 6.36

Fierce Fighters Corporation
Data Taken from Consolidated Statements of Cash Flows
(Shaded Columns Showing Changes Do Not Appear in Original)
(Problem 43)
(all amounts in millions of US\$)

Direct Method (Without Reconciliation of Net Income to Cash Flow from Operations)

Years ended December 31	2013		2012		2011
Cash Provided by Operating Activities		Change		Change	
Sources of Cash					
Cash Received from Customers					
Collections from Customers on Long-Term Contracts	\$ 3,102	1,664	\$ 1,438	(253)	\$ 1,691
Other Collections	11,148	4,145	7,003	(447)	7,450
Less: Cash Paid to Suppliers and Employees	<u>(13,251)</u>	<u>(6,001)</u>	<u>(7,250)</u>	<u>465</u>	<u>(7,715)</u>
Net Cash Margin	\$ 999	(192)	\$ 1,191	(235)	\$ 1,426
Cash Contribution Margin Percentage	7.0%		14.1%		15.6%
Proceeds from Litigation Settlement	\$ 220	220	\$ —	—	\$ —
Interest Received	17	—	17	(1)	18
Income Tax Refunds Received	23	8	15	(60)	75
Other Cash Receipts	<u>24</u>	<u>14</u>	<u>10</u>	<u>3</u>	<u>7</u>
Cash Provided by Operating Activities	<u>\$ 1,283</u>	<u>50</u>	<u>\$ 1,233</u>	<u>(293)</u>	<u>\$ 1,526</u>
Other Operating Uses of Cash					
Interest Paid	\$ 333	168	\$ 165	(51)	\$ 216
Income Taxes Paid	126	69	57	(28)	85
Other Cash Payments	<u>7</u>	<u>6</u>	<u>1</u>	<u>(17)</u>	<u>18</u>
Cash Used in Operating Activities	<u>\$ 466</u>	<u>243</u>	<u>\$ 223</u>	<u>(96)</u>	<u>\$ 319</u>
Net Cash Provided by Operating Activities	<u>\$ 817</u>	<u>(193)</u>	<u>\$ 1,010</u>	<u>(197)</u>	<u>\$ 1,207</u>

The changes are from right to left, from 2011 to 2012 and from 2012 to 2013. Each number in a change column is the difference: number to the left of the change minus the number to the right of the change.

- c. The firm sells \$1 million of accounts receivable for \$980,000 cash to a financial institution but agrees to reimburse the purchaser for the amount by which uncollectible accounts exceed \$20,000.
- d. The firm delays paying for its employees' insurance premiums until after the start of the next period.
- e. The firm delays paying some suppliers until after the due date, and until after the start of the next period.
- f. The firm sells goods for cash but promises the customers that they can return the goods for full refund after the start of the next period.

Introduction to Financial Statement Analysis

1. Understand the relation between the expected return and risk of investment alternatives and the role financial statement analysis plays in providing information about returns and risk.
2. Understand the need to recognize the scale of operations in analyzing performance. Scale is incorporated by the use of ratios.
3. Understand the usefulness of return on equity (ROE) and return on assets (ROA) as measures of profitability, and the relation between these two measures.
4. Understand the insights gained by disaggregating ROE using the DuPont Decomposition Analysis.
5. Understand the distinction between short-term liquidity risk and long-term liquidity risk and the financial ratios used to assess each.
6. Develop skills to compare performance both over-time and across-firms.
7. (Appendix) Develop skills to prepare pro forma financial statements.

LEARNING OBJECTIVES

Chapter 1 introduced you to the financial statements of Great Deal, Inc. As shown in **Exhibit 1.2**, Great Deal earned \$1,317 million in fiscal 2012, \$1,003 million in fiscal 2011, and \$1,407 million in 2010. **Exhibit 1.1** shows that Great Deal's total assets increased over the same period: from \$12,758 million in 2010, to \$15,826 million in 2011, to \$18,302 million in 2012.

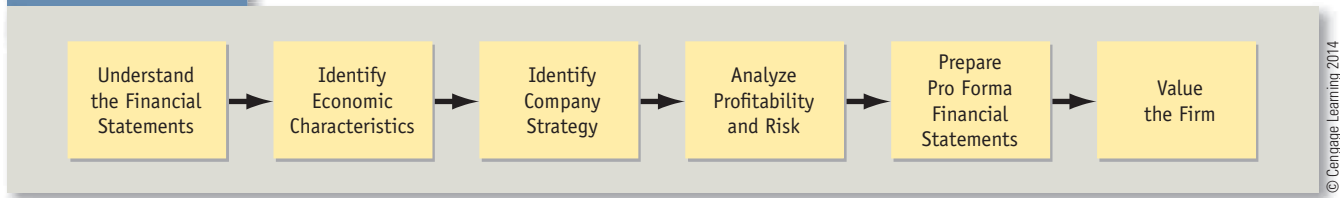
These financial data do not indicate whether Great Deal is performing well or poorly. Specifically, neither the balance sheet alone nor the income statement alone provides sufficient information to answer the following questions about Great Deal's performance and risk:

- How does Great Deal's recent profitability compare to its prior profitability, and to its competitors' profitability?
- What is the source of Great Deal's profitability? Does it derive from selling products and services at substantially higher prices than it costs to obtain those products and services? Or does it derive from selling large volumes of products and services? Or from a combination of the two?
- What risks does Great Deal face? For example, is Great Deal able to pay its debts as they come due?

Answering these questions requires analysis of Great Deal's financial statements and related information provided in the notes to the financial statements. This chapter introduces the tools and techniques of financial statement analysis. **Figure 7.1** presents the typical steps in financial statement analysis and valuation.

FIGURE 7.1

Overview of Financial Statement Analysis



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1. **Understand the purpose and content of three principal financial statements and related notes.** Our financial statement analysis considers the balance sheet, income statement, and statement of cash flows, discussed in **Chapters 4, 5, and 6**, respectively.
2. **Identify the economic characteristics of the industry.** We begin by identifying the characteristics of the firm's industry. Great Deal is a U.S. retailer of consumer electronics, home office products, entertainment software, appliances, and related services. The principal economic characteristics of this industry are as follows:
 - **Nature of products.** Great Deal offers products and services that are similar to the offerings of its competitors. Common terminology refers to such products as *commodities*.
 - **Extent of competition.** The industry is competitive, with many firms offering similar products. Barriers to entry for new competitors include size, distribution network, and market penetration.
 - **Growth characteristics.** The U.S. market is saturated, so further growth must come from introducing new store concepts and expanding internationally.
3. **Identify the company's strategy.** Next, we identify the firm's strategy to compete in its industry and gain competitive advantage. Great Deal emphasizes a broad product offering, relatively low prices, and superior service. Great Deal also sells through both physical stores and the internet.
4. **Calculate and interpret profitability and risk ratios.** Most financial statement analyses examine ratios that capture either profitability or risk. Ratios based on financial statement data provide one analytical tool used to evaluate profitability and risk. This chapter describes and illustrates key profitability and risk ratios.

In analyzing a firm's profitability or risk, it is often helpful to compare the firm's performance to a benchmark. Two common benchmarks are the firm's own performance in a prior period (*time-series analysis*), and competitors' performance in the same period (*cross-sectional analysis*). We illustrate both types of analyses later in this chapter.
5. **Prepare pro forma, or projected, financial statements.** After studying the profitability and risk of a firm in the recent past, the analyst often prepares pro forma, or projected, financial statements for the next three to five years, using assumptions about economic, industry, and firm-specific conditions.¹
6. **Value the firm.** Analysts use projected net income, cash flows, and other items from the financial statements to value the firm. This textbook does not consider valuation, which is an advanced topic in accounting and finance.

OBJECTIVES OF FINANCIAL STATEMENT ANALYSIS

The first question the analyst asks in analyzing a set of financial statements is, "What do I look for?" The response to this question requires an understanding of investment decisions. To illustrate, assume that you must decide how to invest a recent gift of \$25,000. You narrow the investment decision to purchasing either a certificate of deposit at a local bank or the common stock

¹**Appendix 7.1** to this chapter illustrates the preparation of pro forma financial statements for Great Deal for fiscal year 2013 (the year ended February 27, 2014).

of Great Deal, Inc. Great Deal shares currently sell for \$25 per share. You will base your decision on the **return** you anticipate from each investment and the **risk** associated with that return.

The bank currently pays interest at the rate of 3% annually on certificates of deposit. Because the bank will likely remain in business, you feel confident you will earn 3% each year. The return from investing in Great Deal's common stock has two components. First, you anticipate that Great Deal will continue to pay a cash dividend of at least \$0.15 per share. Also, the market price of Great Deal's stock will likely change between the time you purchase the shares and the time you sell them in the future. The difference between the eventual selling price and the purchase price, often called *price appreciation* (or *price depreciation*, if negative), is the second component of the return from buying the stock.

The common stock investment involves more risk (that is, more variability of outcomes) than does the certificate of deposit investment. This is because Great Deal's future profitability will affect its future dividends and market price changes. If competitors open new stores or introduce new products or services that erode Great Deal's market share, future income might be less than you currently anticipate. On the other hand, if Great Deal opens new stores, or introduces successful new products or services, its future income might be greater than you currently anticipate. Economy-wide factors such as inflation and unemployment will also affect the market price of Great Deal's shares, as will factors such as changes in exchange rates that affect the cost of imported merchandise or government regulatory actions. Because most individuals prefer less risk to more risk, you will want a higher expected return if you purchase Great Deal's shares than if you invest in a certificate of deposit.

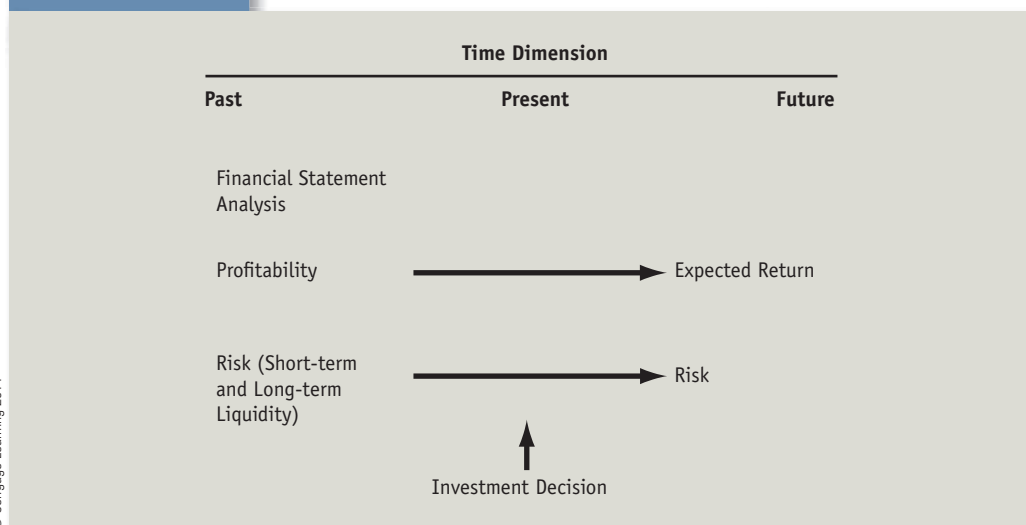
Theoretical and empirical research has shown that the expected return from investing in a firm relates, in part, to the expected profitability of the firm. The analyst studies a firm's past earnings to understand its operating performance and to help forecast its future profitability. Investment decisions also require assessing risk. A firm may find itself short of cash and unable to pay its suppliers on a timely basis. Or, it may have issued so much debt that it has difficulty meeting the required interest and principal payments. The financial statements provide information for assessing how these and other risk elements affect expected return. Most financial statement analysis, therefore, explores some aspect of a firm's profitability, or its risk, or both. **Figure 7.2** summarizes the relation between financial statement analysis and investment decisions.

THE ROLE OF FINANCIAL STATEMENTS IN ASSESSING PROFITABILITY AND RISK

Readers cannot easily answer questions about a firm's profitability and risk from the raw information in financial statements. Nor can they easily compare two firms using these data. For example, one cannot assess profitability by examining the amount of net income. This is because a large amount of net income could result from a large firm earning small profits or

FIGURE 7.2

Relation Between Financial Statement Analysis and Investment Decisions



from a small firm earning large profits. Similarly, it would not be wise to conclude that two firms are of equivalent financial health simply because they report the same amount of income. Rather, it is important to consider the size of the firm when assessing its profitability or when comparing two firms. Financial analysis uses financial ratios and common-size financial statements to deal with size or scale differences in a firm's operations. Common-size income statements express each line in the income statement as a percentage of sales revenues. Common-size balance sheets express each line in the balance sheet as a percentage of total assets. We discuss common-size financial statements later in this chapter.

FINANCIAL RATIOS

Financial ratios incorporate the scale of operations by, for example, relating the amount of income the firm generates to the amount of investment in assets. The analyst expresses the relation between two financial statement items (income and investment, for example) in the form of a ratio. Some ratios compare items within the income statement; some use only balance sheet data; others relate items from multiple financial statements. Ratios aid financial statement analysis because they summarize data in a form easy to understand, interpret, and compare. After calculating the ratios, the analyst must compare them with a benchmark. The following list provides several possible benchmarks for a financial ratio:

1. The planned ratio for the period.
2. The corresponding ratio during the preceding period for the same firm.
3. The corresponding ratio for a similar firm in the same industry.
4. The average ratio for other firms in the same industry.

To demonstrate the calculation of financial ratios, we use the financial statement data for Great Deal, Inc., for fiscal years 2010, 2011, and 2012, appearing in **Exhibit 1.1** (balance sheet), **Exhibit 1.2** (income statement), and **Exhibit 1.3** (statement of cash flows). We recommend that you trace the amounts in the financial ratios discussed in this chapter to the amounts in Great Deal's financial statements.

ANALYSIS OF PROFITABILITY

A firm engages in operations to generate net income. For example, Great Deal sells electronics, office equipment and home appliances to consumers to generate net income. This section discusses two measures of **profitability**, return on equity and return on assets, and how these ratios relate to each other.

RETURN ON EQUITY

Return on equity (ROE) measures a firm's performance in using the resources provided by shareholders to generate net income. This measure of profitability links net income to the portion of the firm's assets that shareholders have financed.

$$\text{ROE} = \frac{\text{Net Income}}{\text{Average Shareholders' Equity}}$$

The numerator of the ROE ratio is net income as reported in the income statement. Because net income includes payments to creditors (in the form of interest expense), net income can be thought of as the profits that are available to shareholders. We do not subtract dividends declared and paid to shareholders because dividends are distributions to shareholders of a portion of the returns generated for them during the period. The firm's board of directors makes the decision whether to pay dividends and specifies the amount. The denominator of the ROE ratio is the average amount of shareholders' equity for a period.² The average is taken over the time period in which net income (the numerator) was generated. For example, if the numerator

²The measure of shareholders' equity used in the ROE formula should be the balance sheet carrying value of the firm's common shareholders' equity. Thus, any preferred equity should be excluded. **Chapter 15** discusses preferred equity.

captures yearly net income, then the denominator should be the average of the beginning of year and end of year amounts of shareholders' equity.

Based on information from Great Deal's balance sheet (**Exhibit 1.1**) and income statement (**Exhibit 1.2**), Great Deal's ROE in fiscal 2012 is 21.7%:

$$\text{ROE} = \frac{\$1,317}{0.5 \times (\$5,156 + \$6,964)} = \frac{\$1,317}{\$6,060} = 21.7\%$$

Great Deal's 21.7% ROE means that each dollar of shareholders' equity generated 21.7 cents in net income. To determine whether an ROE of 21.7% indicates good or bad performance, we might compare Great Deal's 2012 ROE to Great Deal's ROE for the prior year. Great Deal's ROE for fiscal 2011 was 20.7%:

$$\text{ROE} = \frac{\$1,003}{0.5 \times (\$4,524 + \$5,156)} = \frac{\$1,003}{\$4,840} = 20.7\%$$

Great Deal's profitability (as measured by ROE) increased between 2011 and 2012.

RETURN ON ASSETS

Return on assets (ROA) measures a firm's performance in using assets to generate net income independent of how those assets are financed (that is, with debt versus equity). ROA differs from ROE because ROE measures profitability for a specific form of financing—the portion provided by shareholders. The ROA formula is as follows:

$$\text{ROA} = \frac{\text{Net Income}}{\text{Average Total Assets}}$$

ROA is the ratio of net income for a given period to average total assets for that same period. We use the data in **Exhibit 1.1** and **Exhibit 1.2** to calculate Great Deal's ROA for fiscal 2012 as follows:

$$\text{ROA} = \frac{\text{Net Income}}{\text{Average Total Assets}} = \frac{\$1,317}{0.5 \times (\$15,826 + \$18,302)} = 7.7\%$$

Great Deal's ROA indicates that Great Deal earned \$0.077 for each dollar of assets in fiscal 2012. To determine whether this return indicates good or poor performance, we might compare Great Deal's 2012 ROA with its ROA for the previous year. We calculate Great Deal's ROA for fiscal 2011 as follows:

$$\text{ROA} = \frac{\text{Net Income}}{\text{Average Total Assets}} = \frac{\$1,003}{0.5 \times (\$12,758 + \$15,826)} = 7.0\%$$

These results indicate that Great Deal improved its use of assets between 2011 and 2012. ROA increased from \$0.07 per dollar of assets to \$0.077 per dollar of assets, or a 10% increase in ROA ($10\% = [0.077 - 0.07]/0.07$).

RELATION BETWEEN RETURN ON EQUITY AND RETURN ON ASSETS

Our previous analysis indicates that Great Deal's ROE exceeds its ROA. For example, in fiscal 2012 ROE was 21.7% compared to an ROA of 7.7%. What accounts for this relation, a common one for profitable firms? The key to understanding the relation between ROE and ROA lies in understanding **financial leverage**. Financial leverage measures the degree to which a firm's assets are financed with debt. Financial leverage links return on equity and return on assets as follows:

$$\text{ROE} = \text{ROA} \times \text{Financial Leverage}$$

$$\frac{\text{Net Income}}{\text{Average Shareholders' Equity}} = \frac{\text{Net Income}}{\text{Average Total Assets}} \times \frac{\text{Average Total Assets}}{\text{Average Shareholders' Equity}}$$

This formula shows that return on equity equals return on assets multiplied by *financial leverage*, equal to the ratio of average total assets to average total shareholders' equity.³ If a firm is 100% equity financed (i.e., no assets are financed by debt), its financial leverage ratio is 1 (or 100%). In contrast, a firm that financed 50% of its assets with equity would have a financial leverage ratio of 2 (or 200%).

Exhibit 7.1 shows the components of Great Deal's ROE for fiscal years 2011 and 2012. Great Deal's financial leverage ratio (average total assets divided by average shareholders' equity) is 2.82 for fiscal 2012 ($= [0.5 \times (\$15,826 + \$18,302)]/[0.5 \times (\$5,156 + \$6,964)]$). A financial leverage ratio of 2.82 means that each dollar of equity finances about \$2.82 of assets. The deviation of this ratio from 1.0 captures the degree to which assets are financed by non-equity source of funds. We also see that the product of Great Deal's ROA ratio (7.7%) and its financial leverage ratio (2.82) equals its ROE for 2012, 21.7%.

Comparing Great Deal's ROE and ROE components in 2012 to those in 2011 reveals that the increase in ROE between 2011 and 2012 resulted from two offsetting effects. First, Great Deal's ROA increased from 7.0% to 7.7%. Second, Great Deal's financial leverage declined from 2.95 to 2.82. Because ROE increased overall, we can conclude that the first effect (the increase in ROA) exceeded the second effect (the decline in financial leverage).

CONCEPTUAL NOTE

The use of average total assets as the denominator in the ROA ratio means that the firm's financing decisions do not affect the denominator of this ratio. Those financing decisions do, however, affect the numerator of ROA (net income) because interest expense reduces net income. To incorporate the effect of interest costs, the analyst adjusts the numerator of the ROA formula for the effects of financing choices. This adjustment results in the following adjusted ROA formula:

$$\text{ROA} = \frac{\text{Net Income} + \text{After-tax Interest Expense}}{\text{Average Total Assets}}$$

The adjusted ROA formula adds back interest expense (adjusted for its tax effects) to net income. Interest expense is deducted on the firm's tax return in calculating taxable income, which is the income on which the firm pays taxes. Other things equal, interest expense benefits the firm by reducing its taxable income and, therefore, reducing its taxes paid. The amount of taxes saved or shielded because of the tax deductibility of interest expense is the amount of interest expense times one minus the firm's tax rate. Because it includes

an adjustment to income for the effects of the firm's financing choices, the adjusted ROA formula is the technically correct formula for calculating ROA. Great Deal's adjusted ROA for fiscal 2011 and fiscal 2012 are calculated as follows:⁴

$$\begin{aligned} \text{ROA} &= \frac{\text{Net Income} + \text{After-tax Interest Expense}}{\text{Average Total Assets}} \\ &= \frac{\$1,317 + (1 - 0.365)(\$94)}{0.5 \times (\$15,826 + 18,302)} = 8.1\% \end{aligned}$$

$$\begin{aligned} \text{ROA} &= \frac{\text{Net Income} + \text{After-tax Interest Expense}}{\text{Average Total Assets}} \\ &= \frac{\$1,003 + (1 - 0.396)(\$94)}{0.5 \times (\$12,758 + 15,826)} = 7.4\% \end{aligned}$$

Although the adjusted formula is the correct formula to use when ROA is calculated on a standalone basis, it is not the formula that is used in the decomposition of ROE. Therefore, for purposes of this chapter, we use the unadjusted formula when we refer to the ROA ratio.

³Financial leverage can be measured in a number of ways including the ratio of average total debt to average total assets, the ratio of average shareholders' equity to average total assets, and the inverse of either of these ratios. The formula above uses the ratio of average total assets to average shareholders' equity.

⁴Great Deal's tax rate is 39.6% in fiscal 2011 and 36.5% in fiscal 2012.

EXHIBIT 7.1**Great Deal, Inc.
Components of the Return on Equity**

	ROE	=	Return on Assets	×	Financial Leverage
2012.....	21.7%	=	7.7%	×	2.82
2011.....	20.7%	=	7.0%	×	2.95

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▶ PROBLEM 7.1 FOR SELF-STUDY

Analyzing return on equity. Balance sheets and income statements for Markum Corporation are provided in Exhibits 7.2 and 7.3, respectively. Using the information in these financial statements, answer the following questions about Markum's profitability.

- What was Markum's return on equity (ROE) for 2013?
- What was Markum's return on assets (ROA) for 2013?
- Why is Markum's ROE different from its ROA in 2013?

EXHIBIT 7.2**Markum Corporation
Consolidated Balance Sheets
For Years 2012 and 2013
(in millions of US\$)**

	2013		2012	
Assets				
Cash and Cash Equivalents.....	\$ 6,000	4.8%	\$ 4,000	4.0%
Receivables.....	15,000	12.1%	12,000	12.0%
Merchandise Inventories.....	28,000	22.6%	20,000	20.0%
Total Current Assets.....	\$ 49,000	39.5%	\$ 36,000	36.0%
Property, Plant, and Equipment, Net.....	75,000	60.5%	64,000	64.0%
Total Assets.....	<u>\$124,000</u>	<u>100.0%</u>	<u>\$100,000</u>	<u>100.0%</u>
Liabilities and Shareholders' Equity				
Accounts Payable.....	\$ 31,000	25.0%	\$ 24,800	24.8%
Accrued Wages and Other.....	19,000	15.3%	16,000	16.0%
Total Current Liabilities.....	\$ 50,000	40.3%	\$ 40,800	40.8%
Long-Term Debt.....	18,000	14.5%	12,000	12.0%
Shareholders' Equity:				
Common Stock.....	1,500	1.2%	1,000	1.0%
Additional Paid-in Capital.....	24,500	19.8%	18,000	18.0%
Retained Earnings.....	30,000	24.2%	28,200	28.2%
Total Shareholders' Equity.....	\$ 56,000	45.2%	\$ 47,200	47.2%
Total Liabilities and Shareholders' Equity.....	<u>\$124,000</u>	<u>100.0%</u>	<u>\$100,000</u>	<u>100.0%</u>

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EXHIBIT 7.3

Markum Corporation
Consolidated Income Statements
For Years 2012 and 2013
(amounts in millions of US\$)

	2013		2012	
Revenue	\$92,000	100.0%	\$85,000	100.0%
Cost of Goods Sold	67,000	72.8%	70,000	76.1%
Gross Profit	\$25,000	27.2%	\$15,000	16.3%
Selling, General, and Administrative Expenses	8,000	8.7%	6,000	6.5%
Research and Development Expenses	7,000	7.6%	5,000	5.4%
Operating Income	\$10,000	10.9%	\$ 4,000	4.3%
Interest Expense	2,000	2.2%	1,000	1.1%
Income Before Income Tax Expense	\$ 8,000	8.7%	\$ 3,000	3.3%
Income Tax Expense	3,200	3.5%	1,200	1.3%
Net Income	\$ 4,800	5.2%	\$ 1,800	2.0%
Tax Rate	40.0%		40.0%	

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DuPONT DECOMPOSITION ANALYSIS

A useful tool for understanding the sources of a firm's profitability (as measured by ROE and ROA) is the **DuPont Decomposition Analysis**. This analysis disaggregates ROE into the financial leverage and ROA components (as we did in the previous section), and then disaggregates ROA further into the product of two other ratios: the **profit margin ratio** and the **asset turnover ratio**. **Figure 7.3** illustrates this breakdown.

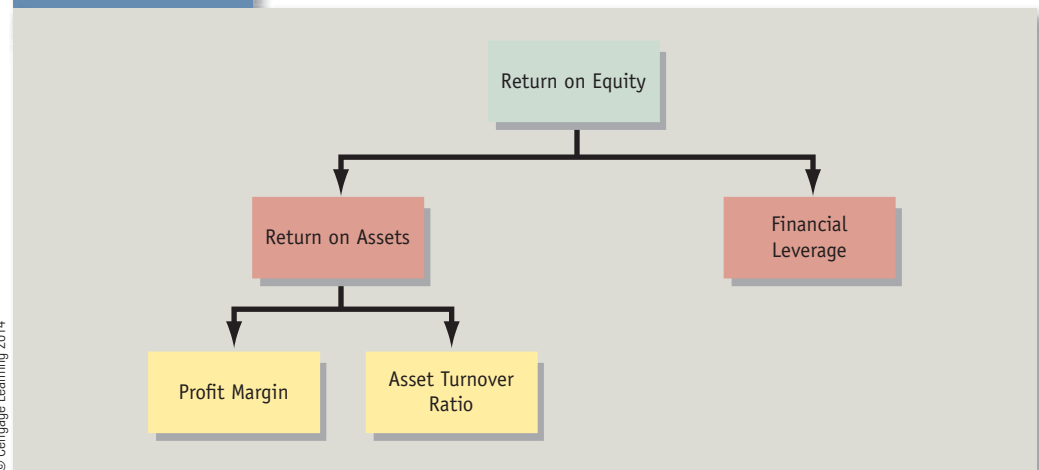
The ROA disaggregation is as follows:

$$\text{ROA} = \text{Profit Margin} \times \text{Asset Turnover Ratio}$$

$$\frac{\text{Net Income}}{\text{Average Total Assets}} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average Total Assets}}$$

FIGURE 7.3

DuPont Decomposition of ROE and ROA



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The profit margin ratio (net income divided by sales revenue) measures a firm's ability to control the level of expenses relative to sales, to increase selling prices relative to the level of expenses incurred, or a combination of the two. By controlling expenses or increasing selling prices, a firm can increase the profits from a given amount of sales activity and improve its profit margin.

The asset turnover ratio measures a firm's ability to generate sales from its investment in assets, or alternatively, to control the amount of assets it uses to generate a particular level of sales revenues. The smaller the amount of assets the firm needs to generate a given level of sales, the better (larger) its assets turnover and the more profitable the firm.

Exhibit 7.4 presents the disaggregation of ROA for Great Deal into the profit margin ratio and asset turnover ratio for fiscal years 2011 and 2012. The data show that the previously noted increase in ROA from 7.0% in 2011 to 7.7% in 2012 is the result of two offsetting factors:

- An increase in profit margin from 2.2% to 2.7% and
- A decline in asset turnover from 3.1 to 2.9.

To pinpoint the causes of these changes, we analyze the changes in the profit margin and asset turnover ratios, in the next section.

A firm can improve its ROA by increasing the profit margin ratio, the rate of asset turnover, or both. It may be difficult to alter one or the other of these components. For example, a firm that sells commodity products in a competitive market likely has little opportunity to increase its profit margin by increasing prices. Such a firm would need to improve its total assets turnover (for example, shortening the holding period for inventories by imposing tighter inventory controls) to increase its ROA. A firm whose activities require substantial investments in property, plant, and equipment and that operates efficiently near its capacity has limited ability to increase its ROA by increasing its total assets turnover. Such a firm might have more flexibility to take actions that increase the profit margin (for example, by creating brand loyalty for its products to increase sales).

The profit margin and asset turnover ratios are also related to each other. Holding other factors constant, we would expect that reducing the selling prices of products (thus reducing the profit margin) would increase sales of those products (thus increasing the asset turnover ratio). Conversely, raising selling prices (thus increasing the profit margin) would reduce sales volumes (thus reducing the asset turnover ratio).

ANALYZING CHANGES IN THE PROFIT MARGIN RATIO

Changes in a firm's expenses relative to sales cause the profit margin ratio to change. To see the relation, we express the individual line items on the income statement as a percentage of sales. These percentages, for each individual expense and net income, are collectively referred to as a *common-size income statement*. The common-size income statements for Great Deal for fiscal years 2010–2012 are shown in **Exhibit 7.5**. **Exhibit 7.5** indicates that Great Deal's profit margin increased between 2011 and 2012 because of the following effects:

- Cost of sales as a percentage of sales declined from 75.6% to 75.5%. Possible reasons for this decline include:
 - Great Deal's increasing size (as measured by the growth in total assets between 2011 and 2012) may have allowed it to purchase merchandise at lower cost, either because of quantity discounts or greater bargaining power over suppliers.

EXHIBIT 7.4

Great Deal, Inc. Disaggregation of ROA for 2011 and 2012

	ROA	=	Profit Margin	×	Asset Turnover Ratio
2012.....	7.7%	=	2.7%	×	2.9
2011.....	7.0%	=	2.2%	×	3.1

EXHIBIT 7.5

Great Deal, Inc.
Common-Size Income Statements
For Years 2012, 2011, and 2010
(amounts in millions of US\$)

	2012		2011		2010	
Revenue	\$49,694	100.0%	\$45,015	100.0%	\$40,023	100.0%
Cost of Goods Sold	<u>37,534</u>	<u>75.5%</u>	<u>34,017</u>	<u>75.6%</u>	<u>30,477</u>	<u>76.1%</u>
Gross Profit	\$12,160	24.5%	\$10,998	24.4%	\$ 9,546	23.9%
Selling, General, and Administrative Expenses	9,873	19.9%	8,984	20.0%	7,385	18.5%
Restructuring Charges	52	0.1%	78	0.2%	0	0.0%
Goodwill and Trade Name Impairment	<u>0</u>	<u>0.0%</u>	<u>66</u>	<u>0.1%</u>	<u>0</u>	<u>0.0%</u>
Operating Income	\$ 2,235	4.5%	\$ 1,870	4.2%	\$ 2,161	5.4%
Other Income (Expense)						
Investment Income and Other	54	0.1%	35	0.1%	129	0.3%
Investment Impairment	0	0.0%	(111)	-0.2%	0	0.0%
Interest Expense	<u>(94)</u>	<u>-0.2%</u>	<u>(94)</u>	<u>-0.2%</u>	<u>(62)</u>	<u>-0.2%</u>
Earnings Before Income Tax Expense and Equity in Income (Loss) of Affiliates	\$ 2,195	4.4%	\$ 1,700	3.8%	\$ 2,228	5.6%
Income Tax Expense	802	1.6%	674	1.5%	815	2.0%
Equity in Income (Loss) of Affiliates	<u>1</u>	<u>0.0%</u>	<u>7</u>	<u>0.0%</u>	<u>(3)</u>	<u>0.0%</u>
Net Earnings Including Noncontrolling Interests	\$ 1,394	2.8%	\$ 1,033	2.3%	\$ 1,410	3.5%
Net Earnings Attributable to Noncontrolling Interests	<u>(77)</u>	<u>-0.2%</u>	<u>(30)</u>	<u>-0.1%</u>	<u>(3)</u>	<u>0.0%</u>
Net Earnings Attributable to Great Deal, Inc.	<u>\$ 1,317</u>	<u>2.7%</u>	<u>\$ 1,003</u>	<u>2.2%</u>	<u>\$ 1,407</u>	<u>3.5%</u>

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- Great Deal may have shifted its sales mix toward products or geographical markets with lower cost of goods sold to sales percentages.
- Great Deal may have improved its controls over the purchase, storage, and delivery of merchandise, reducing the cost of storage and obsolescence.
- Selling, general, and administrative (SG&A) expenses, as percentages of sales, declined from 20.0% to 19.9%. Possible reasons for this decline include:
 - A competitor's bankruptcy may have reduced competition, permitting Great Deal to reduce advertising and other marketing costs.
 - Great Deal may have improved its distribution channels, resulting in lower SG&A expenses.
 - Great Deal may have shifted its sales mix toward products or geographical markets with lower levels of selling or administrative expenses.
- Both restructuring charges and impairment charges declined as a percentage of sales. Restructuring charges declined from 0.2% to 0.1% and impairment charges declined from 0.1% to 0.0%. The declines in these percentages indicate that Great Deal had fewer restructuring events and fewer impairments in fiscal 2012 compared to fiscal 2011.

ANALYZING CHANGES IN THE ASSET TURNOVER RATIO

Changes in the rate of turnover of specific types of assets result in changes in the total assets turnover ratio. The analyst generally calculates separate turnover ratios for three types of assets: accounts receivable, inventory, and fixed assets.

Accounts Receivable Turnover The rate at which accounts receivable turn over indicates how quickly a firm collects cash from credit sales. The **accounts receivable turnover ratio** equals sales revenue divided by average accounts receivable during the period:⁵

$$\frac{\text{Sales}}{\text{Average Accounts Receivable}}$$

The accounts receivable turnover ratio for Great Deal in fiscal 2012 is as follows:

$$\frac{\text{Sales}}{\text{Average Accounts Receivable}} = \frac{\$46,964}{0.5 \times (\$1,868 + \$2,020)} = 38.3 \text{ times per year}$$

The analyst often expresses accounts receivable turnover in terms of the average number of days that elapse between the time the firm makes the sale and the time it later collects the cash. This calculation is called *days accounts receivable are outstanding* or *days outstanding for receivables*. To calculate this ratio, divide 365 days by the accounts receivable turnover ratio. The days outstanding for accounts receivable for Great Deal during fiscal 2012 was 9.5 days (= 365 days/38.3 times per year). During fiscal 2011 its accounts receivable turnover was 55.9 or 6.5 days. The declining accounts receivable ratios and the increasing days outstanding for receivables indicate that Great Deal has been slower to convert sales into cash collections in fiscal 2012 compared to fiscal 2011. The declining accounts receivable turnover and increased number of days on average to collect accounts receivable may result from the following factors:

- Great Deal may, over time, be increasing the fraction of its sales made on credit (versus cash). Because our calculation includes cash sales (erroneously) in the numerator but not the denominator of the accounts receivable turnover ratio, a shift in the portion of cash sales over time will create shifts in the ratio itself.
- Great Deal may be offering customers more attractive (to the customer) payment terms in order to increase sales. All else equal, customers would prefer to pay for sales later rather than earlier.

Most firms that sell to other businesses, as opposed to consumers, sell on account and collect within 30 to 90 days. Interpreting any particular firm's accounts receivable turnover and days receivable outstanding requires knowing the terms of sale. If a firm's terms of sale are "net 30 days" and the firm collects its accounts receivable in 45 days, then collections do not match the stated terms. Such a result warrants a review of the credit and collection activity to ascertain the cause and to guide corrective action. If the firm offers terms of "net 45 days," a days receivable outstanding of 45 days indicates that the firm handles accounts receivable in accord with stated terms.

Many firms sell to customers on account as a strategy to stimulate sales. Customers may purchase more willingly and purchase more if they are provided credit. Such firms may also encourage customers to delay paying for their purchases as a means for the selling firm to generate interest revenue through finance charges on the unpaid amounts. Thus, comparing accounts receivable turnovers over time or across firms requires an analysis of the growth rate in sales, the amount of interest revenue generated, the cost of administering the credit-granting activity, and the losses from uncollectible accounts.

Inventory Turnover The **inventory turnover ratio** indicates how fast firms sell their inventory, measured in terms of the rate of movement of goods into and out of the firm. Inventory turnover equals cost of goods sold divided by the average inventory during the period:

$$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$$

⁵In theory, the numerator should include only credit sales (i.e., exclude cash sales) if the objective is to measure how quickly a firm collects its accounts receivable. Many firms, except some retailers that deal directly with consumers (such as fast food outlets), sell their goods and services on credit. Other firms, such as Great Deal, have both cash sales and credit sales. Firms seldom disclose the proportions of cash and credit sales in their financial reports. Thus, the analyst uses sales revenue in the numerator of the accounts receivable turnover ratio, recognizing that the inclusion of cash sales increases the numerator and thereby overstates the receivables turnover ratio.

The numerator equals the cost of inventories sold during the period.⁶ The denominator equals the average cost of inventories on hand during the period. The inventory turnover ratio for Great Deal for fiscal 2012 is as follows:

$$\frac{\text{Cost of Sales}}{\text{Average Inventory}} = \frac{\$37,534}{0.5 \times (\$4,753 + \$5,486)} = 11.0 \text{ times per year}$$

Items remain in inventory an average of 33.2 days (= 365 days/11.0 times per year) before sale. In fiscal 2011, Great Deal's inventory turnover ratio was 10.8 times or 33.8 days. The increasing inventory turnover ratio (and declining days inventory) might result from the following factors:

- Improved inventory control systems, which would reduce the levels of inventory and the cost of storage and obsolescence. This explanation is consistent with the decreased cost of goods sold to sales percentage discussed earlier.
- A shift in sales mix toward DVDs or CDs or other products that turn over more quickly.

Managing inventory turnover involves two opposing considerations. On the one hand, for a given amount of profit margin on the goods, firms prefer to sell as many goods as possible with a minimum of assets tied up in inventories. An increase in the rate of inventory turnover between periods indicates reduced costs of financing the inventory. On the other hand, management does not want to have so little inventory on hand that shortages result in lost sales. Increases in the rate of inventory turnover caused by inventory shortages could signal a loss of customers, thereby offsetting any advantage gained by decreased investment in inventory. Firms must balance these opposing considerations in setting the level of inventory and, thus, the rate of inventory turnover.

Fixed-Asset Turnover The **fixed-asset turnover ratio** measures the relation between sales and the investment in fixed assets—property, plant, and equipment. It is more difficult to understand the notion that fixed assets “turn over” than to understand turnover for inventory. A more appropriate title for the fixed-asset turnover ratio might be the *fixed-asset productivity ratio* because it measures the sales generated from a particular level of investment in fixed assets:

$$\frac{\text{Sales}}{\text{Average Fixed Assets}}$$

The fixed-asset turnover ratio for Great Deal for fiscal 2012 is as follows:

$$\frac{\text{Sales}}{\text{Average Fixed Assets}} = \frac{\$46,964}{0.5 \times (\$4,174 + \$4,070)} = 12.1 \text{ times per year}$$

Thus, \$1.00 invested in fixed assets during fiscal 2012 generated \$12.10 in sales. In fiscal 2011, \$1.00 invested in fixed assets generated \$12.0 in sales. Thus, the fixed-asset turnover increased between 2011 and 2012. The analyst should interpret changes in the fixed-asset turnover ratio cautiously. Firms often invest in fixed assets (for example, new production facilities) well before these assets generate sales from products manufactured in their plants or sold in their stores. Thus, a low or decreasing fixed-asset turnover ratio may indicate an expanding firm preparing for future growth. On the other hand, a firm anticipating a decline in product sales could cut back its expenditures on fixed assets, thus increasing the fixed-asset turnover ratio.

Some analysts find the reciprocal of the fixed-asset turnover ratio helpful in comparing the operating characteristics of different firms. The reciprocal ratio measures the investment in fixed assets required to generate sales. For Great Deal, this reciprocal for 2012 is \$0.08

⁶Some analysts calculate the inventory turnover ratio using sales, rather than cost of goods sold, as the numerator. As long as the ratio of selling price to cost of goods sold remains relatively constant, either measure will identify changes in the trend of the inventory turnover ratio. Using sales in the numerator, however, will lead to incorrect measures of the inventory turnover ratio for calculating the average number of days that inventory is on hand until sale.

(= \$1.0/12.1 times). This calculation implies that Great Deal required \$0.08 of fixed assets to generate \$1.00 of sales in fiscal 2012.

Summary of Asset Turnover Ratios Exhibit 7.6 presents the four turnover ratios discussed for Great Deal, for fiscal years 2011 and 2012. We noted earlier that the asset turnover ratio for Great Deal declined between 2011 and 2012. The accounts receivable turnover ratio decreased from 55.9 to 38.3 between 2011 and 2012. Accounts receivable represent 11% (= \$2,020/\$18,302) of Great Deal's total assets in fiscal 2012. The decreasing accounts receivable turnover ratio, taken alone, would decrease the total assets turnover. Inventory and fixed assets, on the other hand, together comprise approximately 52% of total assets (= [\$5,486 + \$4,070]/\$18,302) and both of these ratios increased by small amounts. The small changes in the inventory turnover ratio and the fixed-asset turnover ratio, coupled with the larger amounts of these assets, do not offset the effects of the decline in the accounts receivable turnover ratio. The offsetting effects of changes in these three asset turnover ratios led to the decline in the total assets turnover ratio between 2011 and 2012.

SUMMARY OF THE DUPONT DECOMPOSITION ANALYSIS

The DuPont decomposition analysis helps the analyst understand the sources of a firm's performance as measured by return on equity. The DuPont analysis shows the following:

- ROE results from the interaction of its components: ROA and financial leverage. Financial leverage captures the choice about the portion of assets to finance through debt versus equity.
- ROA results from the interaction of its components: profit margin and asset turnover. The profit margin results from the relation of expenses to sales. Asset turnover reflects the effects of turnover ratios for accounts receivable, inventory, and fixed assets.

► PROBLEM 7.2 FOR SELF-STUDY

Analyzing the return on assets. Refer to the information for Markum Corporation provided in **Problem 7.1** for Self-Study. Identify the likely reasons for the increasing return on assets ratio for 2013. Use common-size income statement percentages and individual asset turnover ratios in your interpretations.

SUMMARY OF PROFITABILITY ANALYSIS

This chapter introduces two broad measures for assessing profitability: ROE and ROA. **Figure 7.4** summarizes the discussion. At Level 1, ROA and ROE measure overall profitability and the effect of financial leverage. At Level 2, we disaggregate ROA into its profit margin and asset turnover components. At Level 3, we further disaggregate the profit margin and asset turnover ratios to gain additional insights into reasons for changes in profitability.

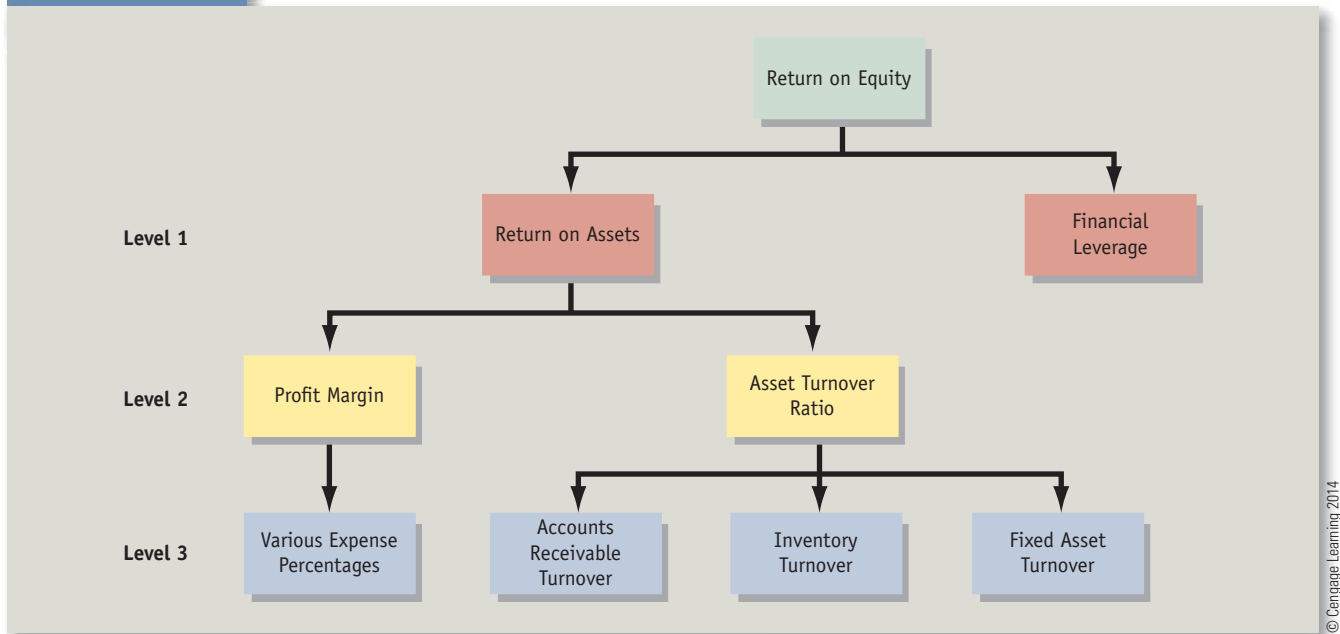
EXHIBIT 7.6

Great Deal Inc. Asset Turnover Ratios

	2012	2011
Total Assets Turnover	2.9	3.1
Accounts Receivable Turnover	38.3	55.9
Inventory Turnover	11.0	10.8
Fixed-Asset Turnover	12.1	12.0

FIGURE 7.4

Complete DuPont Decomposition



ANALYSIS OF RISK

Investors deciding among potential investments must consider the comparative risks of those investments. Various factors affect the risk of a business enterprise:

1. Macroeconomic factors, such as inflation, interest rates, and unemployment rates.
2. Industry factors, such as competition, changes in technology, and changes in regulations.
3. Firm-specific factors, such as labor strikes, loss of facilities due to fire or other casualty, or key skills and talents of the management team.

An important risk assessment concerns **liquidity**, which refers to whether the firm is able to pay its bills in a timely manner. Assessing liquidity requires a time horizon. Consider the three questions that follow:

1. Does a firm have sufficient cash to pay its employees tomorrow?
2. Will the firm have sufficient cash to pay its suppliers in six months?
3. Will the firm have sufficient cash to repay a loan due in five years?

To answer the first question, we examine whether the amount of cash on hand and in the bank is sufficient to pay amounts owed to employees tomorrow. To answer the second question, we need to know the amount of cash the firm expects to generate from operations during the next six months, as well as the amount of any new borrowing that the firm expects to undertake. Cash obtained from either of these sources could be used to pay suppliers. To answer the third question, we focus on the long-run cash-generating ability of the firm and determine whether the amount of cash generated is sufficient to repay long-term debt as it comes due. Questions 1 and 2 capture the firm's short-term liquidity risk. Question 3 captures the firm's long-term liquidity risk. We turn next to financial ratios that capture short-term and long-term liquidity risk.

MEASURES OF SHORT-TERM LIQUIDITY RISK

This section discusses four measures for assessing **short-term liquidity risk**:

1. Current ratio,
2. Quick ratio,
3. Cash flow from operations to current liabilities ratio, and
4. Working capital turnover ratios.

Current Ratio The **current ratio** equals current assets divided by current liabilities. Current assets comprise cash and assets that a firm expects to turn into cash or sell or consume within approximately one year of the balance sheet date. Current liabilities include obligations that will require cash (or the rendering of services) within approximately one year. Thus, the current ratio indicates a firm's ability to meet its short-term obligations. A current ratio of at least 1.0 indicates that the firm has sufficient current assets on hand to cover its obligations due in the coming year. As shown below, Great Deal's current ratio increased between fiscal years 2011 and 2012, from 0.97 to 1.18:

Current Ratio	= $\frac{\text{Current Assets}}{\text{Current Liabilities}}$
2012: \$10,566/\$8,987	1.18
2011: \$8,192/\$8,435	0.97

Changes in the trend of the current ratio can mislead. For example, when the current ratio exceeds 1.0, an increase of equal amount in both current assets and current liabilities results in a decline in the ratio, whereas equal decreases result in an increased current ratio.⁷ An implication of this arithmetic relation is that during a recession (when there are fewer growth opportunities), a firm may use its cash to pay its current liabilities, causing the current ratio to increase. In contrast, during a boom period, a firm may conserve cash (in order to finance growth opportunities) by delaying payment of current liabilities, causing the current ratio to decrease. Thus, a high current ratio may accompany deteriorating business conditions, whereas a falling ratio may accompany profitable operations.

Furthermore, management can take actions to present a better current ratio at the balance sheet date than the normal current ratio during the rest of the year. For example, near the end of its accounting period a firm might delay purchases of inventory on account. Or, it might hasten the collection of a noncurrent loan receivable and use the proceeds to reduce current liabilities. Such actions will increase the current ratio. Analysts refer to such actions as *window dressing*.

Quick Ratio A variation of the current ratio is the **quick ratio** (sometimes called the **acid test ratio**). The quick ratio includes in the numerator only current assets that a firm could convert quickly into cash, typically, cash, marketable securities, and accounts receivable. Some businesses can convert their inventory into cash more quickly than other businesses can convert their receivables. The facts in each case will indicate whether the analyst should include receivables or exclude inventories. For purposes of this textbook, assume the numerator includes accounts receivable and excludes inventories. The denominator includes all current liabilities. A quick ratio approximately one-half of the current ratio is typical, although this varies by industry.

Assuming the quick ratio of Great Deal includes accounts receivable and excludes inventory, the quick ratios for fiscal 2011 and 2012 are as follows:

Quick Ratio	= $\frac{\text{Cash, Marketable Securities, Accounts Receivable}}{\text{Current Liabilities}}$
2012: (\$1,826 + \$90 + \$2,020)/\$8,978.	0.44
2011: (\$498 + \$11 + \$1,868)/\$8,435	0.28

Great Deal's quick ratio, like its current ratio, increased between 2011 and 2012 because of increases in cash, marketable securities, and accounts receivable. For both years, Great Deal's quick ratio is below the benchmark of one-half the current ratio. This is likely because Great Deal's largest current asset, inventory, is not reflected in the quick ratio. Because it is reasonable

⁷The general rule is that adding equal amounts to both the numerator and the denominator of a fraction moves that fraction closer to 1.0, whereas subtracting equal amounts from both the numerator and the denominator of a fraction makes that fraction diverge from 1.0.

to believe that Great Deal could sell most if not all of its inventory quickly if it wanted to, we can calculate its quick ratios including inventory:

Quick Ratio Including Inventory	= Cash, Marketable Securities, Accounts Receivable, and Inventory Current Liabilities
2012: $(\$1,826 + \$90 + \$2,020 + \$5,486)/\$8,978$	1.05
2011: $(\$498 + \$11 + \$1,868 + \$4,753)/\$8,435$	0.85

These data indicate that Great Deal's quick ratios are much higher when inventory is included.

Cash Flow from Operations to Current Liabilities Ratio Some analysts criticize the current ratio and the quick ratio as measures of short-term liquidity risk because these ratios use balance sheet amounts at a specific time. If financial statement amounts at that time are unusually large or small, the resulting ratios will not reflect normal conditions. If management knows that analysts will evaluate the firm using one of these ratios at a particular time, it can take steps to window dress that ratio. An example of the latter would be if a firm used cash to pay off a current liability (reducing both numerator and denominator) or acquired inventory on account (increasing both numerator and denominator).

The **cash flow from operations to current liabilities ratio** overcomes these deficiencies. The numerator of this ratio is cash flow from operations for the period and the denominator is average current liabilities for the period. Healthy mature firms typically have a ratio of 40% or more. The cash flow from operations to current liabilities ratios for Great Deal for 2011 and 2012 are as follows:

Cash Flow from Operations to Current Liabilities Ratio	= Cash Flow from Operations Average Current Liabilities
2012: $\$2,206/[0.5 \times (\$8,435 + \$8,978)]$	25.3%
2011: $\$1,877/[0.5 \times (\$6,769 + \$8,435)]$	24.7%

Great Deal's cash flow from operations to current liabilities ratios are below the 40% benchmark.

Working Capital Turnover Ratios Working capital turnover ratios help to assess a firm's **operating cycle (cash cycle, earnings cycle)**, which captures the length of time from the expenditure of cash to purchase or produce products for sale to the sale of products, collections from customers and payments to suppliers. Thus, the operating cycle can be thought of as the time period over which the firm needs to finance its operating outlays, equal to the net outlays associated with its production, sales, collection and payment cycles. During the operating cycle, a retailing firm such as Great Deal has several transactions:

1. Purchases inventory on account from suppliers,
2. Sells inventory for cash or on account to customers,
3. Collects amounts due from customers, and
4. Pays amounts due to suppliers.

This cycle recurs for most businesses. The number of days a firm holds inventories (that is, 365 days/inventory turnover ratio) indicates the length of the period between the purchase and the sale of inventory during each operating cycle. The number of days receivables remain outstanding (that is, 365 days/accounts receivable turnover ratio) indicates the length of the period between the sale of inventory and the collection of cash from customers during each operating cycle.

Firms must finance their investments in inventories and accounts receivable. Suppliers typically provide a portion of the needed financing. The number of days accounts payable remain outstanding (that is, 365 days/accounts payable turnover ratio) indicates the length of the period between the purchase of inventory on account and the payment of cash to suppliers during each operating cycle. The **accounts payable turnover ratio** equals purchases on account divided by average accounts payable. Although firms do not disclose their purchases, the analyst can derive the amount for a merchandising firm as follows:

$$\text{Beginning Inventory} + \text{Purchases} = \text{Cost of Goods Sold} + \text{Ending Inventory}$$

Rearranging terms yields the following:

$$\text{Purchases} = \text{Cost of Goods Sold} + \text{Ending Inventory} - \text{Beginning Inventory}$$

Great Deal's purchases appear below for 2011 and 2012:

	Purchases	=	Cost of Goods Sold	+	Ending Inventory	-	Beginning Inventory
2012	\$38,267	=	\$37,534	+	\$5,486	-	\$5,486
2011	\$34,062	=	\$34,017	+	\$4,753	-	\$4,708

The accounts payable turnover ratios for Great Deal for fiscal 2011 and 2012 are as follows:

Accounts Payable Turnover Ratio	=	$\frac{\text{Purchases}}{\text{Average Accounts Payable}}$
2012: $\$38,267 / [0.5 \times (\$4,997 + \$5,276)]$		11.2
2011: $\$34,062 / [0.5 \times (\$4,297 + \$4,997)]$		11.0

The average number of days Great Deal's payables were outstanding was 33.2 days (= 365/11.0) in 2011 and 32.7 days (= 365/11.2) in 2012. Interpreting the accounts payable turnover ratio involves opposing considerations. An increase in the accounts payable turnover ratio (a decrease in days payable) indicates that a firm pays its obligations to suppliers more quickly, requiring cash and even wasting the benefits of cash if the firm makes payments earlier than necessary. On the other hand, a faster accounts payable turnover also means a smaller relative amount of accounts payable that the firm must pay in the near future. Most firms want to extend their payables as long as they can, but they also want to maintain their relations with suppliers. Businesses, therefore, negotiate for favorable payment terms and then delay paying until just before the last agreed moment.

The period of time (in days) during which a firm converts cash into goods and services, then sells those goods and services to customers, then collects cash from those customers is the firm's operating cycle. We calculate Great Deal's operating cycle as follows:

Year	Days Inventory	+	Days Accounts Receivable	-	Days Accounts Payable Outstanding	=	Operating Cycle
2012	33.2	+	9.5	-	32.7	=	10.0
2011	33.8	+	6.5	-	33.2	=	7.2

Great Deal reduced its days inventory, increased its days receivables, and reduced its days payable between 2011 and 2012. The net effect of these changes was to increase Great Deal's operating cycle by 2.8 days (from 7.2 days to 10.0 days) between 2011 and 2012. Inspection of the components of the operating cycle reveals that this increase is primarily due to the increase in days receivables from 6.5 days to 9.5 days. Great Deal's 2012 operating cycle of 10.0 days

means that Great Deal's operating cash outflows occur about 10 days earlier, on average, than do its operating cash inflows. Thus, if it wanted to finance this gap, Great Deal would need to borrow for approximately 10 days.

Summary of Short-Term Liquidity Risk Analysis The current and quick ratios measure liquidity at a particular date. Great Deal's current ratios are near the benchmark value of 1.0, while its quick ratios and operating cash flow to current liabilities ratios are lower than their benchmark values. Great Deal has been slower to collect its accounts receivable, with the days receivable increasing from 6.5 days in 2011 to 9.5 days in 2012. Great Deal has accelerated the sales of inventory, reducing its days inventory from 33.8 days in 2011 to 33.2 days in 2012. Finally, Great Deal financed a decreasing proportion of its purchases by delaying payments to suppliers, as evidenced by a decline in days payable from about 33.2 days in 2011 to about 32.7 days in 2012. Taken as a whole, Great Deal's short-term liquidity risk appears low.

► PROBLEM 7.3 FOR SELF-STUDY

Analyzing short-term liquidity risk. Refer to the information for Markum Corporation in Exhibits 7.2 and 7.3.

- Calculate Markum's current ratio and quick ratio for 2013.
- Calculate Markum's working capital turnover ratios (accounts receivable turnover, inventory turnover and accounts payable turnover) for 2013.
- What was Markum's operating cycle (in days) for 2013?
- What is your assessment of the short-term liquidity risk of Markum Corporation at the end of 2013?

MEASURES OF LONG-TERM LIQUIDITY RISK

Analysts use measures of **long-term liquidity risk** (also called *solvency risk*) to evaluate a firm's ability to meet interest and principal payments on long-term debt and similar obligations as they become due. If a firm cannot make the payments on time, it becomes insolvent and may have to reorganize or liquidate.

A firm's ability to generate income over several years provides the best protection against long-term liquidity risk. If a firm is profitable, it will either generate sufficient cash from operations or obtain needed financing from creditors and owners. Therefore, the measures of profitability discussed previously apply to assessing long-term liquidity risk as well. In addition, analysts measure long-term liquidity risk with debt ratios, the cash flow from operations to total liabilities ratio, and the interest coverage ratio.

Debt Ratios Several variations of debt ratios measure long-term liquidity risk. Because of these variations, the analyst should take care when comparing debt ratios among firms. In particular, the analyst should understand which debt ratio is being calculated and compared.

We use three debt ratios to measure long-term liquidity risk:

- Liabilities to Assets Ratio** = Total Liabilities/Total Assets
- Long-Term Debt Ratio** = Long-Term Debt/Total Assets
- Debt-Equity Ratio** = Long-Term Debt/Shareholders' Equity

The liabilities to assets ratio measures the portion of assets financed with liabilities. The long-term debt ratio measures the portion of assets financed with long-term debt. The debt-equity ratio measures financing obtained from long-term debt relative to shareholders' equity. In general, higher debt ratios mean greater long-term liquidity risk, that is, a greater likelihood that the firm will be unable to meet interest and principal payments in the future. Most firms must decide how much financial leverage, with its attendant risk, they can afford.

Exhibit 7.7 shows these debt ratios for Great Deal for fiscal 2011 and 2012. Because the three debt ratios (and versions of them) correlate highly, analysts generally rely on one or two of these ratios to assess long-term liquidity risk.

EXHIBIT 7.7**Great Deal, Inc.
Debt Ratios****Liabilities to Assets Ratio**

2012: \$11,338/\$18,302	61.9
2011: \$10,670/\$15,826	67.4

Long-Term Debt Ratio

2012: \$1,104/\$18,302	6.0
2011: \$1,126/\$15,826	7.1

Debt-Equity Ratio

2012: \$1,104/\$6,964	15.9
2011: \$1,126/\$5,156	21.8

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The debt ratios for Great Deal show similar patterns between 2011 and 2012. All indicate that Great Deal's long-term liquidity risk decreased.

In assessing debt ratios, analysts customarily vary the benchmark in relation to the stability of the firm's earnings and cash flows from operations. The more stable the earnings and cash flows, the higher is the acceptable or safe debt ratio. Public utilities, for example, have high liabilities to assets ratios, frequently on the order of 60% to 70%. The stability of earnings and cash flows of public utilities makes these high ratios acceptable to many investors. These same investors might find such high leverage unacceptable for firms with less stable earnings and cash flows.

Cash Flow from Operations to Total Liabilities Ratio Debt ratios do not consider the availability of cash to service debt (that is, to pay interest and principal when due). The **cash flow from operations to total liabilities ratio** overcomes this deficiency. This cash flow ratio resembles the one for assessing short-term liquidity risk, but here the denominator includes all liabilities (both current and noncurrent). A mature, financially healthy company typically has a cash flow from operations to total liabilities ratio of 20% or more.

The cash flow from operations to total liabilities ratios for Great Deal are as follows:

Cash Flow from Operations to Total Liabilities Ratio	= $\frac{\text{Cash Flow from Operations}}{\text{Average Total Liabilities}}$
2012: \$2,206/[0.5 × (\$10,670 + \$11,338)]	20.0%
2011: \$1,438/[0.5 × (\$8,234 + \$10,670)]	15.2%

Great Deal's cash flow from operations to total liabilities ratio was below the 20% benchmark in 2011 and reached this benchmark in 2012.

Interest Coverage Ratio Another measure of long-term liquidity risk is the number of times that income covers (pays for) interest charges. The **interest coverage ratio** equals income before interest expense and income tax expense divided by interest expense.⁸ This ratio indicates the relative protection that operating profitability provides debt holders. Analysts typically view an interest coverage ratio below 3.0 as risky, although they prefer a ratio that is stable over time to one that is somewhat higher on average but fluctuates. A benchmark value of 3.0 means that the firm has three times as much income before interest expense and income taxes as it needs to pay current interest charges.

⁸If debt contracts require periodic repayments of principal, the denominator of the interest coverage ratio might include such required repayments.

Great Deal's interest coverage ratios for 2011 and 2012 are as follows:

Interest Coverage Ratio	=	<u>Net Income Before Interest and Income Taxes</u>
		Interest Expense
2012: $(\$2,195 + \$94)/\$94$		24.4 times
2011: $(\$1,700 + \$94)/\$94$		19.1 times

Great Deal's interest coverage ratios increased from 19.1 times in 2011 to 24.4 times in 2012. Because the interest coverage ratios easily exceed the 3.0 benchmark, we infer that Great Deal has profitability to cover its interest charges.

One can criticize the interest coverage ratio as a measure of long-term liquidity risk because it uses income rather than cash flows in the numerator. Firms pay interest and other fixed payment obligations with cash, not with income. When the ratio is relatively low, the analyst should use some measure of cash flows, such as cash flow from operations, in the numerator.

Summary of Long-Term Liquidity Risk Analysis Long-term liquidity analysis focuses on the amount of debt (particularly long-term debt) in the financing structure of a firm and on the adequacy of net income and cash flows to service this debt. Great Deal has a low fraction of assets financed by long-term debt, and its interest coverage ratios are strong. Both suggest that Great Deal's long-term liquidity risk is low.

► PROBLEM 7.4 FOR SELF-STUDY

Analyzing long-term liquidity risk. Refer to the information for Markum Corporation in Exhibits 7.2 and 7.3.

- Calculate the three debt ratios for Markum for 2012 and 2013: liabilities to assets ratio, long term debt ratio, debt-equity ratio.
- Calculate the interest coverage ratio for 2012 and 2013.
- Did Markum's long-term liquidity risk improve or weaken between 2012 and 2013? What is your assessment of the long-term liquidity risk of Markum Corporation at the end of fiscal year 2013?

LIMITATIONS OF RATIO ANALYSIS

Ratio analysis, as a tool for understanding the financial health of a firm, has limitations:

- Because ratios use financial statement data as inputs, factors that cause shortcomings in financial statements will affect the ratios computed from them.
- Changes in many ratios correlate with each other and thus do not provide independent insights. For example, the current ratio and the quick ratio often change proportionally and in the same direction. Typically, analysts would compute a subset of ratios to assess a particular dimension of profitability or risk.
- When comparing ratios between periods for the same firm, the analyst must recognize changes in economic conditions, for example, changes in product lines or geographic markets served, changes in prices, or corporate acquisitions.
- When comparing ratios of a particular firm with those of similar firms, the analyst must recognize differences among the firms, for example, different methods of accounting, different operating methods, and different types of financing.
- Financial ratios alone do not indicate good or poor management; they indicate areas that the analyst should investigate further. For example, a decrease in inventory turnover

(ordinarily considered an undesirable trend) may reflect the accumulation of merchandise to keep retail stores fully stocked during a period of anticipated increased demand. The analyst must combine ratios with an investigation of other facts before drawing conclusions.

COMMON-SIZE FINANCIAL STATEMENTS

Common-size financial statements, which show each item included on the statement as a percentage of some amount, are useful for analyzing a particular firm over time or for comparing firms of different sizes. As noted at the start of this chapter, **common-size balance sheets** express each balance sheet item as a percentage of total assets. **Common-size income statements** express each income statement item as a percentage of revenues. We previously discussed Great Deal's common-size income statements, shown in **Exhibit 7.5**. **Exhibit 7.8** shows Great Deal's common-size balance sheets for fiscal years 2010–2012.

Exhibit 7.8 reveals that Great Deal's accounts receivable as a percentage of total assets is 11.0% for 2012. Is 11.0% high or low relative to other firms whose business models are similar to Great Deal's? Is Great Deal's common-size net property and equipment percentage of 22.2% in 2012 high or low? Comparing the items in Great Deal's common-size balance sheet to those of other firms in the same industry can provide insight into whether Great Deal is performing better, or worse, than its competition.

Comparing firms using common-size balance sheets assumes that the size or scale of a business does not affect the relation between a given balance sheet item and total assets. Similarly, comparing firms using common-size income statements assumes that the size or scale of a business does not affect the relation between a given income statement sheet item and total revenues. These assumptions may not hold. Large firms often achieve economies of scale that affect the proportionality of the components of their business, thus reducing the comparability of their common-size ratios with those of smaller-scale competitors. For example, a large purchaser of goods and services (such as Great Deal) has negotiating power over its suppliers, relative to the negotiating power of a smaller purchaser (such as a small local electronics store). Greater negotiating power means that Great Deal can obtain:

- **Lower per-unit prices.** Holding quantity constant, lower per-unit prices imply a lower per-unit recorded amount for inventory, which affects both inventory turnover and the cost of goods sold percentage.
- **More frequent but proportionately smaller quantities purchased.** Smaller but more frequent purchases reduce the quantity of inventory held by Great Deal, which improves inventory turnover.
- **Better payment terms.** Better terms increase the time that Great Deal retains cash as opposed to paying it to the supplier, thus improving its accounts payable turnover ratio.

A comparison of Great Deal's common-size financial statements with those of a smaller competitor, Consumers Electronics Limited (CEL), suggests that Great Deal has negotiating power. **Exhibit 7.9** shows CEL's common-size balance sheets for fiscal years 2010–2012 and **Exhibit 7.10** shows its common-size income statements for the same periods. CEL's financial information is presented in thousands of dollars, whereas Great Deal reports in millions of dollars. CEL is, therefore, substantially smaller than Great Deal. To discern the influence of negotiating power, we note that Great Deal has smaller common-size percentages for inventory and larger common-size percentages for accounts payable than CEL. Typically, analysts would not compare the common-size balance sheets of two firms that differ significantly in size. For example, an informed user would not compare Great Deal's common-size balance sheet with the common-size balance sheet of a local electronics shop.

ANALYZING FIRM PERFORMANCE USING FINANCIAL RATIOS

As discussed earlier in this chapter, two common approaches to evaluating whether a firm has done well or poorly during a given accounting period involve comparing that firm to:

1. Its own performance, in an earlier time period.
2. Other firms' performance, over the same time period as performance is measured.

EXHIBIT 7.8

Great Deal, Inc.
Common-Size Balance Sheets
For Years 2012, 2011, and 2010
(amounts in millions of US\$)

	2012		2011		2010	
Assets						
Current Assets						
Cash and Cash Equivalents	\$ 1,826	10.0%	\$ 498	3.1%	\$ 1,438	11.3%
Short-Term Investments	90	0.5%	11	0.1%	64	0.5%
Receivables	2,020	11.0%	1,868	11.8%	549	4.3%
Merchandise Inventories	5,486	30.0%	4,753	30.0%	4,708	36.9%
Other Current Assets	1,144	6.3%	1,062	6.7%	583	4.6%
Total Current Assets	\$10,566	57.7%	\$ 8,192	51.8%	\$ 7,342	57.5%
Property and Equipment						
Land and Buildings	\$ 757	4.1%	\$ 755	4.8%	\$ 732	5.7%
Leasehold Improvements	2,154	11.8%	2,013	12.7%	1,752	13.7%
Fixtures and Equipment	4,447	24.3%	4,060	25.7%	3,057	24.0%
Property Under Capital Lease	95	0.5%	112	0.7%	67	0.5%
	\$ 7,453	40.7%	\$ 6,940	43.9%	\$ 5,608	44.0%
Less: Accumulated Depreciation	3,383	18.5%	2,766	17.5%	2,302	18.0%
Net Property and Equipment	\$ 4,070	22.2%	\$ 4,174	26.4%	\$ 3,306	25.9%
Goodwill	2,452	13.4%	2,203	13.9%	1,088	8.5%
Trade Names	159	0.9%	173	1.1%	97	0.8%
Customer Relationships	279	1.5%	322	2.0%	5	0.0%
Equity and Other Investments	324	1.8%	395	2.5%	605	4.7%
Other Assets	452	2.5%	367	2.3%	315	2.5%
Total Assets	\$18,302	100.0%	\$15,826	100.0%	\$12,758	100.0%
Liabilities and Shareholders' Equity						
Current Liabilities						
Accounts Payable	\$ 5,276	28.8%	\$ 4,997	31.6%	\$ 4,297	33.7%
Unredeemed Gift Card Liabilities	463	2.5%	479	3.0%	531	4.2%
Accrued Compensation and Related Expenses	544	3.0%	459	2.9%	373	2.9%
Accrued Liabilities	1,681	9.2%	1,382	8.7%	975	7.6%
Accrued Income Taxes	316	1.7%	281	1.8%	404	3.2%
Short-Term Debt	663	3.6%	783	4.9%	156	1.2%
Current Portion of Long-Term Debt	35	0.2%	54	0.3%	33	0.3%
Total Current Liabilities	\$ 8,978	49.1%	\$ 8,435	53.3%	\$ 6,769	53.1%
Long-Term Liabilities	1,256	6.9%	1,109	7.0%	838	6.6%
Long-Term Debt	1,104	6.0%	1,126	7.1%	627	4.9%
Commitments and Contingencies						
Shareholders' Equity						
Preferred Stock	0	0.0%	0	0.0%	0	0.0%
Common Stock	42	0.2%	41	0.3%	41	0.3%
Additional Paid-in Capital	441	2.4%	205	1.3%	8	0.1%
Retained Earnings	5,797	31.7%	4,714	29.8%	3,933	30.8%
Accumulated Other Comprehensive Income	40	0.2%	(317)	-2.0%	502	3.9%
Total Great Deal Shareholders' Equity	\$ 6,320	34.5%	\$ 4,643	29.3%	\$ 4,484	35.1%
Noncontrolling Interests	644	3.5%	513	3.2%	40	0.3%
Total Shareholders' Equity	\$ 6,964	38.1%	\$ 5,156	32.6%	\$ 4,524	35.5%
Total Liabilities and Shareholders' Equity	\$18,302	100.0%	\$15,826	100.0%	\$12,758	100.0%

EXHIBIT 7.9

Consumers Electronics Limited
Common-Size Balance Sheets
For Years 2012, 2011, and 2010
(amounts in thousands of US\$)

	2012		2011		2010	
Assets						
Cash and Cash Equivalents	\$ 612	5.0%	\$ 451	4.2%	\$ 406	4.8%
Receivables	1,512	12.5%	1,417	13.1%	1,350	16.0%
Merchandise Inventories	3,567	29.4%	3,984	36.9%	2,910	34.4%
Other Current Assets	301	2.5%	721	6.7%	456	5.4%
Total Current Assets	\$ 5,992	49.3%	\$ 6,573	60.9%	\$5,122	60.6%
Land	697	5.7%	546	5.1%	401	4.7%
Buildings and Equipment, net of depreciation	5,454	44.9%	3,678	34.1%	2,929	34.7%
Total Property and Equipment	6,151	50.7%	4,224	39.1%	3,330	39.4%
Total Assets	\$12,143	100.0%	\$10,797	100.0%	\$8,452	100.0%
Liabilities and Shareholders' Equity						
Accounts Payable	\$ 1,040	8.6%	\$ 1,066	9.9%	\$ 906	10.7%
Notes Payable	2,015	16.6%	1,814	16.8%	1,524	18.0%
Other Current Liabilities	584	4.8%	816	7.6%	410	4.9%
Total Current Liabilities	\$ 3,639	30.0%	\$ 3,696	34.2%	\$2,840	33.6%
Long-Term Debt	1,741	14.3%	1,724	16.0%	1,243	14.7%
Shareholders' Equity:						
Common Stock	\$ 25	0.2%	\$ 25	0.2%	\$ 20	0.2%
Additional Paid-In Capital	1,653	13.6%	1,750	16.2%	1,649	19.5%
Retained Earnings	5,085	41.9%	3,602	33.4%	2,700	31.9%
Total Shareholders' Equity	\$ 6,763	55.7%	\$ 5,377	49.8%	\$4,369	51.7%
Total Liabilities and Shareholders' Equity	\$12,143	100.0%	\$10,797	100.0%	\$8,452	100.0%

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EXHIBIT 7.10

Consumers Electronics Limited
Common-Size Income Statements
For Years 2012, 2011, and 2010
(amounts in thousands of US\$)

	2012		2011		2010	
Revenue	\$25,675	100.0%	\$23,542	100.0%	\$19,120	100.0%
Cost of Goods Sold	17,765	69.2%	16,713	71.0%	13,711	71.7%
Gross Profit	\$ 7,910	30.8%	\$ 6,829	29.0%	\$ 5,409	28.3%
Selling, General, and Administrative Expenses	5,681	22.1%	5,412	23.0%	4,162	21.8%
Restructuring Charges	0	0.0%	13	0.1%	4	0.0%
Operating Income	\$ 2,229	8.7%	\$ 1,404	6.0%	\$ 1,243	6.5%
Investment Income	12	0.0%	16	0.1%	8	0.0%
Interest Expense	(123)	-0.5%	(131)	-0.6%	(27)	-0.1%
Income Before Income Tax Expense	\$ 2,118	8.2%	\$ 1,289	5.5%	\$ 1,224	6.4%
Income Tax Expense	635	2.5%	387	1.6%	367	1.9%
Net Income	\$ 1,483	5.8%	\$ 902	3.8%	\$ 857	4.5%

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The first approach is called **time-series analysis** and involves the over-time comparison of the firm's financial ratios. The second approach is called **cross-section analysis** and involves comparing the financial ratios of the firm being analyzed with the financial ratios of one or more other firms, for the same time period. Firms selected for comparison in a cross-section analysis share common business elements with the firm being analyzed. Common business elements that would be used to select comparison firms include: industry membership, size, business strategy, and degree of geographic or product diversification. We illustrate both a time-series analysis of financial ratios and a cross-sectional analysis of financial ratios for Great Deal.

Illustration of Time-Series Analysis of Financial Ratios Exhibit 7.5 shows that Great Deal's gross profit percentage (= gross profit divided by sales) increased over time, from 23.9% in 2010, to 24.4% for 2011, to 24.5% in 2012. The increasing gross profit percentage results from the decreasing cost of goods sold percentage (from 76.1% in 2010, to 75.6% in 2011, to 75.5% in 2012).

Sales increased each year, 2010–2012. The year-to-year sales increase, combined with the decrease in cost of goods sold as a percentage of sales, suggests that Great Deal experienced some combination of pricing advantages, purchasing advantages, or changes in sales mix to higher margin products. That is, cost of goods sold did not increase proportionally with sales; rather, it increased at a rate smaller than the sales increase. Regardless of the underlying causes, sales increases coupled with less-than-proportional increases in cost of goods sold explain the decline in this expense percentage.

Great Deal experienced a decrease in its operating income percentage (= operating income divided by sales) from 5.4% to 4.2% between 2010 and 2011, and an increase between 2011 and 2012, from 4.2% to 4.5%. The decrease between 2010 and 2011 resulted from a combination of three factors:

1. A decreasing cost of goods sold to sales percentage.
2. An increasing selling, general, and administrative (SG&A) expense to sales percentage.
3. An increasing percentage of one-time charges (restructuring charges and asset impairments).

As discussed earlier in this chapter, the increase in profitability between 2011 and 2012 resulted from a combination of three factors:

1. A further decrease in the cost of goods sold to sales percentage.
2. A decreasing SG&A expense to sales percentage.
3. A decreasing percentage of one-time charges.

The analyst would need to identify the reasons for these changes over time when analyzing Great Deal's profitability.

Illustration of Cross-Section Analysis of Financial Ratios We illustrate a cross-section analysis of Great Deal's financial ratios by examining the financial ratios for a Great Deal competitor, Consumers Electronics Limited, or CEL. Exhibit 7.9 contains CEL's common-size balance sheet, and Exhibit 7.10 contains its common-size income statement for fiscal years 2010–2012.

A cross-section analysis compares Great Deal to other retailers, preferably other retailers whose products and services are similar to those offered by Great Deal. Comparing financial ratios of retailers with ratios of non-retailers makes little sense. The non-comparability results from the different business models—different types of assets and different financial structures—that distinguish Great Deal from companies such as Boeing, an aircraft manufacturer, McDonald's, a fast-food retailer, or Colgate Palmolive, a consumer products manufacturer. Differences in business models and their implementations create across-firm differences in risk and performance, which in turn affect the results reported in financial statements. We compare Great Deal to a single competitor (CEL). An alternative approach would compare Great Deal to several similar firms. Regardless of the choice, the objective is to hold constant the effects of business models by identifying a competitor (or competitors), using industry classification and other factors to determine similarity.

We turn now to CEL's and Great Deal's common-size income statements. CEL's profit margin percentage, 5.8% for 2012 (the ratio of net income to sales revenue), is about 2.2 times Great Deal's profit margin ratio of 2.7% for the same fiscal year. Inspection of the components

of the two income statements reveals that CEL's higher profit margin percentage derives from a lower cost of sales percentage (69.2% in fiscal 2012 versus 75.5% for Great Deal), and a higher ratio of selling, general, and administrative percentage (22.1% in 2012 versus 19.9% for Great Deal). The higher cost of sales percentage for Great Deal is consistent with the fact that Great Deal is a large mass marketer; it will have a higher (compared to the smaller and local CEL) cost of goods sold percentage due to competition and aggressive pricing. Great Deal will, however, recognize economies of scale on its SG&A costs, as evidenced by Great Deal's lower (relative to CEL) SG&A costs as a percentage of sales.

It is important to note that our analysis assumes Great Deal and CEL classify, label, and aggregate information similarly. For example, we assume Great Deal and CEL include store occupancy costs in the same lines of their respective income statements. This may not be the case. Moreover, firms do not typically disclose enough disaggregated information to adjust the financial statements. Usually the analyst can find a level of aggregation of the available data into broader categories that include similar cost items. For example, the analyst can calculate and compare the operating income to sales revenue percentages of the two firms. This comparison is appropriate as long as the analyst has identified all operating expenses of the two firms. In fiscal 2012, Great Deal's operating income to sales percentage is 4.5%, compared to 8.7% for CEL.

Even for otherwise similar firms, income statement formats may be so non-comparable as to preclude any comparisons of line items and subtotals. In such cases the only appropriate comparison is based on the profit margin percentages. This is because, by definition, net income is comparable across all firms that report under the same accounting standards. Furthermore, because net income aggregates all items on the income statement, it is unaffected by differences in format, presentation, labeling, and aggregation of income statement items. For these reasons, the profit margin percentage (the ratio of net income to sales revenue) is a widely used ratio in evaluating and comparing operating performance of similar firms. Profit margin percentages are not comparable for firms with different business models.

SUMMARY

Exhibit 7.11 summarizes the calculation of the financial statement ratios discussed in this chapter.

This chapter began with the question of whether to invest in a certificate of deposit or in the shares of Great Deal. Analysis of Great Deal's financial statements indicates that it is a growing, profitable company with few indications of either short-term or long-term liquidity problems. An investor would need at least three additional inputs before making the investment decision. The first is information other than the financial statements to aid in understanding the firm's future profitability and risk. Such information might include articles in the financial press, the firm's statements about its spending plans for long-term assets, analysts' beliefs about spending needs, and strategies of competitors. Second, the investor should understand his or her willingness to assume risk. Third, the investor must decide if the current price of the shares makes them an attractive purchase.⁹ Before making buy/sell recommendations to investors, analysts compare their assessments of the firm's profitability and risk to the firm's share price. Analysts might recommend the purchase of shares of a poorly run company whose shares they judge underpriced rather than recommend shares of a well-run company whose shares they judge overpriced. At this stage in the investment decision, the analysis requires intuition, judgment, and experience.

⁹Finance texts discuss other factors in the investment decision. Perhaps the most important of these is how a particular investment fits in with the investor's entire portfolio. Modern research suggests that the suitability of a potential investment depends more on the attributes of the other components of an investment portfolio and the risk attitude of the investor than it does on the attributes of the potential investment itself.

EXHIBIT 7.11**Summary of Financial Statement Ratios**

Ratio	Numerator	Denominator
Profitability Ratios		
Return on Equity (ROE)	Net Income	Average Shareholders' Equity During the Period
Return on Assets (ROA)	Net Income	Average Total Assets During the Period
Return on Assets, adjusted for financing	Net Income + Interest Expense (net of tax effects)	Average Total Assets During the Period
Profit Margin	Net Income	Sales
Various Expense Ratios	Various Expenses	Sales
Asset Ratio Turnover	Sales	Average Total Assets During the Period
Accounts Receivable Turnover Ratio	Sales	Average Accounts Receivable During the Period
Inventory Turnover Ratio	Cost of Goods Sold	Average Inventory During the Period
Fixed-Asset Turnover Ratio	Sales	Average Fixed Assets During the Period
Financial Leverage Ratio	Average Total Assets During the Period	Average Shareholders' Equity During the Period
Short-Term Liquidity Risk Ratios		
Current Ratio	Current Assets	Current Liabilities
Quick or Acid Test Ratio	Highly Liquid Assets (cash, marketable securities, and accounts receivable) ^a	Current Liabilities
Cash Flow from Operations to Current Liabilities Ratio	Cash Flow from Operations	Average Current Liabilities During the Period
Accounts Payable Turnover Ratio	Purchases ^b	Average Accounts Payable During the Period
Days Accounts Receivable Outstanding	365 days	Accounts Receivable Turnover Ratio
Days Inventories Held	365 days	Inventory Turnover Ratio
Days Accounts Payable Outstanding	365 days	Accounts Payable Turnover Ratio
Long-Term Liquidity Ratios		
Liabilities to Assets Ratio	Liabilities	Assets
Long-Term Debt Ratio	Long-Term Debt	Assets
Debt–Equity Ratio	Long-Term Debt	Shareholders' Equity
Cash Flow from Operations to Total Liabilities Ratio	Cash Flow from Operations	Average Total Liabilities During the Period
Interest Coverage Ratio	Income Before Interest and Income Taxes	Interest Expense

^aThe calculation could exclude receivables for some firms and include inventories for others.

^bPurchases = Cost of Goods Sold + Ending Inventories – Beginning Inventories.

▶ PROBLEM 7.5 FOR SELF-STUDY

Computing profitability and risk ratios. Using the information from Consumer Electronics Limited's balance sheet (**Exhibit 7.9**) and income statement (**Exhibit 7.10**), compute the following ratios for fiscal 2012:

- a. Return on equity (ROE).
- b. Return on assets (ROA).
- c. Financial leverage ratio.
- d. Profit margin ratio.
- e. Cost of goods sold percentage.
- f. SG&A percentage.
- g. Asset turnover ratio.
- h. Accounts receivable turnover ratio.
- i. Inventory turnover ratio.
- j. Fixed-asset turnover ratio.
- k. Current ratio.
- l. Quick ratio.
- m. Accounts payable turnover ratio.
- n. Operating cycle.
- o. Liabilities to assets ratio.
- p. Long-term debt ratio.
- q. Debt-equity ratio.
- r. Interest coverage ratio.

APPENDIX 7.1: PRO FORMA FINANCIAL STATEMENTS

Accountants use the term **pro forma financial statements** to refer to financial statements prepared under a particular set of assumptions. One set of assumptions might be that some transactions, actually reported in the firm's income statement for the year, had not occurred. Such assumed-away transactions might include unusual or nonrecurring revenues, expenses, gains, and losses. In these cases, firms report pro forma earnings to indicate to financial statement users what the firm views as normal, recurring earnings.

The more traditional use of the term pro forma financial statements refers to projected financial statements based on assumptions about the future. One set of assumptions might be that historical patterns (for example, growth rates or rates of return) will continue. Alternatively, the pro forma financial statements might reflect new assumptions about growth rates, debt levels, profitability, and so on. For example, a firm might project future sales, net income, assets, and cash flows to ascertain whether operations will generate sufficient cash flows to finance expenditures on long-term assets. A firm might change its product lines or pricing policies and wish to estimate the impact on rates of return. A firm might project future financial statement amounts for an acquisition target to ascertain the price it should pay.

This appendix describes and illustrates procedures for preparing pro forma (projected) financial statements and illustrates how to use them. In your exposure to managerial and cost accounting concepts, you will encounter the notion of a budget. A budget for an entire firm means the same thing as pro forma (projected) financial statements except that the statements projected typically have different uses and formats. Managers and analysts use pro forma financials and budgets for differing reasons, but use similar procedures to prepare them.

PREPARING PRO FORMA FINANCIAL STATEMENTS

The preparation of pro forma financial statements requires assumptions about the future. The usefulness of the pro forma financial statements depends on the reasonableness of those assumptions. Various spreadsheet programs ease the calculations required to prepare these statements, but the warning “garbage-in, garbage-out” certainly applies—the results will have quality and validity no better than the input assumptions. Careful analysts organize a list of all assumptions, preferably in a single section of the spreadsheet. Well-prepared pro forma statements allow the analyst to vary critical assumptions to see how the results vary.

The preparation of pro forma financial statements typically begins with the income statement, followed by the balance sheet and then the statement of cash flows. The level of operating activity usually dictates the required amount of assets, which in turn affects the required level of financing. Amounts for the statement of cash flows come directly from the pro forma income statement and comparative balance sheets.

We adhere to the following steps in preparing pro forma financial statements:

1. Project operating revenues.
2. Project operating expenses other than the cost of financing and income taxes.
3. Project the assets required to support the level of projected operating activity.
4. Project the financing (liabilities and contributed capital) required to fund the level of assets in step 3.
5. Project the cost of financing the debt projected in step 4, income tax expense, net income, dividends, and the change in retained earnings.
6. Project the statement of cash flows from amounts on the projected balance sheet and income statement.

Exhibit 7.12 summarizes these six steps. To illustrate the preparation of pro forma financial statements, we use the data for Great Deal discussed previously in this chapter. We project its financial statements for fiscal 2013. **Note: All discussions of percentages in the text reflect rounding to the first decimal point (e.g., 10.1%). The underlying calculations are not rounded.**

STEP 1: PROJECT OPERATING REVENUES

The projections begin with sales revenues. The analyst studies the historical pattern of changes in sales and assesses whether this pattern will continue. Among the questions raised are the following:

1. Does the firm plan to change product lines or pricing policies, make acquisitions of other companies, or take other actions that would alter the historical sales pattern?
2. Does the firm expect competitors to alter their strategies or new competitors to enter the market and thereby change market shares?
3. Will conditions in the economy affect the firm’s sales? For example, do the firm’s sales fluctuate with economic cycles, do they remain steady, or do they fluctuate with other variables, such as local population growth?

The assumption about sales revenues drives most other items in the pro forma financial statements, which normally makes this the most important assumption.

Exhibit 7.2 indicates that sales revenues for Great Deal increased from \$40,023 to \$45,015 between 2010 and 2011, a growth rate of 12.5% [= $(\$45,015/\$40,023) - 1$]. Sales increased from \$40,023 to \$49,694 between 2011 and 2012, a growth rate of 10.4% [= $(\$49,694/\$45,015) - 1$]. The decline in the growth rate occurred in a year when Great Deal made no large corporate acquisitions and the economy grew slowly. We assume that economic conditions will slightly weaken in 2013, and project Great Deal’s revenues to increase 10% between 2012 and 2013. Thus, projected sales for 2013 are \$54,663 (= $\$49,694 \times 1.10$).

STEP 2: PROJECT OPERATING EXPENSES

Projecting operating expenses requires understanding the behavior of various operating costs. Among the question that an analyst raises are the following:

1. Does the expense item tend to vary with the level of sales, a behavior pattern characterized as a variable cost? Alternatively, does the expense item tend to remain relatively constant for a particular time period regardless of the level of sales, a behavior pattern characterized

EXHIBIT 7.12**Preparing Pro Forma Financial Statements**

Statement of Income and Retained Earnings		Balance Sheet	
STEP 1: Project Operating Revenues		STEP 3: Project Assets	
Sales Revenue		Cash	
Other Revenues		Accounts Receivable	
		Inventories	
		Other Current Assets	
		Investments	
		Fixed Assets	
		Other Assets	
STEP 2: Project Operating Expenses			
Cost of Goods Sold			
Selling and Administrative Expenses			
Net Income Before Interest Expense and Income Taxes			
STEP 5: Project Cost of Financing, Income Tax Expense, and the Change in Retained Earnings			
Interest Expense			
Income Tax Expense			
Net Income			
Dividends			
Change in Retained Earnings			
		STEP 4: Project Liabilities and Contributed Capital	
		Accounts Payable	
		Notes Payable	
		Other Current Liabilities	
		Long-Term Debt	
		Other Liabilities	
		Contributed Capital	
		STEP 5: Project Retained Earnings	
		Retained Earnings	
Statement of Cash Flows			
STEP 6: Project the Statement of Cash Flows			
Operations	Investing	Financing	
Net Income	Acquisition of Fixed Assets	Change in Notes Payable	
Depreciation	Sale of Investments	Change in Long-Term Debt	
Other Adjustments	Acquisition of Investments	Change in Common Stock	
Change in Receivables	Other Investing Transactions	Dividends	
Change in Inventories		Other Financing Transactions	
Change in Other Current Assets			
Change in Accounts Payable			
Change in Other Current Liabilities			
CASH FLOW FROM OPERATIONS	CASH FLOW FROM INVESTING	CASH FLOW FROM FINANCING	

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as a fixed cost? When you study cost behavior in managerial accounting and economics courses, you will learn that nearly all costs vary in the long run, but some appear fixed in the short run. Deciding on whether a given cost is fixed or variable requires knowing the time period of the projection.

- Does the expense item have both variable- and fixed-cost characteristics, a pattern described as a mixed cost or a step cost?
- Does the firm have some discretion to change the amount of a fixed-cost item in the short term in response to current conditions (for example, maintenance or advertising expenditures)? Or, is there little discretion to change a fixed cost (for example, depreciation on equipment)?

Understanding the behavior of each expense item aids in projecting its amount.

Exhibit 7.5 presents common-size income statements for Great Deal for fiscal years 2010, 2011, and 2012. We use these common-size percentages in projecting operating expenses.

Cost of Goods Sold Great Deal purchases merchandise for sale to customers. Thus cost of goods sold will vary with sales. Great Deal's cost of goods sold percentage decreased from 76.1% in 2010 to 75.6% in 2011, and to 75.5% in 2012. Assume that the decrease is a result of implementing inventory control systems in their retail stores, and that Great Deal will benefit even further from these control systems in 2013, reducing the cost of goods sold to sales percentage to 75.2%. Projected cost of goods sold for 2013 is \$41,107 ($= 0.752 \times \$54,663$) million.

Selling and Administrative Expense The ratio of selling and administrative expense to sales increased from 18.5% in 2010 to 20.0% in 2011, and declined to 19.9% in 2013. We project that selling and administrative expenses will equal 19.5% of sales in 2013. Projected selling and administrative expenses for 2013 are \$10,659 ($= 0.195 \times \$54,663$) million.

Other Operating Expenses Firms may report other operating expenses on their income statements, some of which are recurring, some of which are not. An example of a common recurring other operating expense is research and development (R&D) expense. An example of a common non-recurring operating expense is a restructuring charge. Great Deal does not have R&D expense, so we do not forecast any recurring operating expenses (other than cost of goods sold and SG&A). Great Deal does report restructuring charges and impairments, but not consistently across all years. We assume that Great Deal will have no restructuring charges and no asset impairments in 2013.

Non-Operating Expenses The remaining items on Great Deal's income statement relate to other income and other expenses (losses). Other income typically consists of one-time gains from sales of assets and income earned on investments. Other expenses (losses) consist of one-time losses from asset sales or asset impairments, financing charges (interest expense) and income taxes. We assume that Great Deal will have no one-time gains or losses in 2013, and that it will have \$50 million of investment income. Based on recent borrowings, we assume Great Deal pays interest charges at the rate of 6% annually. Finally, we assume Great Deal faces an income tax rate of 36%. We delay projecting the amounts of interest expense until we project the amount of debt, and we wait to project income taxes until we know Great Deal's projected earnings before taxes.

The remaining items on Great Deal's income statement relate to equity in income (loss) of affiliates and to the amount of earnings attributable to noncontrolling interests.¹⁰ Briefly, equity in income (loss) of affiliates pertains to Great Deal's pro rata share of the earnings, or losses, of companies in which it has ownership interests between 20% and 50%. In fiscal 2012, these earnings were \$1 million. For fiscal 2013, earnings from affiliates are projected to be \$3 million.

Net earnings attributable to noncontrolling interests pertains to the portion of Great Deal's earnings which are attributable to the residual ownership stakes in companies where Great Deal has a controlling, or majority, ownership. For example, if Great Deal owns 90% of another company, the noncontrolling or residual ownership interest is 10%. The projected amount of earnings attributable to noncontrolling interests for fiscal 2013 is \$100 million.

STEP 3: PROJECT ASSETS

The projection of total assets on the balance sheet requires assumptions that are consistent with those underlying the pro forma income statement. One approach assumes a total assets turnover (that is, sales/average total assets) similar to that of previous years. For example, Great Deal's total assets turnover was 3.0 in 2010, 3.1 in 2011, and 2.9 in 2012. Assuming Great Deal targets a 2.8 total assets turnover ratio for 2013, we can calculate its projected total assets at the end of 2013 by solving the following equation:

$$\text{Total Assets Turnover} = \frac{\text{Sales}}{\text{Average Total Assets}} = \frac{\$54,663}{0.5 \times (18,302 + X)} = 2.8$$

Solving for the unknown in the equation (X , equal to total assets at the end of fiscal 2013) yields projected total assets at the end of 2013 of \$20,743 million. The analyst can then use common-size balance sheet percentages to allocate this total to individual balance sheet accounts. We use this approach in projecting specific asset balances for Great Deal.

An alternative approach uses the historical annual growth rate in total assets of 11% during the last three years ($=$ the average of -6% growth in 2010, 24% growth in 2011 and 16% growth in 2012). This approach yields total assets of \$20,315 ($= \$18,302 \times 1.11$) million. The analyst can apply common-size balance sheet percentages to allocate \$20,315 million to individual balance sheet items. A third approach uses a mixture of asset turnovers and growth rates for the various assets and then aggregates projected amounts for individual assets to compute total assets.

¹⁰Chapter 14 describes equity investments in affiliates as well as noncontrolling interests.

Cash We assume Great Deal's 2013 common-size percentage for cash (10.0% of total assets) reflects the amount of cash it needs to maintain for operations. Projected cash and cash equivalents for 2013 is \$2,070 ($= \$20,743 \times 10.0\%$) million.

If other forecasts indicate that Great Deal will have more cash than \$2,070 million, we assume Great Deal will pay the difference as dividends to its shareholders. If the forecasts reveal that Great Deal will need cash, we assume it will issue (sell) shares of common stock. These assumptions indicate how Great Deal will use extra cash if available, or generate extra cash if needed. Preparing pro forma financial statements requires the preparer to know how the firm will respond to having more cash than needed or a shortfall of cash.

Short-Term Investments Short-term investments reflect cash Great Deal has used to purchase debt and equity securities issued by other entities. Using the common-size percentage for 2012, we project an ending balance of short-term investments for 2013 of \$102 ($= \$20,743 \times 0.5\%$) million.

Accounts Receivable For most firms, accounts receivable vary with sales. Great Deal's common-size balance sheet shows that accounts receivable as a percentage of total assets declined from 11.8% in 2011 to 11% in 2012. We assume accounts receivable will maintain at the 2012 percentage of 11.0% of assets. Projected accounts receivable for 2013 are \$2,002 ($= \$20,743 \times 11\%$) million.

Inventory Merchandise inventories were 36.9% of total assets in 2010 and declined to 30.0% in 2011 and 2012. We assume the inventory to total assets percentage will stay at 30.0% in 2013. Projected merchandise inventory is \$5,438 ($= \$20,743 \times 30.0\%$) million.

Other Current Assets Great Deal's common-size balance sheets show that other current assets were 4.6%, 6.7%, and 6.3% of total assets in 2010, 2011 and 2012, respectively. We assume other current assets will remain at 6.3% in 2013. Thus, other current assets at the end of 2013 are \$1,134 ($= \$20,743 \times 6.3\%$) million.

Property, Plant, and Equipment We assume that Great Deal projects gross property, plant, and equipment (PPE), accumulated depreciation, and net PPE, at the 2012 common-size percentages of 40.7% (gross PPE), 18.5% (accumulated depreciation), and 22.2% (net PPE). The projected balances for these balance sheet items are \$8,447 ($= \$20,743 \times 40.7\%$) million for gross PPE, \$3,834 ($= \$20,743 \times 18.5\%$) million for accumulated depreciation, and \$4,613 ($= \$8,447 - \$3,834$) million for net PPE.

We further assume that Great Deal had no disposals or impairments of property and equipment in 2010. Thus, the only transaction affecting Great Deal's gross property and equipment will be purchases of property, plant, and equipment (capital expenditures), and the only transaction affecting accumulated depreciation will be its periodic depreciation charge (depreciation expense). As **Chapter 10** describes in detail, there are several other transactions that affect the property, plant, and equipment account. These transactions would be taken into account in preparing a more complex set of pro forma financial statements.

Intangible Assets Great Deal's intangible assets consist of goodwill (13.4% of total assets in fiscal 2012), trade names (0.9% of total assets), and customer relationships (1.5% of total assets). We assume the amounts of these balance sheet accounts will remain at their 2012 common-size percentages for 2013. Thus, the projected amounts for intangible assets for 2013 are: \$2,779 ($= \$20,743 \times 13.4\%$) million for goodwill, \$180 ($= \$20,743 \times 0.9\%$) million for trade names, and \$316 ($= \$20,743 \times 1.5\%$) million for customer relationships.

Equity and Other Investments Equity and other investments relate primarily to Great Deal's ownership of the common shares of other firms. We assume Great Deal maintains equity and other investments at the 2012 common-size percentage of 1.8%. Thus, the projected amount for this balance sheet item is \$367 ($= \$20,743 \times 1.8\%$) million.

Other Assets Other assets likely reflects a number of assets that are aggregated for convenience in one account. We assume that Great Deal maintains other assets at the 2012 common-size percentage of 2.5% of total assets. The projected amount for other assets for 2013 is \$512 ($= \$20,743 \times 2.5\%$) million.

STEP 4: PROJECT LIABILITIES AND CONTRIBUTED CAPITAL

We project next the financing side of the balance sheet. The projection of liabilities and contributed capital flows directly from the projection of the level of operating activity estimated in steps 1 and 2 and the projection of total assets in step 3.

Accounts Payable As a percentage of total assets, Great Deal's accounts payable were 28.8% in fiscal 2012. We assume the same percentage for fiscal 2013. Projected accounts payable for 2013 are \$5,980 ($= \$20,743 \times 28.8\%$) million.

Other Current Liabilities Great Deal reports a number of other current liabilities, including unredeemed gift cards, accrued compensation, accrued liabilities, accrued income taxes, short-term debt, and the current portion of long-term debt. For simplicity, we assume that the amounts in these accounts at the end of 2013 approximate their 2012 common-size percentages.¹¹ Applying these percentages to the projected amount of total assets of \$20,743 yields the following amounts for these items:

Current Liability	Calculation	Projected Amount, End of Fiscal 2013
Unredeemed Gift Card Liabilities	$\$20,743 \times 2.5\%$	\$ 525
Accrued Compensation	$\$20,743 \times 3.0\%$	617
Accrued Liabilities	$\$20,743 \times 9.2\%$	1,905
Accrued Income Taxes	$\$20,743 \times 1.7\%$	358
Short-Term Debt	$\$20,743 \times 2.6\%$	751
Current Portion of Long-Term Debt	$\$20,743 \times 0.2\%$	40

Long-Term Liabilities Great Deal's long-term liabilities include liabilities that extend beyond one year and are related to operations (as opposed to financing). This account includes retirement liabilities and deferred taxes. For simplicity, we project these liabilities using their 2012 common-size percentages. For fiscal 2013, the projected amount of long-term liabilities is \$1,424 ($= \$20,743 \times 6.9\%$) million.

Long-Term Debt This account reflects Great Deal's borrowings that are due beyond one year. The portion due within one year is included in the current portion of the long-term debt account, a current liability. Typically, the amount of long-term debt would reflect the firm's cash needs and would be calculated after other cash inflows and outflows are determined. Determining the amount of debt financing in this way requires an iterative process to "solving" the pro forma financial statements. Given the complexity of the iterative process, we use a simpler approach to illustrate the creation of projected financial statements. Specifically, we follow the prior assumption of using the common-size percentage from 2012 to project long-term debt for fiscal 2013. Projected long-term debt at the end of 2013 is \$1,251 ($= \$20,743 \times 6.0\%$) million.

Preferred Stock Great Deal has no preferred stock in its capital structure in 2010–2012. We assume the same for 2013. The projected amount of preferred stock at the end of 2013 is, therefore, zero.

Common Stock and Additional Paid-In Capital The assumptions for the cash account indicated that Great Deal would issue common equity if the amount of cash generated during the year was insufficient to meet the projected balance in the cash account of \$2,070 million. The amount of cash generated or consumed by Great Deal in 2013 is not yet known because we have not projected its statement of cash flows. For now, we will assume that Great Deal will not issue common equity during 2013. We will revisit this assumption if the statement of cash flows

¹¹In more complex pro forma calculations, the projected amounts of current operating liabilities (unredeemed gift card liabilities and accrued compensation) might be tied to sales, because sales is an indicator of the level of operating activity. The projected amount of short-term debt would be linked to financing needs. In addition, the projected current portion of long-term debt is disclosed in the notes to the financial statements. This amount would typically be known from debt contracts that specify how much of the debt is due in the coming year.

indicates that cash is needed. The projected amounts for common stock and additional paid-in capital at the end of fiscal 2013 are, therefore, equal to their 2012 balances of \$42 million and \$441 million, respectively.

Accumulated Other Comprehensive Income We assume Accumulated Other Comprehensive Income grows in proportion to total assets. The projected amount in Accumulated Other Comprehensive Income at the end of 2013 is \$45 ($= \$20,743 \times 0.2\%$) million.

Noncontrolling Interests We assume noncontrolling interests maintain at the same common-size percentage as in fiscal 2012. Projected noncontrolling interests for 2013 is \$730 ($= \$20,743 \times 3.5\%$) million.

STEP 5: PROJECT INTEREST EXPENSE, INCOME TAX EXPENSE, NET INCOME, DIVIDENDS, AND THE CHANGE IN RETAINED EARNINGS

Interest Expense Interest expense usually has a fairly stable relation to the level of borrowing. Our projection of non-operating liabilities assumed an interest rate of 6% on debt outstanding during 2013. The average projected amount of debt outstanding for 2013 equals \$1,922 [$= 0.5 \times (\$663 + \$35 + \$1,104 + \$751 + \$40 + \$1,251)$] million. Projected interest expense is \$115 [$= 0.06 \times \$1,922$] million.

Income Tax Expense Projections of sales, operating expenses, and interest expense yield income before income taxes of \$2,962 ($= \$54,663 \times \$41,107 - \$10,659 + \$50 - \115) million. We assume a 2013 income tax rate of 36%. Projected income tax expense is \$1,066 ($= 0.36 \times \$2,962$) million.

Retained Earnings Retained earnings increase by the projected net income for 2013 and decrease by the amount of dividends declared. The amount of net income projected for 2013 is \$1,899 million, as indicated by the pro forma income statement shown in **Exhibit 7.13**. There are two approaches to calculating the amount of dividends declared. Under the first approach, we apply the balance sheet equation to determine the total amount of retained earnings projected for 2013, and then apply the retained earnings equation to infer the amount of dividends declared:

$$\begin{aligned} \text{Assets} &= \$20,743 \text{ million} \\ \text{Liabilities} &= \$5,980 + \$525 + \$617 + \$1,905 + \$358 + \$751 + \$40 + \$1,424 + \$1,251 \\ &= \$12,850 \text{ million} \\ \\ \text{Shareholders' Equity} &= \$42 + \$441 + \text{Retained Earnings} + \$45 + \$730 \\ &= \$1,258 + \text{Retained Earnings} \end{aligned}$$

Balance Sheet equation:

$$\begin{aligned} \text{Assets} &= \text{Liabilities} + \text{Shareholders' Equity} \\ \$20,743 &= \$12,850 + \$1,258 + \text{Retained Earnings} \end{aligned}$$

Solving for Retained Earnings yields:

$$\text{Retained Earnings, end of 2013} = \$6,635 \text{ million}$$

Next, we apply the retained earnings equation and solve for the amount of dividends:

$$\begin{aligned} \text{Retained Earnings, Ending} &= \text{Retained Earnings, Beginning} + \text{Net Income} - \text{Dividends} \\ \$6,635 &= \$5,797 + \$1,899 - \text{Dividends} \\ \text{Dividends} &= \$1,061 \text{ million} \end{aligned}$$

Under the second approach, we project Great Deal's statement of cash flows and determine the amount of excess cash (if any) that the firm generates in fiscal 2013. According to our cash assumptions, any cash in excess of \$2,070 million will be paid as dividends. We will revisit this second approach after we have calculated Great Deal's pro forma statement of cash flows for 2013.

The preparation of pro forma financial statements through the first five steps results in a projected income statement (**Exhibit 7.13**) and a projected balance sheet (**Exhibit 7.14**). **Note: Some balance sheet items do not sum to amounts shown due to rounding.**

EXHIBIT 7.13

Great Deal, Inc.
Pro Forma Statement of Earnings
 (amounts in millions of US\$)

	2013
Revenue	\$54,663
Cost of Goods Sold	41,107
Gross Profit	\$13,557
Selling, General, and Administrative Expenses	10,659
Restructuring Charges	0
Goodwill and Trade Name Impairment.	0
Operating Income	\$ 2,897
Other Income (Expense).	
Investment Income and Other.	50
Investment Impairment	0
Interest Expense	(115)
Earnings Before Income Tax Expense and Equity in Income (Loss) of Affiliates	\$ 2,962
Income Tax Expense	1,066
Equity in Income (Loss) of Affiliates	3
Net Earnings Including Noncontrolling Interests	\$ 1,899
Net Earnings Attributable to Noncontrolling Interests.	(100)
Net Earnings Attributable to Great Deal	\$ 1,799

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STEP 6: PROJECT THE STATEMENT OF CASH FLOWS

The analyst can prepare a pro forma statement of cash flows directly from the pro forma income statement and pro forma balance sheet. **Exhibit 7.15** presents the pro forma statement of cash flows for Great Deal for fiscal 2013. **Note: Some statement of cash flow items do not sum to amounts shown due to rounding.**

Note the following about the projected statement of cash flows:

- We calculate the amount of property, plant, and equipment purchased (capital expenditures) during 2013 from the change in the ending balances in this account. That amount is \$994 (= \$8,447 – \$7,453) million. The amount of depreciation expense equals the change in the accumulated depreciation account. Depreciation expense for 2013 is \$451 (= \$3,834 – \$3,383) million. As described in **Chapter 10**, these calculations are more complex if there are disposals of fixed assets during the year.
- The increase in cash during 2013 of \$244 (= \$2,486 – \$1,945 – \$735) million on the statement of cash flows reconciles to the change in cash on the pro forma balance sheet.
- If we had not calculated dividends using the first approach described under step 5, we could calculate dividends from the statement of cash flows using the second approach described in step 5. The cash assumptions imply the cash balance at the end of 2013 is \$2,070 million. Given the non-dividend cash flows projected by the statement of cash flows, we can infer the dividends needed to reach this ending cash balance:

Cash flows from operations	\$2,468
– Cash flows used in investing	(\$1,495)
+ Cash flows from financing	<u>\$240 + \$86 – Dividends</u>
= Change in cash	\$244

We can solve for the amount of dividends as follows:

$$\begin{aligned}
 \$2,468 - \$1,495 + 240 + 86 - \text{Dividends} &= \$244 \text{ million} \\
 \text{Dividends} &= \$1,061 \text{ million}
 \end{aligned}$$

EXHIBIT 7.14

Great Deal, Inc.
Pro Forma Balance Sheet
 (amounts in millions of US\$)

	2013
Assets	
Current Assets	
Cash and Cash Equivalents	\$ 2,070
Short-Term Investments	102
Receivables	2,289
Merchandise Inventories	6,218
Other Current Assets	<u>1,297</u>
Total Current Assets	\$11,975
Property and Equipment	
Land and Buildings	\$ 858
Leasehold Improvements	2,441
Fixtures and Equipment	5,040
Property Under Capital Lease	<u>108</u>
	8,447
Less: Accumulated Depreciation	<u>3,834</u>
Net Property and Equipment	4,613
Goodwill	2,779
Trade Names	180
Customer Relationships	316
Equity and Other Investments	367
Other Assets	<u>512</u>
Total Assets	<u>\$20,743</u>
Liabilities and Shareholders' Equity	
Current Liabilities	
Accounts Payable	\$ 5,980
Unredeemed Gift Card Liabilities	525
Accrued Compensation and Related Expenses	617
Accrued Liabilities	1,905
Accrued Income Taxes	358
Short-Term Debt	751
Current Portion of Long-Term Debt	<u>40</u>
Total Current Liabilities	\$10,176
Long-Term Liabilities	1,424
Long-Term Debt	1,251
Commitments and Contingencies	
Shareholders' Equity	
Great Deal Shareholders' Equity	
Preferred Stock	0
Common Stock	42
Additional Paid-In Capital	441
Retained Earnings	6,635
Accumulated Other Comprehensive Income	<u>45</u>
Total Great Deal Shareholders' Equity	\$ 7,163
Noncontrolling Interests	<u>730</u>
Total Shareholders' Equity	\$ 7,893
Total Liabilities and Shareholders' Equity	<u>\$20,743</u>

EXHIBIT 7.15
Great Deal, Inc.
Pro Forma Statement of Cash Flows
(amounts in millions of US\$)

	2013
Operating Activities	
Net Earnings Including Noncontrolling Interests	\$ 1,899
Adjustments to Reconcile Net Earnings to Total Cash Provided by Operating Activities:	
Depreciation	451
Changes in Operating Assets, Net of Acquired Assets and Liabilities:	
Receivables	(269)
Merchandise Inventories	(732)
Other Current Assets	(153)
Accounts Payable	704
Other Liabilities	359
Income Taxes	42
Long-Term Liabilities	168
<i>Total Cash Provided By Operating Activities.</i>	<u>\$ 2,468</u>
Investing Activities	
Additions to PPE.	\$ (994)
Purchases of Intangible Assets	(385)
Purchases of Short-Term Investments	(12)
Purchases of Equity Investments	(43)
Other Noncurrent Assets	(60)
<i>Total Cash (Used in) Provided by Investing Activities</i>	<u>\$(1,495)</u>
Financing Activities	
Issuance of Common Stock	\$ 0
Dividends Paid	(1,061)
Debt Issuances	240
Increase in Noncontrolling Interests	86
<i>Total Cash (Used in) Provided by Financing Activities.</i>	<u>\$(735)</u>
Effect of Exchange Rate Changes in Cash	5
Increase (Decrease) in Cash and Cash Equivalents	244
Cash and Cash Equivalents at Beginning of Year	1,826
Cash and Cash Equivalents at End of Year.	<u>\$ 2,070</u>

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SOLUTIONS TO SELF-STUDY PROBLEMS

SUGGESTED SOLUTION TO PROBLEM 7.1 FOR SELF-STUDY

(Markum Corporation; analyzing return on equity.)

a. Return on equity $\frac{\text{Net Income}}{\text{Average Shareholders' Equity}} = \frac{\$4,800}{\$51,600} = 9.3\%$

b. Return on assets, unadjusted for financing $\frac{\text{Net Income}}{\text{Average Total Assets}} = \frac{\$4,800}{\$112,000} = 4.3\%$

c. Markum's ROE exceeds its ROA because its financial leverage exceeds 1.0. As shown below, Markum's financial leverage is 2.2:

$$\frac{\text{Average Total Assets}}{\text{Average Shareholders' Equity}} = \frac{\$112,000}{\$51,600} = 2.2$$

SUGGESTED SOLUTION TO PROBLEM 7.2 FOR SELF-STUDY

(Markum Corporation; analyzing the return on assets.)

Return on Assets	$\frac{\text{Net Income}}{\text{Average Total Assets}}$	$= \frac{\$4,800}{\$112,000} = 4.3\%$
Profit Margin	$\frac{\text{Net Income}}{\text{Sales}}$	$= \frac{\$4,800}{\$92,000} = 5.2\%$
Cost of Sales Percentage	$\frac{\text{Cost of Goods Sold}}{\text{Sales}}$	$= \frac{\$67,000}{\$92,000} = 72.8\%$
SG&A Percentage	$\frac{\text{SG\&A Expense}}{\text{Sales}}$	$= \frac{\$8,000}{\$92,000} = 8.7\%$
R&D Percentage	$\frac{\text{R\&D Expense}}{\text{Sales}}$	$= \frac{\$7,000}{\$92,000} = 7.6\%$
Asset Turnover Ratio	$\frac{\text{Sales}}{\text{Average Total Assets}}$	$= \frac{\$92,000}{\$112,000} = 0.8 \text{ time per year}$
Accounts Receivable Turnover	$\frac{\text{Sales}}{\text{Average Accounts Receivable}}$	$= \frac{\$92,000}{\$13,500} = 6.8 \text{ times per year}$
Inventory Turnover	$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$	$= \frac{\$67,000}{\$24,000} = 2.8 \text{ times per year}$
Fixed-Asset Turnover	$\frac{\text{Sales}}{\text{Average Fixed Assets}}$	$= \frac{\$92,000}{\$69,500} = 1.3 \text{ times per year}$

SUGGESTED SOLUTION TO PROBLEM 7.3 FOR SELF-STUDY

(Markum Corporation; analyzing short-term liquidity risk.)

a. Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	$= \frac{\$67,000}{\$92,000} = 72.8\%$
Quick Ratio	$\frac{\text{Cash} + \text{Receivables}}{\text{Current Liabilities}}$	$= \frac{\$21,000}{\$50,000} = 42.0\%$
b. Accounts Receivable Turnover	$\frac{\text{Sales}}{\text{Average Accounts Receivable}}$	$= \frac{\$92,000}{\$13,500} = 6.8 \text{ times per year}$
Inventory Turnover	$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}}$	$= \frac{\$67,000}{\$24,000} = 2.8 \text{ times per year}$
Accounts Payable Turnover	$\frac{\text{Purchases}}{\text{Average Accounts Payable}}$	$= \frac{\$75,000}{\$27,900} = 2.7 \text{ times per year}$
c. Days Accounts Receivable	$\frac{365}{\text{Accounts Receivable Turnover}}$	$= \frac{365}{6.8} = 54 \text{ days}$
Days Inventory	$\frac{365}{\text{Inventory Turnover}}$	$= \frac{365}{2.8} = 131 \text{ days}$
Days Payables	$\frac{365}{\text{Accounts Payable Turnover}}$	$= \frac{365}{2.7} = 136 \text{ days}$
Operating Cycle	$\text{Days A/R} + \text{Days Inventory} - \text{Days Payables}$	$= 49 \text{ days}$

- d. Markum's short-term liquidity risk seems somewhat high at the end of 2013. Its current ratio of 72.8% is below 1.0. Markum's quick ratio (of 42.0%) is in the benchmark range of roughly half its current ratio. Its operating cycle is 49 days, indicating that Markum would require 49 days of financing to cover the net period when its cash outflows exceed its cash inflows.

SUGGESTED SOLUTION TO PROBLEM 7.4 FOR SELF-STUDY

(Markum Corporation; analyzing long-term liquidity risk.)

		2012		2013	
a.	Liabilities to Assets Ratio	$\frac{\text{Total Liabilities}}{\text{Total Assets}}$	$= \frac{\$52,800}{\$100,000} = 52.8\%$	$\frac{\$68,000}{\$124,000}$	$= 54.8\%$
	Long-Term Debt Ratio	$\frac{\text{Total Long-Term Debt}}{\text{Total Assets}}$	$= \frac{\$12,000}{\$100,000} = 12.0\%$	$\frac{\$18,000}{\$124,000}$	$= 14.5\%$
	Debt-Equity Ratio	$\frac{\text{Total Long-Term Debt}}{\text{Total Shareholders' Equity}}$	$= \frac{\$12,000}{\$47,200} = 25.4\%$	$\frac{\$18,000}{\$56,000}$	$= 32.1\%$
b.	Interest Coverage Ratio	$\frac{\text{Net Income} + \text{Income Tax Expense} + \text{Interest Expense}}{\text{Interest Expense}}$	$= \frac{\$4,800 + \$3,200 + \$2,400}{\$2,000} = 5.0$	$\frac{\$1,800 + \$1,200 + \$1,000}{\$1,000}$	$= 4.0$

- c. Markum's long-term liquidity risk increased between 2012 and 2013, as evidenced by increasing debt ratios and a declining interest coverage ratio. The interest coverage ratio remains acceptable (albeit somewhat low) at the end of 2013, and the debt ratios are also well within reason. Overall, Markum's long-term solvency position is strong at the end of fiscal 2013.

SUGGESTED SOLUTION TO PROBLEM 7.5 FOR SELF-STUDY

(Consumer Electronics Limited; computing profitability and risk ratios.)

a.	Return on Equity (ROE)	$= \frac{\$1,483}{0.5 \times (\$5,377 + \$6,763)} = 24.4\%$
b.	Return on Assets (ROA)	$= \frac{\$1,483}{0.5 \times (\$10,797 + \$12,143)} = 12.9\%$
c.	Financial Leverage Ratio	$= \frac{0.5 \times (\$10,797 + \$12,143)}{0.5 \times (\$5,377 + \$6,763)} = 1.9$
d.	Profit Margin Ratio	$= \frac{\$1,483}{\$25,675} = 5.8\%$
e.	Cost of Goods Sold Percentage	$= \frac{\$17,765}{\$25,675} = 69.2\%$
f.	SG&A Percentage	$= \frac{\$5,681}{\$25,675} = 22.1\%$
g.	Asset Turnover Ratio	$= \frac{\$25,675}{0.5 \times (\$10,797 + \$12,143)} = 2.2 \text{ times per year}$
h.	Accounts Receivable Turnover Ratio	$= \frac{\$25,675}{0.5 \times (\$1,417 + \$1,512)} = 17.5 \text{ times per year}$
i.	Inventory Turnover Ratio	$= \frac{\$17,765}{0.5 \times (\$3,984 + \$3,567)} = 4.7 \text{ times per year}$
j.	Fixed-Asset Turnover Ratio	$= \frac{\$25,675}{0.5 \times (\$4,224 + \$6,151)} = 4.9 \text{ times per year}$
k.	Current Ratio	$= \frac{\$5,992}{\$3,639} = 1.6$
l.	Quick Ratio	$= \frac{\$612 + \$1,512}{\$3,639} = 0.58$
m.	Accounts Payable Turnover Ratio	$= \frac{\$17,765 + \$3,567 - \$3,984}{0.5 \times (\$1,066 + \$1,040)} = 16.5 \text{ times per year}$

$$\begin{aligned}
 \text{n. Operating Cycle} &= (365/17.5) + (365/4.7) - (365/16.5) = 76 \text{ days} \\
 \text{o. Liabilities to Assets Ratio} &= \frac{\$3,639 + \$1,741}{\$12,143} = 44.3\% \\
 \text{p. Long-Term Debt Ratio} &= \frac{\$1,741}{\$12,143} = 14.3\% \\
 \text{q. Debt-Equity Ratio} &= \frac{\$1,741}{\$6,763} = 25.7\% \\
 \text{r. Interest Coverage Ratio} &= \frac{\$1,483 + \$635 + \$123}{\$123} = 18.2 \text{ times}
 \end{aligned}$$

KEY TERMS AND CONCEPTS

Return and risk	Operating cycle, cash cycle, earnings cycle
Profitability	Accounts payable turnover ratio
Return on equity (ROE)	Long-term liquidity risk
Return on assets (ROA)	Liabilities to assets ratio
Financial leverage	Long-term debt ratio
DuPont Decomposition Analysis	Debt-equity ratio
Profit margin ratio	Cash flow from operations to total liabilities ratio
Asset turnover, asset turnover ratio	Interest coverage ratio
Accounts receivable turnover ratio	Common-size balance sheet
Inventory turnover ratio	Common-size income statement
Fixed-asset turnover ratio	Time-series analysis
Liquidity	Cross-section analysis
Short-term liquidity risk	Pro forma financial statements
Current ratio	
Quick ratio or acid test ratio	
Cash flow from operations to current liabilities ratio	

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

1. Review the meaning of the terms and concepts listed in Key Terms and Concepts.
2. “Financial ratios are useful metrics for relating two items in the financial statements. Interpreting changes in a particular financial ratio is difficult, however, because the explanation might relate to changes in the numerator, the denominator, or both.” Explain this statement using a change in the cost of goods sold to sales percentage from 65% to 68%.
3. In calculating return on assets, the simple ROA formula does not adjust for interest expense. Explain why it is technically more correct to make an adjustment for interest expense in calculating this ratio, and explain the form of the adjustment.
4. A firm’s total assets turnover decreased, but its accounts receivable, inventory, and fixed-asset turnover increased. Suggest possible explanations.
5. Explain why the return on equity of a company that has no preferred stock will be smaller than the return on equity of an otherwise similar firm that has preferred stock.
6. One company president stated, “The operations of our company are such that we must turn our assets over once every four weeks.” A company president in another industry

stated, “The operations of our company are such that we can live comfortably with asset turnover of four times each year.” Explain what these two company presidents probably had in mind.

7. Some have argued that for any given firm at a particular time, there is an optimal inventory turnover ratio. Explain.
8. Under what circumstances will the rate of return on equity exceed the rate of return on assets? Under what circumstances will it be less?
9. An entrepreneur claimed that her new company had generated *both* superior profit margin performance and superior asset turnover performance. Explain whether such an outcome is likely to happen.
10. Given how financial leverage affects ROE, why does a firm not borrow as much as possible? That is, why doesn't a firm increase borrowing to as close to 100% of financing as it can?

EXERCISES

11. **Calculating and disaggregating the rate of return on assets.** Recent annual reports of two restaurant chains (Calem Incorporated and Garter Company) reveal the following (amounts in millions of US\$):

	Calem	Garter
Revenues	\$2,352	\$22,787
Net Income	76	2,335
Average Total Assets	1,473	29,183

Calem operates a chain of restaurants featuring value-priced meals and owns all of its restaurants. Garter also sells value-priced meals but operates through both company-owned and franchised restaurants. Garter owns the land and buildings of most of its franchised restaurants and leases the space to the franchisees.

- a. Calculate the rate of return on assets for each company.
 - b. Disaggregate the rate of return on assets in part **a** into profit margin and total assets turnover components.
 - c. Comment on the relative profitability of the two companies.
12. **Profitability analysis for two types of retailers.** Information taken from recent annual reports of two retailers appears as follows (amounts in millions of US\$). One of these companies is a discount store chain, and the other is a specialty retailer of apparel. Indicate which of these companies is the discount store chain and which is the specialty retailer. Explain your reasoning using appropriate financial ratios.

	Company A	Company B
Sales	\$3,750	\$6,834
Net Income	476	243
Average Total Assets	2,458	2,574

13. **Calculating and disaggregating rate of return on shareholders' equity.** Information taken from the annual reports of Mobilex, a petroleum company, for three recent years appears below (amounts in millions of US\$):

	2013	2012	2011
Revenues	\$404,552	\$377,635	\$370,680
Net Income	40,610	39,500	36,130
Average Total Assets	230,549	213,675	201,796
Average Shareholders' Equity	117,803	112,515	106,471

- a. Compute the rate of return on equity for each year.
- b. Disaggregate the rate of return on equity into profit margin, total assets turnover, and financial leverage ratio components.
- c. How has the profitability of Mobilex changed over the three years?

14. Profitability analysis for two companies. The following data show four items from the financial statements of two companies for a recent year (amounts in millions of US\$):

	Company A	Company B
For Year		
Revenues	\$3,750	\$6,143
Net Income	476	934
Average During Year		
Total Assets	2,458	5,594
Shareholders' Equity	2,256	2,566

- a. Compute the rate of return on assets for each company. Disaggregate the rate of return on assets into profit margin and total assets turnover components.
- b. Compute the rate of return on equity for each company. Disaggregate the rate of return on equity into profit margin, total assets turnover, and financial leverage ratio components.
- c. The two companies are a manufacturer of brand-name motorcycles and an operator of specialty retail coffee shops, primarily in rented facilities. Which of the companies corresponds to A and B? What clues did you use in reaching your conclusions?

15. Profitability analysis for two companies. The following data show four items from the financial statements of two companies for a recent year (amounts in millions of US\$):

	Company A	Company B
For Year		
Revenues	\$38,334	\$93,469
Net Income	6,986	6,999
Average During Year		
Total Assets	52,010	187,882
Common Shareholders' Equity	39,757	49,558

- a. Compute the rate of return on assets for each company and disaggregate ROA into profit margin and total assets turnover components.
- b. Compute the rate of return on equity for each company and disaggregate ROE into profit margin, total assets turnover, and capital structure leverage components.
- c. The two companies are a developer and manufacturer of semiconductors and a telecommunication service company. Which of the companies corresponds to A and B? What clues did you use in reaching your conclusions?

16. Analyzing accounts receivable for two companies. The annual reports of Delta, Inc. and SunnyDay Company, two manufacturers of computers, reveal the information below for the current year (amounts in millions). Delta sells custom-order personal computers, primarily to individuals. SunnyDay sells higher-end computers and Internet software, primarily to businesses.

	Delta	SunnyDay
Sales	\$61,133	\$13,873
Accounts Receivable, January 1	6,152	2,702
Accounts Receivable, December 31	7,693	2,964

- a. Compute the accounts receivable turnover for each company.

- b. Compute the average number of days that accounts receivable are outstanding for each company.
- c. Why do the accounts receivable turnovers of these two companies differ?
17. **Analyzing inventories over three years.** The following information relates to the activities of Funtime, Inc., a manufacturer of toys (amounts in millions of euros):

	2013	2012	2011
Sales	€5,970	€5,650	€5,179
Cost of Goods Sold	3,193	3,038	2,806
Average Inventory	406	380	415

- a. Compute the inventory turnover for each year.
- b. Compute the average number of days that inventories are held each year.
- c. Compute the cost of goods sold to sales percentage for each year.
- d. How well has Funtime managed its inventories over the three years?
18. **Analyzing fixed-asset turnover over three years.** The following information relates to Mickey Group, an entertainment company (amounts in millions of pounds sterling):

	2013	2012	2011
Sales	£35,510	£33,747	£31,374
Average Fixed Assets	16,270	16,174	15,362
Expenditures on Fixed Assets	1,566	1,299	1,823
Depreciation Expense	1,491	1,436	1,339

- a. Compute the fixed-asset turnover for each year.
- b. How well has Mickey Group managed its investment in fixed assets over the three years?
19. **Calculating and interpreting short-term liquidity ratios.** Data taken from the financial statements of FleetSneak, a designer and manufacturer of athletic footwear and apparel, appear as follows (amounts in millions of US\$):

For the Year	2013	2012	2011	
Revenues	\$16,326	\$14,955	\$13,740	
Cost of Goods Sold	9,165	8,368	7,624	
Net Income	1,492	1,392	1,212	
Cash Flow from Operations	1,879	1,668	1,571	
On May 31	2013	2012	2011	2010
Cash and Marketable Securities	\$ 2,847	\$ 2,303	\$ 1,825	\$ 1,229
Accounts Receivable	2,495	2,383	2,262	2,120
Inventories	2,122	2,077	1,811	1,650
Prepayments	613	583	453	529
Total Current Assets	<u>\$ 8,077</u>	<u>\$ 7,346</u>	<u>\$ 6,351</u>	<u>\$ 5,528</u>
Accounts Payable	\$ 1,040	\$ 952	\$ 775	\$ 780
Bank Loans	131	299	76	153
Other Current Liabilities	1,413	1,362	1,148	1,098
Total Current Liabilities	<u>\$ 2,584</u>	<u>\$ 2,613</u>	<u>\$ 1,999</u>	<u>\$ 2,031</u>

- a. Compute the current and quick ratios on May 31 of each year.
- b. Compute the cash flow from operations to current liabilities ratio and the accounts receivable, inventory, and accounts payable turnover ratios for 2011, 2012, and 2013.
- c. How has the short-term liquidity risk of FleetSneak changed during the three-year period?
20. **Calculating and interpreting short-term liquidity ratios.** Data taken from the financial statements of Geneva S.A., a consumer foods company headquartered in Switzerland, appear as follows (amounts in millions of euros):

For the Year	2013	2012	2011	
Revenues	€89,625	€78,533	€73,135	
Cost of Goods Sold	37,530	32,474	30,435	
Net Income	8,874	7,277	6,498	
Cash Flow from Operations	11,030	9,197	8,461	
On December 31	2013	2012	2011	2010
Cash and Marketable Securities	€ 5,737	€ 7,129	€11,188	€ 9,887
Accounts Receivable	9,316	9,056	9,193	7,640
Inventories	5,602	4,988	5,250	4,545
Prepayments	955	760	1,234	756
Total Current Assets	<u>€21,610</u>	<u>€21,933</u>	<u>€26,865</u>	<u>€22,828</u>
Accounts Payable	€ 8,566	€ 7,810	€ 7,151	€ 5,871
Bank Loans	14,826	9,626	12,120	9,525
Other Current Liabilities	2,783	2,742	3,792	3,415
Total Current Liabilities	<u>€26,175</u>	<u>€20,178</u>	<u>€23,063</u>	<u>€18,811</u>

- a. Compute the current and quick ratios on December 31 of each year.
 - b. Compute the cash flow from operations to current liabilities ratio and the accounts receivable, inventory, and accounts payable turnover ratios for 2011, 2012, and 2013.
 - c. How has the short-term liquidity risk of Geneva changed during the three-year period?
21. **Calculating and interpreting long-term liquidity ratios.** Data taken from the financial statements of Kyoto Electric, a Japanese generator and provider of electric services, appear below (amounts in billions of Japanese yen).

For the Year	2013	2012	2011	
Net Income Before Interest and Income Taxes	¥ 651	¥ 635	¥ 538	
Cash Flow from Operations	1,074	936	1,411	
Interest Expense	155	161	165	
On December 31	2013	2012	2011	2010
Long-Term Debt	¥ 5,871	¥ 6,278	¥ 7,150	¥ 7,391
Total Liabilities	10,488	10,814	11,247	11,540
Total Shareholders' Equity	3,034	2,780	2,502	2,360

- a. Compute the long-term debt ratio and the debt-equity ratio at the end of 2010, 2011, 2012, and 2013.
 - b. Compute the cash flow from operations to total liabilities ratio and the interest coverage ratio for 2011 through 2013.
 - c. How has the long-term liquidity risk of Kyoto Electric changed over this three-year period?
22. **Calculating and interpreting long-term liquidity ratios.** Data taken from the financial statements of Arctagon, a steel manufacturer headquartered in the Netherlands, appear below (amounts in millions of euros). Arctagon acquired other steel companies during the three-year period.

For the Year	2013	2012	2011	
Net Income Before Interest Expense and Income Taxes . .	€11,538	€ 6,624	€ 4,160	
Cash Flow from Operations	8,539	6,828	6,034	
Interest Expense	676	895	404	
On December 31	2013	2012	2011	2010
Long-Term Debt	€15,106	€16,416	€ 6,760	€1,206
Total Liabilities	52,749	53,114	17,448	7,760
Total Shareholders' Equity	38,662	31,947	11,264	4,301

- a. Compute the long-term debt ratio and the debt–equity ratio at the end of each year.
 - b. Compute the cash flow from operations to total liabilities ratio and the interest coverage ratio for 2011 through 2013.
 - c. How has the long-term liquidity risk of Arctagon changed over this three-year period?
- 23. Effect of various transactions on financial statement ratios.** Indicate the immediate effects (increase, decrease, no effect) of each of the following independent transactions on (1) the rate of return on shareholders' equity, (2) the current ratio, and (3) the liabilities to assets ratio. State any necessary assumptions.
- a. A firm purchases, on account, merchandise inventory costing \$205,000.
 - b. A firm sells for \$150,000, on account, merchandise inventory costing \$120,000.
 - c. A firm collects \$100,000 from customers on accounts receivable.
 - d. A firm pays \$160,000 to suppliers on accounts payable.
 - e. A firm sells for \$10,000 a machine costing \$40,000 and with accumulated depreciation of \$30,000.
 - f. A firm declares dividends of \$80,000. It will pay the dividends during the next accounting period.
 - g. A firm issues common stock for \$75,000.
 - h. A firm acquires a machine costing \$60,000. It gives \$10,000 cash and signs a note for \$50,000 payable five years from now for the balance of the purchase price.
- 24. Effect of various transactions on financial statement ratios.** Indicate the effects (increase, decrease, no effect) of the following independent transactions on (1) working capital (= current assets – current liabilities) and (2) the quick ratio, where accounts receivable are included but merchandise inventory is excluded from quick assets. State any necessary assumptions.
- a. A firm sells for €300,000, on account, merchandise inventory costing €240,000.
 - b. A firm declares dividends of €160,000. It will pay the dividends during the next accounting period.
 - c. A firm purchases, on account, merchandise inventory costing €410,000.
 - d. A firm sells for €20,000 a machine costing €80,000 and with accumulated depreciation of €60,000.
 - e. Because of defects, a firm returns to the supplier merchandise inventory purchased for €7,000 cash. The firm receives a cash reimbursement.
 - f. A firm issues 10,000 shares of €10 par value common stock on the last day of the accounting period for €15 per share. It uses the proceeds to acquire the assets of another firm composed of the following: accounts receivable, €30,000; merchandise inventory, €60,000; plant and equipment, €100,000. The acquiring firm also agrees to pay current liabilities of €40,000 of the acquired company. The quick ratio of the acquired company is at least 0.75.

PROBLEMS

- 25. Calculating and interpreting profitability and risk ratios in a time-series setting.** Bullseye Corporation, headquartered in the United States, operates retail stores that offer clothing, household products, electronic products, sports products, toys, and entertainment products at discount prices. Bullseye differentiates itself from competitors by pushing trend merchandising with more brand name products, by emphasizing customer service, and by providing a comfortable and attractive shopping experience. Bullseye also offers its own credit card to customers. Bullseye increased its number of stores from 1,397 on December 31, 2010, to 1,591 on December 31, 2013. The growth rate in sales of stores open at least two full years was 5.6% for the fiscal year ended December 31, 2011, 4.8% for the fiscal year ended December 31, 2012, and 3.0% for the fiscal year ended December 31, 2013. The financial statements for Bullseye for the fiscal years ended December 31, 2011, 2012, and 2013 appear in **Exhibit 7.16** (income statement), **Exhibit 7.17** (balance sheet), and **Exhibit 7.18** (statement of cash flows). **Exhibit 7.19** presents financial statement ratios for Bullseye for its fiscal years ended December 31, 2011 and 2012.

EXHIBIT 7.16
Bullseye Corporation
Comparative Income Statement
 (amounts in millions of US\$)
 (Problem 25)

	For the Year Ended December 31		
	2013	2012	2011
Sales Revenue	\$61,471	\$57,878	\$51,271
Other Revenues	<u>1,918</u>	<u>1,637</u>	<u>1,376</u>
Total Revenues	<u>63,389</u>	<u>59,515</u>	<u>52,647</u>
Less Expenses:			
Cost of Goods Sold	41,895	39,399	34,927
Selling and Administrative	16,200	15,022	13,370
Interest	<u>669</u>	<u>597</u>	<u>490</u>
Total	<u>58,764</u>	<u>55,018</u>	<u>48,787</u>
Income Before Income Taxes	4,625	4,497	3,860
Income Tax Expense	<u>1,776</u>	<u>1,710</u>	<u>1,452</u>
Net Income	<u>\$ 2,849</u>	<u>\$ 2,787</u>	<u>\$ 2,408</u>

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EXHIBIT 7.17
Bullseye Corporation
Comparative Balance Sheet
 (amounts in millions of US\$)
 (Problem 25)

	December 31			
	2013	2012	2011	2010
ASSETS				
Cash	\$ 2,450	\$ 813	\$ 1,648	\$ 2,245
Accounts Receivable (net)	8,054	6,194	5,666	5,069
Inventories	6,780	6,254	5,838	5,384
Prepayments	<u>1,622</u>	<u>1,445</u>	<u>1,253</u>	<u>1,224</u>
Total Current Assets	<u>\$18,906</u>	<u>\$14,706</u>	<u>\$14,405</u>	<u>\$13,922</u>
Property, Plant, and Equipment (net)	25,908	22,681	20,501	18,042
Other Noncurrent Assets	<u>1,559</u>	<u>1,212</u>	<u>1,552</u>	<u>1,511</u>
Total Assets	<u>\$46,373</u>	<u>\$38,599</u>	<u>\$36,458</u>	<u>\$33,475</u>
LIABILITIES AND SHAREHOLDERS' EQUITY				
Accounts Payable	\$ 6,721	\$ 6,575	\$ 6,268	\$ 5,779
Current Portion of Long-Term Debt	1,964	1,362	753	504
Other Current Liabilities	<u>3,097</u>	<u>3,180</u>	<u>2,567</u>	<u>1,937</u>
Total Current Liabilities	<u>\$11,782</u>	<u>\$11,117</u>	<u>\$ 9,588</u>	<u>\$ 8,220</u>
Long-Term Debt	16,939	9,925	10,582	10,216
Other Noncurrent Liabilities	<u>2,345</u>	<u>1,924</u>	<u>2,083</u>	<u>2,010</u>
Total Liabilities	<u>\$31,066</u>	<u>\$22,966</u>	<u>\$22,253</u>	<u>\$20,446</u>
Common Stock (\$0.10 par value)	\$ 68	\$ 72	\$ 73	\$ 74
Additional Paid-In Capital	2,656	2,387	2,121	1,810
Retained Earnings	12,761	13,417	12,013	11,148
Accumulated Other Comprehensive Income	<u>(178)</u>	<u>(243)</u>	<u>(2)</u>	<u>(3)</u>
Total Shareholders' Equity	<u>\$15,307</u>	<u>\$15,633</u>	<u>\$14,205</u>	<u>\$13,029</u>
Total Liabilities and Shareholders' Equity	<u>\$46,373</u>	<u>\$38,599</u>	<u>\$36,458</u>	<u>\$33,475</u>

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EXHIBIT 7.18

Bullseye Corporation
Comparative Statement of Cash Flows
 (amounts in millions of US\$)
 (Problem 25)

	For the Year Ended December 31		
	2013	2012	2011
OPERATIONS			
Net Income	\$ 2,849	\$ 2,787	\$ 2,408
Additions and Subtractions:			
Depreciation Expense	1,659	1,496	1,409
Other Addbacks and Subtractions	485	296	474
(Increase) Decrease in Accounts Receivable	(602)	(226)	(244)
(Increase) Decrease in Inventories	(525)	(431)	(454)
(Increase) Decrease in Prepayments	(38)	(25)	(52)
Increase (Decrease) in Accounts Payable	111	435	489
Increase (Decrease) in Other Current Liabilities	186	530	421
Cash Flow from Operations	<u>\$ 4,125</u>	<u>\$ 4,862</u>	<u>\$ 4,451</u>
INVESTING			
Acquisitions of Property, Plant, and Equipment	\$ (4,369)	\$ (3,928)	\$ (3,388)
Other Investing Transactions	<u>(1,826)</u>	<u>(765)</u>	<u>(761)</u>
Cash Flow from Investing	<u>\$ (6,195)</u>	<u>\$ (4,693)</u>	<u>\$ (4,149)</u>
FINANCING			
Increase (Decrease) in Short-Term Borrowing	\$ 500	\$ —	\$ —
Increase in Long-Term Borrowing	7,617	1,256	913
Issue of Common Stock	210	181	231
Decrease in Long-Term Borrowing	(1,326)	(1,155)	(527)
Acquisition of Common Stock	(2,808)	(901)	(1,197)
Dividends	(442)	(380)	(318)
Other Financing Transactions	<u>(44)</u>	<u>(5)</u>	<u>(1)</u>
Cash Flow from Financing	<u>\$ 3,707</u>	<u>\$ (1,004)</u>	<u>\$ (899)</u>
Net Change in Cash	\$ 1,637	\$ (835)	\$ (597)
Cash, Beginning of Year	813	1,648	2,245
Cash, End of Year	<u>\$ 2,450</u>	<u>\$ 813</u>	<u>\$ 1,648</u>

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- Compute the amounts of the ratios listed in **Exhibit 7.19** for the fiscal year ended December 31, 2013.
 - What are the likely reasons for the changes in Bullseye's rate of return on assets during the three-year period? Analyze the financial ratios to the maximum depth possible.
 - What are the likely reasons for the changes in Bullseye's rate of return on equity during the three-year period?
 - How has the short-term liquidity risk of Bullseye changed during the three-year period?
 - How has the long-term liquidity risk of Bullseye changed during the three-year period?
- 26. Profitability and risk analysis in a cross-section setting.** This problem compares the profitability and risk ratios of three leading discount chains: Cartoo, Taggle, and Wilmet. Cartoo is headquartered in Spain, and Taggle and Wilmet are headquartered in the United States. **Exhibits 7.20** and **7.21** present profitability ratios for Cartoo, Taggle, and Wilmet for fiscal years 2011, 2012, and 2013. **Exhibit 7.22** presents risk ratios for the three firms. **Exhibit 7.23** presents selected other data for these firms. All amounts are expressed in U.S. dollars to permit comparability across the firms. The first item in **Exhibit 7.23** shows both the increase in total sales and, in brackets, the increase in sales of stores that have been open for at least two full years (same store sales). The increase in total sales equals the sum of increases in same store sales and increases in sales due to opening new stores and acquiring new stores through corporate acquisitions. Study these financial ratios and respond to the following questions:

EXHIBIT 7.19**Bullseye Corporation
Financial Ratio Analysis
(Problem 25)**

For Fiscal Year:	2012	2011
Return on Assets	7.4%	6.9%
Profit Margin	4.8%	4.7%
Total Assets Turnover	1.5	1.5
Other Revenues/Sales	2.8%	2.7%
Cost of Goods Sold/Sales	68.1%	68.1%
Selling and Administrative Expenses/Sales	25.9%	26.1%
Interest Expense/Sales	1.0%	1.0%
Income Tax Expense/Sales	2.3%	2.9%
Accounts Receivable Turnover Ratio	9.8	9.6
Inventory Turnover Ratio	6.5	6.2
Fixed-Assets Turnover Ratio	2.7	2.7
Return on Equity	18.7%	17.7%
Financial Leverage Ratio	2.5	2.6
Current Ratio	1.3	1.5
Quick Ratio	0.6	0.8
Accounts Payable Turnover Ratio	6.2	5.9
Cash Flow from Operations to Current Liabilities Ratio	47.0%	50.0%
Liabilities to Assets Ratio	59.5%	61.0%
Long-Term Debt Ratio	25.7%	29.0%
Debt-Equity Ratio	63.5%	74.5%
Cash Flow from Operations to Total Liabilities Ratio	21.5%	20.8%
Interest Coverage Ratio	8.5	8.9

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- a. Wilmet and Taggle follow different strategies. Wilmet consistently has a higher rate of return on assets (ROA) than Taggle. Using information in the exhibits, suggest reasons for these differences in operating profitability.
- b. Wilmet and Cartoo follow similar strategies. Wilmet consistently outperforms Cartoo on ROA. Using information in the exhibits, suggest reasons for these differences in operating profitability.
- c. Do any of these firms appear unduly risky as of the end of 2013?
- 27. Calculating and interpreting profitability and risk ratios.** Gappo Group and Limito Brands maintain leading market positions in the specialty apparel retailing market. The products of Gappo (jeans, blouses, shirts) are more standardized than those of Limito. The products of Limito are more fashion-oriented and glitzy. **Exhibit 7.24** presents comparative income statements for fiscal year 2013, and **Exhibit 7.25** presents comparative balance sheets for Gappo and Limito at the ends of their 2012 and 2013 fiscal years. Cash flows from operations for fiscal year 2013 were \$2,081 million for Gappo and \$765 million for Limito. The income tax rate is 35%. On the basis of this information and appropriate financial statement ratios, which company is
- a. More profitable in fiscal year 2013?
- b. Less risky in terms of short-term liquidity in fiscal year 2013?
- c. Less risky in terms of long-term liquidity in fiscal year 2013?
- 28. Interpreting profitability and risk ratios.** Depkline plc is a pharmaceutical company headquartered in the United Kingdom. **Exhibit 7.26** presents financial statement ratios for Depkline for 2011, 2012, and 2013. Respond to each of the following questions.
- a. What are the likely reasons for the increase in the profit margin during the three-year period from 2011 to 2013?
- b. What are the likely reasons for the decrease in the total asset turnover from 0.88 in 2012 to 0.81 in 2013?

EXHIBIT 7.20

Cartoo, Taggle, and Wilmet
Cross-Section ROA Profitability Analysis
(Problem 26)

	ROA		
	2011	2012	2013
Cartoo	3.8%	3.4%	3.4%
Taggle	7.0%	7.2%	6.4%
Wilmet	8.5%	8.0%	7.8%

	Profit Margin			Total Assets Turnover		
	2011	2012	2013	2011	2012	2013
Cartoo	2.5%	2.4%	2.3%	1.5	1.4	1.5
Taggle	4.7%	4.8%	4.6%	1.5	1.5	1.4
Wilmet	3.7%	3.5%	3.4%	2.3	2.3	2.3

	Cartoo			Taggle			Wilmet		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
Sales	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Other Revenues	1.5	1.4	1.5	2.7	2.8	3.1	1.1	1.2	1.2
Cost of Goods Sold . . .	(80.4)	(80.6)	(80.7)	(68.1)	(68.1)	(68.2)	(76.9)	(76.6)	(76.5)
Advertising	(1.5)	(1.4)	(1.5)	(2.0)	(2.0)	(1.9)	(0.5)	(0.6)	(0.5)
Selling and Administrative	(15.2)	(15.1)	(15.1)	(24.1)	(23.9)	(24.4)	(17.7)	(18.1)	(18.4)
Income Taxes	(1.3)	(1.3)	(1.2)	(3.2)	(3.3)	(3.3)	(2.0)	(2.0)	(2.0)
Profit Margin	2.5%	2.4%	2.3%	4.7%	4.8%	4.6%	3.7%	3.5%	3.4%
Receivable Turnover . .	13.8	12.8	13.3	9.6	9.8	8.6	141.2	125.4	115.3
Inventory Turnover . . .	10.0	10.2	10.3	6.2	6.5	6.4	7.7	8.0	8.3
Fixed-Asset Turnover . .	3.8	3.9	3.9	2.7	2.7	2.5	3.9	3.8	3.7
Percentage of Total Assets:									
Receivables	11%	12%	10%	16%	16%	17%	2%	2%	2%
Inventory	12	11	12	16	16	15	22	22	20
Fixed Assets	37	37	37	56	59	56	59	60	61
Other	40	40	41	12	9	12	17	16	17
Total	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>	<u>100%</u>

EXHIBIT 7.21

**Cartoo, Taggle, and Wilmet
Cross-Section ROE Profitability Analysis
(Problem 26)**

	ROE		
	2011	2012	2013
Cartoo	23.6%	20.8%	18.6%
Taggle	17.7%	18.7%	18.4%
Wilmet	22.2%	21.2%	20.4%

	Profit Margin			Total Assets Turnover			Financial Leverage		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
Cartoo	2.5%	2.4%	2.3%	1.5	1.4	1.5	6.5	6.0	5.6
Taggle	4.7%	4.8%	4.6%	1.5	1.5	1.4	2.6	2.5	2.7
Wilmet	3.7%	3.5%	3.4%	2.3	2.3	2.3	2.6	2.6	2.6

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EXHIBIT 7.22

**Cartoo, Taggle, and Wilmet
Cross-Section Risk Analysis
(Problem 26)**

	Cartoo			Taggle			Wilmet		
	2011	2012	2013	2011	2012	2013	2011	2012	2013
Short-Term Liquidity									
Current Ratio	0.65	0.66	0.67	1.50	1.32	1.60	0.90	0.90	0.81
Quick Ratio	0.36	0.37	0.36	0.76	0.63	0.89	0.19	0.20	0.16
Cash Flow from Operations to Current Liabilities Ratio	19.4%	16.4%	19.4%	50.0%	47.0%	36.0%	38.3%	40.1%	36.9%
Days Receivable	26	29	27	38	37	42	3	3	3
Days Inventory	36	36	36	59	56	57	48	46	44
Days Payable	95	96	91	62	59	57	36	37	37
Long-Term Liquidity									
Liabilities to Assets Ratio	82.1%	80.6%	80.0%	61.0%	59.5%	67.0%	63.2%	60.8%	62.5%
Long-Term Debt Ratio	26.3%	25.9%	25.7%	29.0%	25.7%	36.5%	25.3%	23.4%	24.5%
Debt-Equity Ratio	146.8%	133.4%	128.6%	74.5%	63.5%	110.7%	68.7%	59.8%	65.5%
Cash Flow from Operations to Total Liabilities Ratio	11.2%	10.1%	11.8%	20.8%	21.5%	15.3%	21.0%	21.6%	20.0%
Interest Coverage Ratio	6.6	6.5	6.0	8.9	8.5	7.9	13.1	11.3	10.4

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EXHIBIT 7.23**Cartoo, Taggle, and Wilmet
Selected Other Financial Data
(Problem 26)**

	2011	2012	2013
Growth Rate in Sales [same store]			
Cartoo	1.0% [0.9%]	5.2% [1.2%]	6.8% [1.8%]
Taggle	12.2% [5.6%]	12.9% [4.8%]	6.3% [3.0%]
Wilmet	9.8% [3.4%]	11.7% [2.0%]	8.6% [1.6%]
Number of Stores			
Cartoo	7,003	7,358	7,906
Taggle	1,397	1,488	1,591
Wilmet	6,141	6,779	7,262
Square Footage (000s)			
Cartoo	156,216	164,354	181,899
Taggle	178,260	192,064	207,945
Wilmet	741,897	806,988	869,341
Sales per Square Foot			
Cartoo	\$582	\$587	\$618
Taggle	\$288	\$301	\$296
Wilmet	\$416	\$428	\$431
Sales per Store			
Cartoo	\$12,988,587	\$13,103,550	\$14,224,804
Taggle	\$36,700,787	\$38,896,505	\$38,636,706
Wilmet	\$50,308,582	\$50,891,282	\$51,573,396
Square Feet per Store			
Cartoo	22,307	22,337	23,008
Taggle	127,602	129,075	130,701
Wilmet	120,810	119,042	119,711
Inventory per Square Foot			
Cartoo	\$49	\$46	\$52
Taggle	\$33	\$33	\$33
Wilmet	\$43	\$42	\$40
Fixed Assets per Square Foot			
Cartoo	\$156	\$154	\$163
Taggle	\$115	\$118	\$125
Wilmet	\$115	\$117	\$122
Sales per Employee			
Cartoo	\$242,942	\$248,590	\$269,992
Taggle	\$178,458	\$193,443	\$197,592
Wilmet	\$201,925	\$213,617	\$209,818

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- c. What are the likely reasons for the decrease in the current ratio from 1.5 in 2012 to 1.3 in 2013?
- d. What are the likely reasons for the pattern of changes in the two cash flow ratios during the three-year period from 2012 to 2013?

29. Interpreting profitability and risk ratios. Scantania is a Swedish company that manufactures trucks and other heavy vehicles and provides financing for its customers' purchases. **Exhibit 7.27** presents financial statement ratios for Scantania for 2011, 2012, and 2013. The amount on the common-size income statement for Net Financing Income is the difference between interest earned on receivables from customers and interest expense on amounts borrowed to finance those receivables.

EXHIBIT 7.24

**Gappo Group and Limito Brands
Comparative Income Statements
(amounts in millions of US\$)
(Problem 27)**

For the Year Ended August 31, 2013:	Gappo Group	Limito Brands
Sales	\$15,763	\$10,134
Interest Revenue	117	146
Net Gains from Divestments of Retail Stores	—	230
Total Revenues	<u>\$15,880</u>	<u>\$10,510</u>
Expenses:		
Cost of Goods Sold	\$10,071	\$ 6,592
Selling and Administrative	4,377	2,640
Interest	26	149
Income Taxes	539	411
Total Expenses	<u>\$15,013</u>	<u>\$ 9,792</u>
Net Income	<u>\$ 867</u>	<u>\$ 718</u>

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EXHIBIT 7.25

**Gappo Group and Limito Brands
Comparative Balance Sheets
(amounts in millions of US\$)
(Problem 27)**

For the Year Ended August 31:	Gappo Group		Limito Brands	
	2013	2012	2013	2012
ASSETS				
Cash and Marketable Securities	\$1,939	\$2,644	\$1,018	\$ 500
Accounts Receivable	—	—	355	176
Inventories	1,575	1,796	1,251	1,770
Prepayments	572	589	295	325
Total Current Assets	<u>\$4,086</u>	<u>\$5,029</u>	<u>\$2,919</u>	<u>\$2,771</u>
Property, Plant, and Equipment (net)	3,267	3,197	1,862	1,862
Other Noncurrent Assets	485	318	2,656	2,460
Total Assets	<u>\$7,838</u>	<u>\$8,544</u>	<u>\$7,437</u>	<u>\$7,093</u>
LIABILITIES AND SHAREHOLDERS' EQUITY				
Accounts Payable	\$1,006	\$ 772	\$ 517	\$ 593
Current Portion of Long-Term Debt	138	325	7	8
Other Current Liabilities	1,289	1,175	850	1,108
Total Current Liabilities	<u>\$2,433</u>	<u>\$2,272</u>	<u>\$1,374</u>	<u>\$1,709</u>
Long-Term Debt	50	188	2,905	1,665
Other Noncurrent Liabilities	1,081	910	939	764
Total Liabilities	<u>\$3,564</u>	<u>\$3,370</u>	<u>\$5,218</u>	<u>\$4,138</u>
Common Stock	\$ 55	\$ 55	\$ 262	\$ 262
Additional Paid-In Capital	2,783	2,631	1,550	1,565
Retained Earnings	9,223	8,646	4,758	4,277
Accumulated Other Comprehensive Income	125	77	31	(17)
Treasury Stock	(7,912)	(6,235)	(4,382)	(3,132)
Total Shareholders' Equity	<u>\$4,274</u>	<u>\$5,174</u>	<u>\$2,219</u>	<u>\$2,955</u>
Total Liabilities and Shareholders' Equity	<u>\$7,838</u>	<u>\$8,544</u>	<u>\$7,437</u>	<u>\$7,093</u>

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EXHIBIT 7.26**Depkline plc
Financial Statement Ratios
(Problem 28)**

	2011	2012	2013
Growth Rate in Sales	7.6%	8.5%	6.3%
Profitability Ratios			
Return on Assets	18.8%	20.4%	18.6%
Profit Margin	21.6%	23.2%	23.0%
Total Assets Turnover Ratio	0.87	0.88	0.81
Return on Equity	72.5%	64.3%	55.8%
Financial Leverage Ratio	3.9	3.1	3.0
Accounts Receivable Turnover Ratio	5.2	5.3	5.1
Inventory Turnover Ratio	2.2	2.2	2.0
Fixed-Asset Turnover Ratio	3.4	3.4	3.1
Common-Size Income Statement			
Sales	100.0%	100.0%	100.0%
Investment Income	1.6	1.7	2.2
Other Revenues	1.7	1.2	1.9
Cost of Goods Sold	(22.0)	(21.6)	(23.4)
Selling and Administrative	(33.5)	(31.2)	(30.6)
Research and Development	(14.5)	(14.9)	(14.6)
Other Operating Expenses	(0.2)	(0.1)	(0.1)
Income Taxes	(9.5)	(10.4)	(10.2)
Interest Expense (net of tax effect)	(1.5)	(1.1)	(1.7)
Short-Term Liquidity Risk Ratios			
Current Ratio	1.4	1.5	1.3
Quick Ratio	1.0	1.0	0.9
Cash Flow from Operations to Current Liabilities	66.1%	52.5%	70.9%
Days Accounts Receivable	70	69	72
Days Inventory	167	168	186
Days Accounts Payable	120	105	100
Long-Term Liquidity Risk Ratios			
Liabilities to Assets Ratio	72.2%	62.2%	68.0%
Long-Term Debt Ratio	19.4%	18.7%	22.8%
Debt–Equity Ratio	69.6%	49.5%	71.3%
Cash Flow from Operations to Total Liabilities Ratio	32.6%	24.7%	33.7%
Interest Coverage Ratio	15.6	22.6	14.0

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- a. What are the likely reasons for the increase in the profit margin during the three-year period from 2011 to 2013?
 - b. What are the likely reasons for the decreasing cost of goods sold to sales percentage combined with the increasing inventory turnover ratio during the three-year period?
 - c. What are the likely reasons for the increase in the fixed-asset turnover between 2012 and 2013?
 - d. The total assets turnover remained at 0.85 between 2011 and 2012, yet the accounts receivable, inventory, and fixed-asset turnovers increased. What is the likely explanation for the stable total assets turnover?
 - e. What are the likely explanations for the increase in the two cash flow ratios between 2011 and 2012?
 - f. What are the likely reasons for the decrease in the current and quick ratios between 2012 and 2013?
- 30. Detective analysis—identify company.** Effective financial statement analysis requires an understanding of a firm's economic characteristics. The relations among various financial statement items provide evidence of many of these economic characteristics. **Exhibit 7.28**

EXHIBIT 7.27

**Scantania AB
Financial Statement Ratios
(Problem 29)**

	2011	2012	2013
Growth Rate in Sales	11.5%	11.7%	19.4%
Profitability Ratios			
Return on Assets.	6.3%	7.1%	9.5%
Profit Margin	7.4%	8.4%	10.1%
Total Assets Turnover Ratio	0.85	0.85	0.94
Return on Equity.	20.7%	23.8%	33.6%
Financial Leverage Ratio	3.3	3.3	3.5
Accounts Receivable Turnover Ratio	1.97	2.03	2.16
Inventory Turnover Ratio	4.92	5.21	5.79
Fixed-Asset Turnover Ratio	2.51	2.65	3.02
Common-Size Income Statement			
Sales.	100.0%	100.0%	100.0%
Investment Income	1.2	1.0	0.5
Net Financing Income	1.6	1.4	1.3
Cost of Goods Sold	(75.5)	(73.9)	(73.2)
Selling and Administrative	(11.3)	(10.9)	(9.8)
Research and Development	(3.9)	(4.3)	(4.0)
Income Taxes	(3.7)	(4.1)	(4.2)
Interest Expense (net of tax effect)	(1.0)	(0.9)	(0.6)
Short-Term Liquidity Risk Ratios			
Current Ratio	1.2	1.2	1.0
Quick Ratio	0.8	0.9	0.7
Cash Flow from Operations to Current Liabilities.	35.1%	37.5%	37.7%
Days Accounts Receivable.	186	179	169
Days Inventory	74	70	63
Days Accounts Payable.	34	38	38
Long-Term Liquidity Risk Ratios			
Liabilities to Assets Ratios	69.7%	70.3%	72.9%
Long-Term Debt Ratio	24.7%	20.3%	21.7%
Debt-Equity Ratio	81.4%	68.6%	80.1%
Cash Flow from Operations to Total Liabilities Ratio	15.5%	19.1%	20.7%
Interest Coverage Ratio	8.8	11.0	18.2

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presents common-size condensed balance sheets and income statements for 12 firms in different industries. These common-size balance sheets and income statements express various items as a percentage of operating revenues (that is, the statement divides all amounts by operating revenues for the year). A dash for a particular financial statement item does not necessarily mean that the amount is zero. It merely indicates that the amount is not sufficiently large for the firm to disclose it. The 12 companies, the country of their headquarters, and a brief description of their activities are as follows.

- (1) Accor (France): World’s largest hotel group, operating hotels under the names of Sofitel, Novotel, Motel 6, and others. Accor has grown in recent years by acquiring established hotel chains.
- (2) Arbed-Acier (Luxembourg): Offers flat-rolled steel products, primarily to the European automobile industry.
- (3) Carrefour (France): Operates grocery supermarkets and hypermarkets in Europe, Latin America, and Asia.
- (4) Deutsche Telekom (Germany): Europe’s largest provider of wired and wireless telecommunication services. The telecommunications industry has experienced increased deregulation in recent years.

EXHIBIT 7.28
Data for Ratio Detective Exercise
(Problem 30)

	1	2	3	4	5	6	7	8	9	10	11	12
BALANCE SHEET AT END OF YEAR												
Cash and Marketable Securities	4.7%	16.4%	8.9%	8.4%	16.7%	7.4%	16.1%	21.3%	72.0%	8.3%	1.4%	338.8%
Receivables	8.5	15.9	16.5	27.6	35.9	17.7	81.1	29.6	24.0	10.5	5.9	533.4
Inventories	9.9	2.8	9.9	5.8	6.4	25.7	—	1.3	20.0	2.9	—	—
Property, Plant, and Equipment Cost	40.8	20.9	59.0	69.6	88.3	130.9	23.0	110.3	83.3	278.9	535.4	15.3
Accumulated Depreciation	(15.0)	(9.1)	(33.2)	(17.8)	(50.5)	(67.7)	(11.8)	(35.5)	(35.2)	(112.5)	(284.9)	(12.9)
Property, Plant, and Equipment, Net	25.8	11.8	25.8	51.8	37.8	63.2	11.2	74.8	48.1	166.4	250.5	2.4
Intercorporate Investments	4.0	14.3	3.0	0.6	18.8	10.3	1.3	10.7	7.7	22.4	16.9	41.9
Other Assets	15.0	10.9	11.7	3.6	7.1	1.9	63.5	42.1	69.1	56.3	5.4	61.9
Total Assets	67.9%	72.1%	75.8%	97.8%	122.7%	126.2%	173.2%	179.8%	240.9%	266.8%	280.1%	978.4%
Current Liabilities	37.3%	25.5%	29.7%	26.4%	42.7%	34.5%	106.0%	65.1%	48.3%	42.6%	51.3%	820.8%
Long-Term Debt	12.0	6.1	6.6	9.1	22.2	23.3	22.7	49.6	56.4	95.8	167.7	76.9
Other Noncurrent Liabilities	2.1	1.8	5.9	2.3	4.2	17.2	10.6	10.9	24.5	27.8	24.7	42.2
Shareholders' Equity	16.5	38.7	33.6	60.0	53.6	51.2	33.9	54.2	111.7	100.6	36.4	38.5
Total Liabilities and Shareholders' Equity	67.9%	72.1%	75.8%	97.8%	122.7%	126.2%	173.2%	179.8%	240.9%	266.8%	280.1%	978.4%
INCOME STATEMENT FOR YEAR												
Operating Revenues	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Other Revenues	1.1%	2.7%	1.0%	0.2%	0.7%	2.3%	1.9%	0.3%	13.8%	0.7%	—	—
Cost of Goods Sold	87.8	45.2	44.5	64.6	68.0	81.0	55.3	75.5	27.2	45.0	57.3	32.6
Depreciation and Amortization Expense	3.0	4.9	4.1	3.2	5.9	5.3	2.0	7.1	9.9	23.9	19.9	—
Selling and Administrative Expense	6.3	24.8	38.9	24.3	16.4	13.6	27.8	8.1	40.0	15.2	7.3	22.5
Interest Expense	1.4	0.4	2.0	1.3	0.4	3.5	1.9	3.0	5.2	8.6	8.6	35.4
Research and Development Expense	—	9.8	1.3	—	3.7	—	—	—	13.8	—	—	—
Income Tax Expense	1.3	5.8	3.1	2.4	2.5	0.3	5.9	3.7	4.4	3.9	2.8	2.2
All Other Items (net)	(0.8)	—	0.8	0.3	0.6	(2.1)	0.7	(1.1)	—	0.6	—	1.7
Total Expenses	99.0%	90.9%	94.7%	96.1%	97.5%	101.6%	93.7%	95.8%	100.5%	97.2%	95.9%	94.4%
Net Income	2.1%	11.8%	6.3%	4.1%	3.2%	0.7%	8.2%	4.5%	13.3%	3.5%	4.1%	5.6%

- (5) Fortis (Netherlands): Offers both insurance and banking services. Operating revenues include insurance premiums received, investment income, and interest revenue on loans. Operating expenses include amounts actually paid or amounts it expects to pay in the future on insurance coverage outstanding during the year.
- (6) Interpublic Group (United States): Creates advertising copy for clients. Purchases advertising time and space from various media and sells it to clients. Operating revenues represent the commission or fee earned by Interpublic for advertising copy created and media time and space sold. Operating expenses include compensation paid to employees. Interpublic acquired other marketing services firms in recent years.
- (7) Marks & Spencer (United Kingdom): Operates department stores in England and other retail stores in Europe and the United States. It offers its own credit card for customers' purchases.
- (8) Nestlé (Switzerland): World's largest food processor, offering prepared foods, coffees, milk-based products, and mineral waters.
- (9) Roche Holding (Switzerland): Creates, manufactures, and distributes a wide variety of prescription drugs.
- (10) Sun Microsystems (United States): Designs, manufactures, and sells engineering workstations and servers used to maintain integrated computer networks. Sun outsources the manufacture of many of its computer components.
- (11) Tokyo Electric Power (Japan): Provides electric power services, primarily to the Tokyo community. It maintains almost a monopoly position in its service area.
- (12) Toyota Motor (Japan): Manufactures automobiles and offers financing services to its customers.

Use whatever clues you can to match the companies in **Exhibit 7.28** with the companies and industries listed above.

- 31. Preparing pro forma financial statements** (requires **Appendix 7.1**). **Problem 25** presents financial statements for Bullseye Corporation for its fiscal years ending December 31, 2011, 2012, and 2013, as well as financial statement ratios.
- a. Prepare a set of pro forma financial statements for Bullseye Corporation for fiscal years 2014 through 2018 using the assumptions detailed below.
 - b. Describe actions that Bullseye might take to deal with the shortage of cash projected in part a.
 - c. What are the likely reasons for the projected changes in the return on equity?

INCOME STATEMENT ASSUMPTIONS

1. Sales grew 12.2% in 2011 and 12.9% in 2012, primarily as a result of increases in the number of new stores and increases in sales of stores open more than one year. Sales grew only 6.3% in 2013 because of recession conditions. Although Bullseye Corporation will continue to increase the number of stores, economic conditions and competition will likely constrain increases in sales. Thus, assume that sales will grow 9% each year between 2014 and 2018.
2. Other revenues, representing interest on outstanding accounts receivable, have been approximately 3% of sales during the last three years. Assume that other revenues will continue at this historical rate.
3. The cost of goods sold to sales percentage increased slightly from 66.1% in 2011 to 68.2% in 2013. Assume that the cost of goods sold to sales percentage will be 68.1% for 2014 to 2018.
4. The selling and administrative expense percentage has increased slightly from 26.1% of sales in 2011 to 26.2% of sales in 2013. Bullseye will realize economies of scale as its growth rate in sales increases to 9% annually. Assume that the selling and administrative expense to sales percentage will be 26.0% for 2014 to 2018.
5. Bullseye Corporation has borrowed using long-term debt to construct new stores. The average interest rate on interest-bearing debt was approximately 4.4% during 2013. Assume this interest rate for all borrowing outstanding (long-term debt, and current portion of long-term debt) for Bullseye Corporation will be 5% for 2014 to 2018. Compute interest expense on the average amount of interest-bearing debt outstanding each year.

6. Bullseye Corporation's average income tax rate as a percentage of income before income taxes has varied around 38% during the last three years. Assume an income tax rate of 38% of income before income taxes for 2014 to 2018.
7. Bullseye Corporation's dividends increased at an average annual rate of 17.9% between 2011 and 2013. Assume that dividends will grow 16% each year between 2014 and 2018.

BALANCE SHEET ASSUMPTIONS

8. Cash will be the amount necessary to equate total assets with total liabilities plus shareholders' equity.
9. Accounts receivable will increase at the growth rate in sales.
10. Inventory will increase at the growth rate in sales.
11. Prepayments relate to ongoing operating costs, such as rent and insurance. Assume that prepayments will grow at the growth rate in sales.
12. Property, plant, and equipment grew 12.4% annually during the most recent three years. The construction of new stores will require additional investments in property, plant, and equipment, but not at the growth rate experienced in recent years. Assume that property, plant, and equipment will grow 10% each year between 2014 and 2018.
13. Other assets changed by only a small amount during the last three years. Assume that other assets will remain the same amount for 2014 to 2018 as the amount at the end of 2013.
14. The accounts payable turnover ratio increased from 5.9 in 2011 to 6.4 during 2013. Assume that Bullseye Corporation will increase its accounts payable turnover to 6.5 times per year for 2014 to 2018.
15. The notes to Bullseye Corporation's financial statements indicate that current maturities of long-term debt on December 31 of each year are as follows: 2013, \$1,964 (amount already appears on the December 31, 2013, balance sheet); 2014, \$1,951; 2015, \$1,251; 2016, \$2,236; 2017, \$107; 2018, \$2,251.
16. Other current liabilities relate to ongoing operating activities and are expected to grow at the growth rate in sales.
17. Bullseye Corporation uses long-term debt to finance acquisitions of property, plant, and equipment. Assume that long-term debt will decrease by the amount of long-term debt reclassified as a current liability each year and then the remaining amount will increase at the growth rate in property, plant, and equipment. For example, the December 31, 2013, balance sheet of Bullseye Corporation shows the current portion of long-term debt to be \$1,964. Bullseye Corporation will repay this amount during 2014. During 2014, Bullseye will reclassify \$1,951 from long-term debt to current portion of long-term debt (see item 15 above). This will leave a preliminary balance in long-term debt of \$14,988 (= \$16,939 - \$1,951). Bullseye Corporation will increase this amount of long-term debt by the 10% growth rate in property, plant, and equipment. The projected amount for long-term debt on the December 31, 2014, balance sheet is \$16,487 (= \$14,988 × 1.1).
18. Other noncurrent liabilities include an amount related to retirement benefits and taxes due after more than one year. Assume that other noncurrent liabilities will increase at the growth rate in sales.
19. Assume that common stock and additional paid-in capital will not change.
20. Assume that accumulated other comprehensive income will grow at the growth rate in sales.

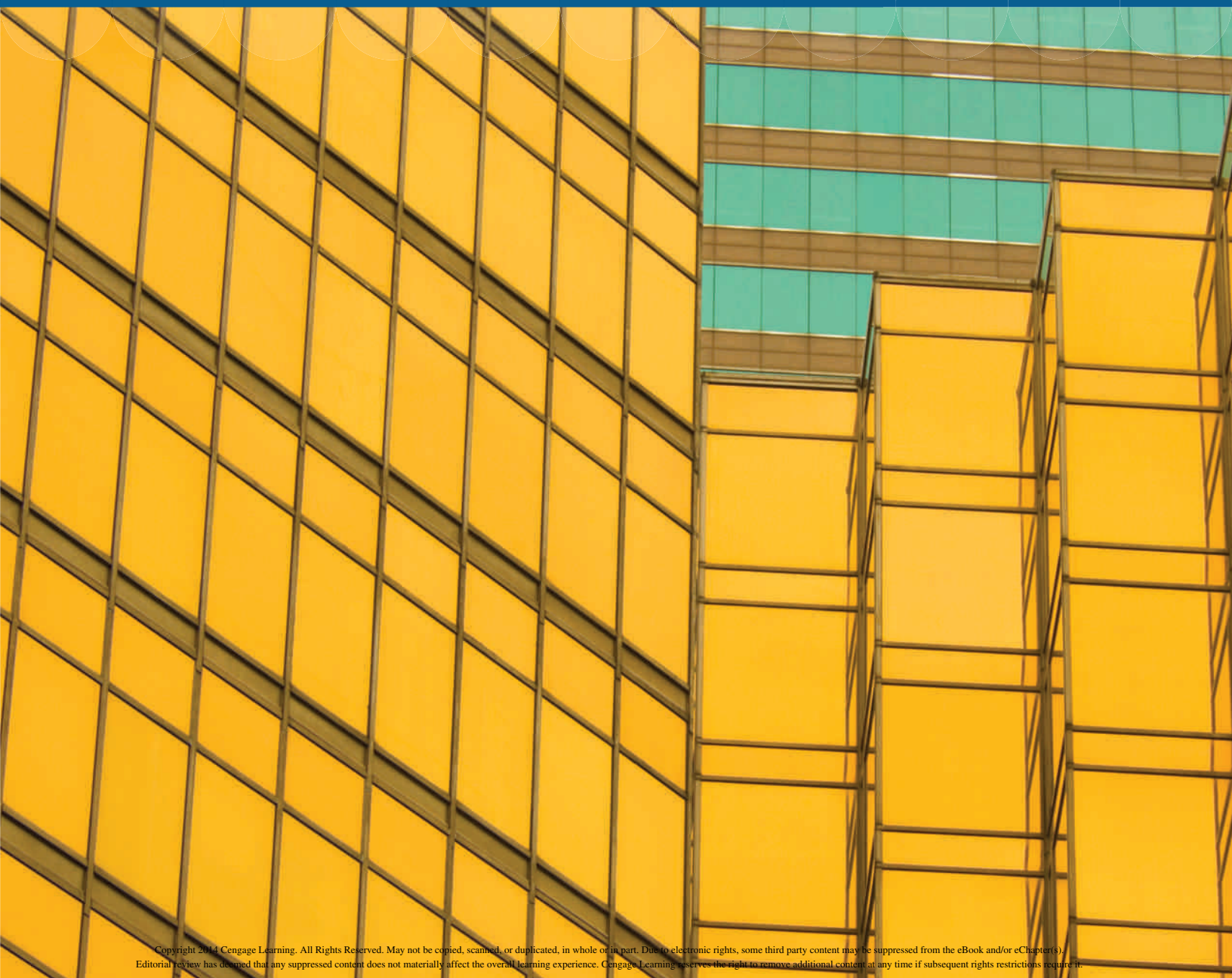
STATEMENT OF CASH FLOW ASSUMPTIONS

21. Assume that depreciation expense will increase at the growth rate in property, plant, and equipment.
22. Assume that changes in other noncurrent liabilities and in accumulated other comprehensive income on the balance sheet are operating activities.
23. Assume that the amount for Other Financing Transactions is zero for 2014 to 2018.

Measuring and Reporting Assets and Equities Using U.S. GAAP and IFRS

P a r t

3



Revenue Recognition, Receivables, and Advances from Customers

1. Understand and apply the criteria for recognizing revenue, including the timing of the recognition and the measurement of revenue.
2. Understand the relation between revenues (an income statement account) and both accounts receivable (an asset) and advances from customers (a liability).
3. Understand the measurement of accounts receivable, including the allowance for uncollectible accounts and the allowance for sales returns.

LEARNING OBJECTIVES

REVIEW AND APPLICATION OF INCOME RECOGNITION PRINCIPLES

Chapter 5 describes the accrual basis of accounting for income recognition. Under accrual accounting, revenue increases income and the related expenses decrease income. Authoritative guidance contains specific criteria for recognizing revenues and expenses. This chapter expands the criteria for **revenue recognition** and **revenue measurement** that Chapter 5 introduces. Revenue recognition refers to both whether and when an item is a revenue item. Revenue measurement refers to its amount. U.S. GAAP and IFRS have broadly similar criteria.¹ We begin with a general description of revenue recognition criteria and then present several examples that illustrate the timing and measurement of revenue recognition.

Revenue Recognition Both U.S. GAAP and IFRS provide conditions that arrangements with customers must meet in order for firms to recognize revenue. Although the specifics of these conditions differ (as **Appendix 8.1** discusses), the two general conceptual criteria for revenue recognition are as follows:

1. The seller must have substantially performed its obligations to the customer, for example, by transferring ownership of goods to the customer.²
2. The seller must have obtained an asset from the customer that it can reliably measure. If the asset is not cash, the seller must be reasonably certain of converting it into cash.

¹**Appendix 8.1** describes differences between U.S. GAAP and IFRS guidance for revenue recognition that exist as this book goes to press. The IASB and FASB are working on a joint project to converge the authoritative guidance for revenue recognition. **Appendix 8.2** describes revenue recognition proposals that are part of this project.

²As discussed in **Appendix 8.1**, U.S. GAAP refers to the selling entity having earned the revenues by having completed the earnings process. IFRS refers to transferring the risks and rewards of ownership to customers (in the case of revenues involving goods) and to having rendered services (in the case of revenues involving services).

Expense Recognition The firm recognizes expenses when it consumes assets (**expense recognition**). If an event or transaction leads to the recognition of revenue, firms match the consumption of assets (the expense), in time, with the revenue recognized. For example, the seller recognizes cost of goods sold when it recognizes revenue from selling those goods.

APPLICATION OF INCOME RECOGNITION PRINCIPLES

Example 1 Costco Wholesale Corporation (Costco) operates retail stores. To shop in a Costco store, customers must pay a nonrefundable, annual membership fee in advance, using either cash or an American Express card. A customer purchases an annual membership from Costco for \$50, a 20-pack of paper towels for \$12.85, and four new tires for \$440. The tire purchase includes mounting and aligning by a Costco tire technician, plus alignment and tire rotation services for three years afterward. The customer pays with an American Express card.³

When Should Costco Recognize the \$50 Membership Fee as Revenue? Costco can reliably measure the revenue from sales of membership fees, and it has an obligation to stand ready to provide shopping services at Costco stores for one year. Costco should recognize 1/12th of the \$50 membership fee, or \$4.17, each month during the annual membership period.

When Should Costco Recognize Revenue from Selling the Paper Towels? Because Costco has no further obligations related to the customer's purchase of the paper towels, it will recognize revenue at the time of sale.

When Should Costco Recognize Revenue from Selling the Tires Plus Mounting, Alignment, and Rotation Services? At the time of initial installation, Costco performs its obligation to provide tires and initial mounting and alignment services. Costco should recognize revenue for the portion of the \$440 selling price applicable to the sale of tires and installation services at the time of installation. Costco should delay recognition of revenue for the portion of the \$440 selling price applicable to the subsequent alignment and rotation services until it performs the required services over the next three years.

Example 2 Pol Roget Vineyards processes grapes into champagne, which it bottles, corks, and then ages in underground caverns. During the aging process, the winemakers hand-turn the bottles a quarter rotation every few months; also, at fixed intervals, the winemakers release yeast gases to prevent unwanted fermentation. Assume that Pol Roget contracts to sell champagne to a customer for €15 million. Under the terms of the contract, Pol Roget will store the champagne in its caverns and perform all necessary functions associated with the aging process. The selling price includes the costs of producing the champagne and providing services during the aging process. The customer pays Pol Roget €7.5 million at the beginning of the aging and storage process and agrees to pay the remainder upon delivery of the champagne.

When Should Pol Roget Recognize Revenue from Selling the Champagne? Pol Roget should recognize revenue when it delivers the champagne to the customer because Pol Roget has not performed its obligations until the customer takes possession of the champagne. In addition, Pol Roget cannot reliably measure the amount of revenue. This is because the quality of the champagne might turn out to be poor, in which case the customer might return the champagne (or never take delivery) and refuse to pay the remaining €7.5 million.

³When the customer pays with a credit card, the retailer promptly receives payment, typically a few percentage points less than the amount the customer promises to pay, from the credit card issuer, typically within a few days. From the retailer's perspective, this is like a cash sale at a small discount from the cash price. The credit card issuer bears the risk of nonpayment by the customer, who compensates the issuer by paying finance charges and other fees.

Example 3 Among other items, Apple, Inc., sells Mac computers to customers, who receive the physical computer (possibly with software installed). Customers also have access to post-delivery non-software services and the right to receive certain software upgrades if and when Apple develops them. Apple sells Macs for various prices, including one model for approximately \$2,500. Customers pay cash or with a credit card.

When Should Apple Recognize Revenue from Macs? Apple can reliably measure the total amount of revenue because customers pay cash, or Apple receives cash soon thereafter from the credit card company. Apple separates the total revenues (\$2,500 in this example) into the portion that represents obligations it has performed (delivery of the computer) and future obligations (providing non-software services and possible software upgrades). It recognizes revenue from the sale of the computer at the time of delivery. It recognizes revenue associated with future obligations over the estimated useful life of the computer. We revisit this example later in this chapter.

Example 4 Bombardier Incorporated is a Canadian manufacturer of aircraft and trains. In this industry, the manufacturing process usually exceeds one year. Assume that Bombardier recently signed a €2 billion contract to provide 25 new high-speed trains to a customer in the European Union. The customer paid a deposit of €250 million and will pay the remainder in equal installments over the next four years.

When Should Bombardier Recognize Revenue from This Contract? At the time Bombardier signs the contract and receives €250 million cash from the customer, it has not performed to fulfill any obligations, so it may not recognize revenue. Although application of the first revenue recognition condition might seem to imply that Bombardier should recognize the entire €2 billion as revenue when it delivers the trains, special revenue recognition policies apply to long-term contracts. If Bombardier can reliably estimate both the revenue from the contract and the costs to complete the contract, it will recognize revenue, and the costs associated with delivering on the contract, over the contract life. We discuss the revenue recognition guidance for long-term contracts like this one later in this chapter.

Example 5 Mitchells & Butlers Plc. is a leading operator of pubs and pub restaurants in the United Kingdom. Among other activities, it operates and franchises about 40 wine restaurants under the name All Bar One. Suppose that in contracting with a franchisee of an All Bar One wine restaurant, Mitchells & Butlers agrees to provide services, including site selection, décor design, marketing, advertising, and recruiting; and the franchisee agrees to pay Mitchells & Butlers £30,000. It is common in the industry to permit the franchisee to pay in equal installments over several years.

When Should Mitchells & Butlers Recognize Revenue from the Franchisee Contract? At the time it signs the contract with the franchisee, Mitchells & Butlers will likely not have performed all of the promised services. Even if it has done so, the amount of cash that Mitchells & Butlers will collect may not be reliably measurable because of uncertainty that the franchisee will pay the entire £30,000. Failure to meet the second revenue recognition criterion (which refers to reliable measurement of the asset received by the seller) will delay revenue recognition until the seller can resolve uncertainty about the amount it will collect.

These examples illustrate variations of two issues about the timing and measurement of revenues: whether the seller has performed, or substantially completed, all obligations, and whether the seller has received a reliably measurable asset. We list several topics here that this chapter discusses in more detail:

- Accounting for customers' promises to pay cash later. The seller records these promises as accounts receivable.
- Accounting for arrangements where collectibility is highly uncertain. Accounting requires that sellers recognize revenue as cash is received.
- Accounting for customers' cash payments to the seller before the seller delivers goods and services. The seller records these payments as advances from customers.
- Accounting for customers' rights to return goods, that is, sales returns.

- Accounting for contracts that contain several components, that is, arrangements with multiple deliverables.
- Accounting for long-term contracts, using the percentage-of-completion method and the completed contract method.

Accrual accounting separates the recognition of revenue from the receipt of cash. Revenue recognition criteria require that the seller must have (1) performed its obligations to the customer and (2) received assets that are cash or that it can convert to cash. The seller may recognize revenue before, or after, or at the point of cash collection. A buyer may exchange a promise of future payment for goods and services. The seller recognizes such promises as accounts receivable, classified as a current asset on the seller's balance sheet. (The same amount is an account payable on the buyer's balance sheet.) The fact that some customers will not pay the amounts they owe means that the balance sheet carrying value of Accounts Receivable should show the amount the seller expects to collect, not the amount the seller is owed. This chapter describes the accounting procedures for these estimated uncollectible amounts.

Sometimes the customer pays the seller cash before receiving the goods or services; examples include the €7.5 million cash payment in **Example 2** and the €250 million cash payment in **Example 4**. The seller has increased both its assets (its cash) and its obligations. The seller recognizes a liability, advances from customers, for products and services in the amount of cash received.⁴ When the seller has performed its obligations, it will recognize revenue and reduce its liability.

Some arrangements permit the customer to return goods. These arrangements could create so much uncertainty that the seller must delay revenue recognition until the returns period has expired. In other transactions the seller recognizes revenue at the time of the sale and accounts for expected **sales returns** at that time.⁵ Arrangements that permit the customer to return goods raise issues of both performance (has the seller performed all its obligations?) and asset measurement.

Firms sometimes sell bundles of products and services in a **multiple deliverable contract**. For example, Apple's sale of a Mac (**Example 3**) includes the computer plus non-software services plus possible software upgrades. In some cases, the seller separates the contract into components or elements for accounting purposes, analyzing each component separately for revenue recognition.⁶ The seller allocates the total contract revenue among the contract components and determines when it has performed each component. Applying U.S. GAAP, the seller assigns revenue to each component based on relative selling prices, meaning the price for which the seller would separately sell an individual deliverable component (the separate selling price). The allocated revenue for a component is the total contract price times the ratio of the separate selling price of that component to the sum of the separate selling prices of all of the components.

Special revenue-recognition guidance applies to long-term contracts such as the Bombardier train contract (**Example 4**). When the seller can reliably estimate both the costs of such contracts and the amounts it will collect, the seller will use the **percentage-of-completion method** to recognize the revenue and costs associated with the contract. One implementation of this method measures revenue for a period as a function of the cost incurred that period, relative to the total estimated contract cost. The percentage of the contract completed this period equals the percentage of total cost incurred this period and that percentage determines the revenue recognized. To illustrate, if in 2013 Bombardier incurred 20% of the total cost of supplying the 25 trains, it would recognize as 2013 revenue 20% of the total contract price, or €400 million

⁴If the seller performs its obligations within a year, Advances from Customers is a current liability. If the arrangement extends beyond one year, the seller apportions the cash advance from the customer into the portion it will discharge over the next year (current liability) and the portion it will discharge after one year (noncurrent liability).

⁵IFRS does not contain explicit guidance for the seller to determine whether it should delay revenue recognition until the returns period has ended. U.S. GAAP provides six conditions that the transaction must meet for the seller to recognize revenue at the time of sale if the customer has a right of return (FASB, *Statement of Financial Accounting Standards No. 48*, "Revenue Recognition When Right of Return Exists," 1981) (**Codification Topic 605**).

⁶U.S. GAAP provides criteria for the seller to use in deciding when it must separate a multiple deliverable contract into its elements for accounting purposes (*Emerging Issues Task Force Issue No. 08-1*, "Revenue Arrangements with Multiple Deliverables," 2010) (**Codification Topic 605**). (U.S. GAAP provides special rules for software.) IFRS refers to the need, in certain circumstances, to apply revenue recognition criteria to the separately identifiable components of a single transaction but does not provide criteria for making this separation. The mechanics of separating a contract into multiple elements are beyond the scope of this textbook.

(= $20\% \times \text{€2 billion}$). Bombardier would also recognize as 2013 expense 20% of total costs. Under this approach, Bombardier does not recognize income as it delivers the trains to the customer. Instead, it recognizes income as it incurs costs.

► PROBLEM 8.1 FOR SELF-STUDY

Revenue recognition at time of sale, or after sale, or before sale. Assume Sony Corporation (the seller) ships 5,000 42-inch LCD flat-screen televisions to Great Deal (the buyer). For each of the following independent contractual arrangements, apply the two general revenue recognition criteria to decide when Sony should recognize revenue.

- The contract requires that Great Deal pay Sony \$2,000 for each television within 30 days of receiving the televisions. Great Deal may return damaged or defective televisions to Sony for full refund at any time.
- The contract requires that Great Deal pay Sony \$2,000 per television within 30 days after receiving the televisions. Great Deal may return to Sony any of the televisions, for any reason, within six months of the receipt of the televisions.
- The contract requires that Great Deal sell the televisions, acting on behalf of Sony. Great Deal is responsible for storing and insuring the televisions, marketing them, and setting the selling price, within an agreed upon range of selling prices. The expected selling price is \$3,400 per television. In return for performing these services, Sony pays Great Deal \$400 per television. At any time it chooses, Great Deal will return unsold televisions to Sony.

INCOME RECOGNITION AT THE TIME OF SALE

Many transactions satisfy the criteria for revenue recognition at the time of sale (that is, at the time of delivery of goods and services). For example, some firms manufacture (or purchase) a product or create a service, identify a customer, deliver the product or service to the customer, and receive cash or some other asset at the time of delivery. To justify recognizing revenue at the time of sale, firms must account for the effects of certain events that occur *after* the time of sale, including:

- Some customers' not paying the amounts they owe. This event gives rise to the accounting issue of uncollectible customer accounts. This issue affects the measurement of accounts receivable.
- Some customers' returning products. This event gives rise to the accounting issue of estimating sales returns.
- Customers' receiving promised warranty services. This event gives rise to the accounting issue of warranty costs.

We consider the first two accounting issues in this chapter and defer the discussion of the accounting for warranties to **Chapter 9**.

ACCOUNTS RECEIVABLE

Accounts receivable (or **trade receivables**) is the amount on the seller's balance sheet owed by customers who have purchased goods and services on credit. Because the seller expects to collect cash within a reasonably short time, such as 30 days, an account receivable is usually a current asset. Receivables allowing customer payments more than one year from the balance sheet date are noncurrent assets.

Not all customers ultimately pay the amounts owed. An account receivable that the seller never collects is an **uncollectible account**. A firm does not want to sell products and services to customers who will fail to pay, but the cost of identifying such customers (assuming this is possible) often exceeds the benefits of doing so. For example, a retailer that wanted to ensure that *every* credit customer will pay would need to, at the time of sales,

- Gather information about the customer's credit worthiness, for example his or her credit history, and
- Assess the customer's likely ability and willingness to pay the amount owed.

Gathering and analyzing these data would take time, resulting in lost sales if some customers take their business elsewhere. Further, if the retailer wanted to avoid bad debts completely, it would most likely deny credit to many customers who would pay their bills, even though those customers could not pass a stringent credit check designed to eliminate *every* uncollectible credit sale. The seller would be better off accepting some uncollectible accounts to increase overall sales. As long as the amount collected from credit sales exceeds the cost of goods sold and the other costs of serving those customers, the retailer will be better off.

The fact that most firms find it optimal to bear the cost of some uncollectible receivables does not imply that a firm should grant credit indiscriminately or not engage in collection efforts. A cost-benefit analysis of credit policy should dictate a strategy that results in uncollectible accounts of an amount that is reasonably predictable before the firm makes any sales.

ALLOWANCE METHOD FOR UNCOLLECTIBLE ACCOUNTS

The two accounting issues for accounts receivable are (1) measurement of the amount on the balance sheet and (2) timing of recognition of the reduction in income caused by the uncollectibility of some accounts. Authoritative guidance requires that sellers report accounts receivable *net* of the estimated uncollectible amount. This is the amount the firm expects to collect from customers, which will be less than the amount that customers have agreed to pay. With regard to timing, the seller must recognize a reduction in income for estimated uncollectible accounts receivable when available information indicates accounts will not be collectible, not when the customer actually defaults at some later time. The following example illustrates these accounting requirements.

Example 6 Turf Maintenance Company started a lawn services business on January 1, 2013. It sends invoices to its customers for lawn maintenance services at the end of each month and expects payment within 30 days. During 2013, Turf Maintenance billed its customers \$2,000,000 for services rendered during the year. It made journal entries at the end of each month debiting Accounts Receivable at the gross amount billed and crediting Sales Revenue. The aggregate effect of these entries during 2013 is as follows:

Accounts Receivable, Gross	2,000,000	
Sales Revenue		2,000,000
To recognize credit sales for 2013.		

If a customer does not pay within 30 days, Turf Maintenance takes steps to collect, such as sending another bill and calling the customer. Both actions will yield some payments from customers, but some customer accounts will remain uncollected. As a business policy, Turf Maintenance treats accounts not collected in cash within six months of billing as uncollectible.

Recognizing revenue before the seller collects cash requires estimating the amount of uncollectible accounts with reasonable reliability.⁷ Authoritative guidance requires the **allowance method** for uncollectible accounts. The allowance method involves *estimating* the amount of uncollectible accounts receivable associated with credit sales. The firm recognizes this estimated amount, which reduces income, as an adjusting entry at the end of each accounting period. The credit is to a contra-asset account, **Allowance for Uncollectibles**. This contra asset account is partnered with the asset account **Accounts Receivable, Gross**. Accounts Receivable, Gross is the amount owed by customers. The amount of cash the firm expects to collect from customers (**Accounts Receivable, Net**) equals the asset account (Accounts Receivable, Gross) netted with its contra account (Allowance for Uncollectibles):

⁷The second criterion for revenue recognition states that the firm must have received cash or *some other asset that it can measure with reasonable reliability*. If the firm has received a promise of payment but cannot measure this promise with reasonable reliability, then the arrangement fails the second criterion, and neither U.S. GAAP nor IFRS would permit the firm to recognize revenue.

Accounts Receivable, Gross
 Less: Allowance for Uncollectibles
 = Accounts Receivable, Net

Most firms show the reduction in income as Bad Debt Expense, which they include among general or administrative or marketing expenses.⁸

We next illustrate the accounting procedures of the allowance method, followed by a discussion of how management estimates uncollectible accounts.

Assume Turf Maintenance estimates that it will not collect 2% of total credit sales in a given month. At the end of each month, it makes an adjusting entry debiting Bad Debt Expense and crediting Allowance for Uncollectibles. The aggregate effect of these entries during 2013 is as follows:

Bad Debt Expense	40,000	
Allowance for Uncollectibles		40,000
To provide for estimated uncollectible accounts relating to 2013 credit sales (\$40,000 = 2% × \$2,000,000).		

Bad Debt Expense is also called the **Provision for Bad Debts** and the **Provision for Uncollectible Accounts**.⁹ Recognizing bad debt expense of \$40,000 records the amount Turf Maintenance does not expect to collect in cash as a reduction of 2013 income. Turf Maintenance is not writing off specific customers' accounts as uncollectible. Rather, it is measuring accounts receivable at the amount it expects to collect. It does not yet know which accounts it will need to write off because they have not yet proved to be uncollectible.

The Allowance for Uncollectibles is a contra-asset account, introduced in **Chapter 2**, which appears as a subtraction among the assets on a firm's balance sheet. A contra-asset account typically has a credit balance, which, netted against the debit balance in the asset account, reduces asset totals. A credit to the Allowance for Uncollectibles contra account increases the amount subtracted from Accounts Receivable, Gross, reducing the debit balance in Accounts Receivable, Net.¹⁰

Accounts Receivable, Gross, is a control account. A **control account** (sometimes called a **controlling account**) aggregates a group of like accounts.¹¹ The firm keeps a separate account for each customer, including that customer's name. The sum of the balances in the individual customers' accounts is the balance in the control account, Accounts Receivable, Gross. When the firm receives cash from a customer, it debits Cash and credits the account receivable of that specific customer. The sum of the balances in the individual customers' accounts is the balance in the control account, Accounts Receivable, Gross. If Turf Maintenance's customers paid \$1,900,000 in cash during 2013, it would make the following journal entry with the following aggregated amounts:

Cash	1,900,000	
Accounts Receivable, Gross—specific accounts		1,900,000
To recognize cash payments by customers in 2013 on credit sales made in 2013.		

After this entry, Accounts Receivable, Gross, reflects the sum of the individual amounts owed by customers who have not yet paid, a total of \$100,000 (= \$2,000,000 – \$1,900,000). Accounts Receivable, Net, is \$60,000 (= \$100,000 balance in Accounts Receivable, Gross – \$40,000 balance in Allowance for Uncollectibles).

⁸Practice differs as to whether the debit in the journal entry is to an expense account (Bad Debt Expense) or to a revenue contra account. We use an expense account in this textbook. Recording the debit as a revenue contra account results in measuring net sales at the amount of cash the firm expects to collect.

⁹Provision in this context refers to an expense in U.S. GAAP, not a liability. *Provision* in IFRS refers to a liability whose timing or amount, or both, are uncertain.

¹⁰Conventional terminology often drops the word *Gross* from this account title. Accounts Receivable, Net, measures the amount the firm expects to collect.

¹¹Another example of a control account is Property, Plant, and Equipment. Most firms keep separate accounts for each group of machines or for each machine and for each building.

Turf Maintenance does not know, at the time it provides services and sends invoices, which customers will not pay. If it did, it would not sell to those customers on credit. To account for the estimated expense associated with its *portfolio* of individual accounts receivable, the firm creates a separate account, Allowance for Uncollectibles, that is contra to Accounts Receivable, Gross. The gross amount less the allowance yields Accounts Receivable, Net, which reflects the amount of cash the firm expects to collect.¹²

When a firm determines that a particular customer account is uncollectible, it removes that specific account, by debiting the Allowance for Uncollectibles and crediting Accounts Receivable, Gross.¹³ This process is called **writing off** the customer's account. Turf Maintenance deems uncollectible any customer account not paid after six months. Every accounting period, Turf Maintenance ascertains which accounts have remained uncollected for six months, and treats these customer accounts as uncollectible by writing them off. If, during 2013, Turf Maintenance identified accounts of specific customers totaling \$15,000 with unpaid balances for six months and wrote them off, the journal entry would be as follows:

Allowance for Uncollectibles	15,000	
Accounts Receivable—specific accounts		15,000
To write off customers' accounts totaling \$15,000 during 2013.		

The write-off of specific customers' accounts using the allowance method has no effect on the income statement. The income effect occurs when the firm records Bad Debt Expense. The write-off of specific customers' accounts also has no effect on Accounts Receivable, Net, because the write-off amount decreases Accounts Receivable, Gross, and its contra account, the Allowance for Uncollectibles, by exactly the same amount. To see this, note that after the write-off of uncollectible customers' accounts, the balance in Accounts Receivable, Gross, declined by \$15,000, as did the balance in the Allowance for Uncollectibles.

The allowance method results in reporting Accounts Receivable, Net, on the balance sheet at the amount the firm expects to collect in cash. At the end of 2013, Turf Maintenance expects to collect \$60,000, measured as follows:

Accounts Receivable, Gross (\$2,000,000 – \$1,900,000 – \$15,000).	\$ 85,000
Less Allowance for Uncollectibles (\$40,000 – \$15,000)	<u>(25,000)</u>
Accounts Receivable, Net	<u>\$ 60,000</u>

PROCEDURAL NOTE ON THE ALLOWANCE METHOD

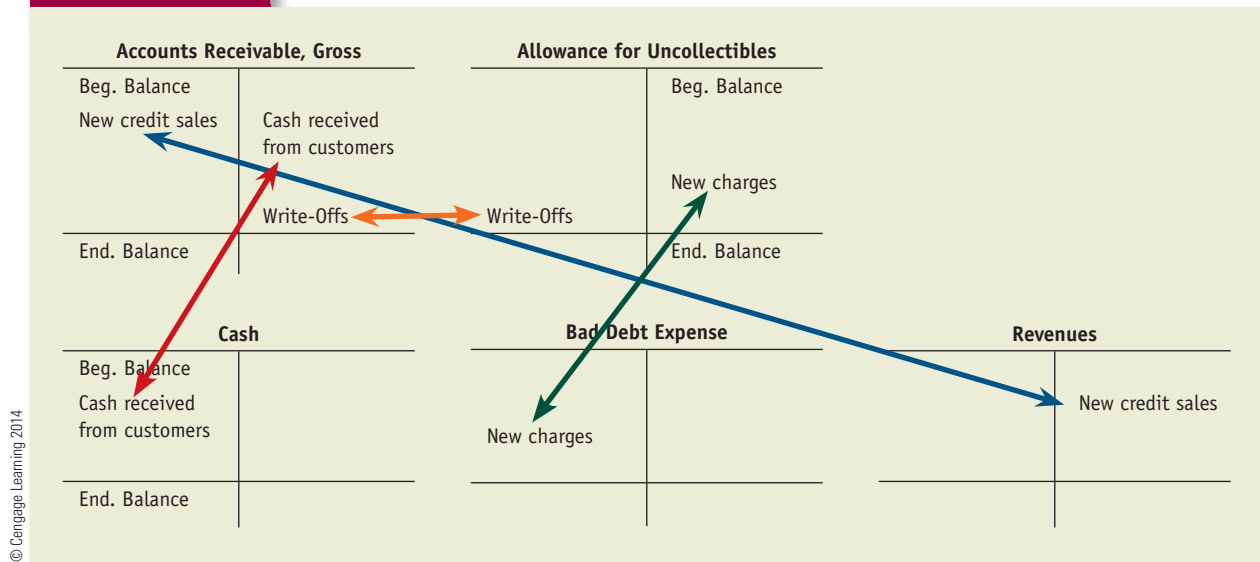
Firms typically write off specific customers' accounts *during* the reporting period as they identify specific customers whose accounts have become uncollectible. Firms typically recognize bad debt expense as an adjusting entry at the *end* of the period. As a result, before it makes this adjusting entry, the firm may have a debit balance in the Allowance for Uncollectibles. After the adjusting entry to recognize bad debt expense, this account always has a credit balance. Because adjusting entries precede balance sheet preparation, a debit balance in the Allowance for Uncollectibles never appears on the balance sheet.

Exhibit 8.1 summarizes the accounting procedures associated with credit sales. The arrows illustrate the four required journal entries:

1. **Blue arrow** shows the sale of goods and services on credit (a debit to Accounts Receivable, Gross, and a credit to Sales Revenue).
2. **Red arrow** shows cash received from customers (a debit to Cash and a credit to Accounts Receivable, Gross).

¹²U.S. GAAP and IFRS require that firms disclose sufficient information to allow the reader of financial statements to calculate Accounts Receivable, Gross, Allowance for Uncollectibles, and Accounts Receivable, Net.

¹³Some taxing authorities do not permit firms to use the allowance method to calculate the tax deduction for bad debts, but instead require that firms recognize bad debt expense only when they conclude an account is not collectible. This approach is often called the *direct write-off method*. It is not permitted by U.S. GAAP or IFRS.

EXHIBIT 8.1**Summary of Accounts Affected by Credit Sales**

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3. **Green arrow** shows the charge for the estimated amount of uncollectibles (a debit to Bad Debt Expense and a credit to Allowance for Uncollectibles).
4. **Orange arrow** shows the write-off of a particular customer account the firm has classified as uncollectible (a debit to the Allowance for Uncollectibles and a credit to Accounts Receivable, Gross).

ESTIMATING THE AMOUNT OF UNCOLLECTIBLE ACCOUNTS

In **Example 6** we assumed that 2% of credit sales would prove to be uncollectible. We now illustrate two approaches management might use to make this estimate: the **percentage-of-sales procedure** and the **aging-of-accounts-receivable procedure**. Over time, the two methods, correctly used, will give the same cumulative income and asset totals. U.S. GAAP and IFRS do not require firms to use one or the other, and some firms use both methods. For example, **Exhibit 8.2** reproduces a retailing firm's accounting policy for uncollectible accounts. This firm estimates uncollectibles using several factors including historical data based on aging of the accounts, past experience with write-offs, and forecasts of future credit losses, and uses a 151-day cutoff for declaring accounts delinquent, or an earlier date if circumstances, such as a customer bankruptcy, warrant.

PERCENTAGE-OF-SALES PROCEDURE

The *percentage-of-sales procedure* arises from the idea that uncollectible amounts will vary with the volume of credit sales. The firm estimates the appropriate percentage by studying its own

EXHIBIT 8.2**Accounting Policy Description of the Allowance for Doubtful Accounts**

Our allowance for doubtful accounts represents our best estimate of the losses inherent in our accounts receivable as of the balance sheet date. We evaluate the collectibility of our accounts receivable based on several factors, including historical trends of aging of accounts, write-off experience and expectations of future performance. We recognize finance charges on delinquent accounts until the account is written off. Delinquent accounts are written off when they are determined to be uncollectible, usually after the passage of 151 days without receiving a full scheduled monthly payment. Accounts are written off sooner in the event of customer bankruptcy or other circumstances that make further collection unlikely.

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experience or by inquiring into the experience of similar firms. After the firm estimates the amount of uncollectible accounts associated with the credit sales of each period, it makes an adjusting entry to debit Bad Debt Expense and credit Allowance for Uncollectibles. **Example 6** uses this approach.

AGING-OF-ACCOUNTS-RECEIVABLE PROCEDURE

The aging-of-accounts-receivable procedure involves two steps:

1. Estimating the amount that the firm does not expect to collect from existing accounts receivable, and
2. Adjusting the balance in the Allowance for Uncollectibles so that the balance in this account, when subtracted from Accounts Receivable, Gross, reflects the amount of cash the firm expects to collect.

Estimating the amount owed by customers that the firm does not expect to collect relies on information about the ages of accounts receivable (the number of days they have been uncollected). **Exhibit 8.3** illustrates a possible classification of individual accounts receivable by age; a firm estimates these amounts from experience. To illustrate the aging method, assume that the 2013 year-end balance in Accounts Receivable, Gross, for Turf Maintenance is \$85,000 (= \$2,000,000 from 2013 sales on account – \$1,900,000 of cash collections – \$15,000 of accounts written off as uncollectible during 2013). **Exhibit 8.3** presents an aging of these accounts receivable and shows that the estimated uncollectible amount is \$24,200.

The amount debited to bad debt expense and credited to the allowance is the amount required to adjust the balance to the amount of uncollectibles estimated by the aging analysis. Before aging the accounts, the Allowance for Uncollectibles has a *debit* balance of \$15,000 from writing off specific customers' accounts. Turf Maintenance would record the following adjusting entry at the end of 2013 to obtain a credit balance in the Allowance for Uncollectibles of \$24,200:

Bad Debt Expense	39,200	
Allowance for Uncollectibles		39,200
To adjust the balance in the Allowance for Uncollectibles to \$24,200 (= -\$15,000 + \$39,200).		

COMPARING PERCENTAGE-OF-SALES AND AGING PROCEDURES

Exhibit 8.4 summarizes the differences between the percentage-of-sales procedure and the aging-of-accounts procedure. The amount *estimated* by the firm appears in red, and the amount *calculated* (plugged) based on that estimate appears in blue. Under the percentage-of-sales procedure, the firm estimates and recognizes its bad debt expense; the offsetting credit increases the balance in the Allowance for Uncollectibles. Under the aging procedure, the firm estimates the

EXHIBIT 8.3

Illustration of Aging Accounts Receivable

Classification of Accounts	Amount	Estimated Uncollectible Percentage	Estimated Uncollectible Amounts
Not yet due	\$35,000	8.0%	\$ 2,800
1–30 days past due	18,000	20.0	3,600
31–60 days past due	15,000	40.0	6,000
61–180 days past due	13,000	60.0	7,800
More than 180 days past due	4,000	100.0	4,000
	<u>\$85,000</u>		<u>\$24,200</u>

EXHIBIT 8.4**Comparison of Methods for Estimating the Provision for Bad Debts**

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Percentage-of-Sales Method Allowance for Uncollectibles		Aging-of-Accounts Method Allowance for Uncollectibles	
	Beg. Balance	Beg. Balance	
	New provision (estimated)	New provision (plug)	
Write-Offs		Write-Offs	
	End. Balance (plug)		End. Balance (estimated)

ending balance in the Allowance for Uncollectibles account and makes a credit entry to bring the balance to this amount; the offsetting debit is to Bad Debt Expense. If the percentage used under the percentage-of-sales method reasonably reflects collection experience, the balance in the allowance account should be approximately the same at the end of each period under both procedures.

Applying the percentage-of-sales method, the firm estimates Bad Debt Expense, and uses this expense, the beginning balance in the Allowance for Uncollectibles, and the amount of write-offs to calculate the ending balance in the Allowance for Uncollectibles. Applying the aging-of-accounts method, the firm estimates the Allowance for Uncollectibles at the end of the year (the ending balance in this account), and uses this ending balance, the beginning balance and the amount of write-offs to calculate Bad Debt Expense for the period.

DEALING WITH CHANGES IN ESTIMATES OF UNCOLLECTIBLE ACCOUNTS

Changes in economic conditions, in credit-granting policies, in collection efforts, and other factors cause differences between estimated and actual uncollectible amounts. These differences necessitate revising the estimates every accounting period to reflect up-to-date information. Both U.S. GAAP and IFRS require firms to reflect these changes in estimates prospectively. That is, firms make no retroactive adjustment to the income statements and balance sheets of previous periods to reflect differences between estimated and actual uncollectible accounts. Rather, the firm adjusts the balance in the Allowance for Uncollectibles going forward.

The prospective application of changes in estimates is based on the view that estimates are an essential component of accrual accounting. If firms make conscientious estimates, adjustments for differences between estimated outcomes and actual outcomes will be recurring and small, absent a sudden and substantial change in economic conditions. Retroactive adjustment of previously reported amounts because of differences between estimates and outcomes would lead to continual restatements of prior financial statements, likely confusing users of those financial statements and undermining their credibility.

Examples 7, 8, and 9 illustrate the accounting for uncollectible accounts. In these examples, we compute the ending balance of the Allowance for Uncollectibles using the aging-of-accounts method. Next, we derive the Bad Debt Expense implied by the ending balance and compare this Bad Debt Expense to the amount derived from the percentage-of-sales method.

Example 7 At the start of 2013, Coral Designs's Allowance for Uncollectibles balance is €120,000. During 2013, Coral Designs's credit sales were €5,000,000; of this amount, it estimates 2% will be uncollectible. During 2013, Coral Designs wrote off €60,000 of accounts receivable. At the end of 2013, Coral Designs estimates, based on an aging of accounts, that the ending balance in the Allowance for Uncollectibles should be €130,000. A T-account representation of this information appears below:

Allowance for Uncollectibles			
		120,000	Beg. Bal.
Write-Offs	60,000		
		?	Bad Debt Expense
		130,000	End. Bal.

Under the aging-of-accounts method, Coral Designs solves for Bad Debt Expense: $€120,000 - €60,000 + \text{Bad Debt Expense} = €130,000$. The expense is €70,000:

Bad Debt Expense	70,000	
Allowance for Uncollectibles		70,000
To record the amount of Bad Debt Expense that ensures the ending balance in the Allowance for Uncollectibles is €130,000.		

Under the percentage-of-sales method, Bad Debt Expense would be €100,000 ($= 2\% \times €5,000,000$), and the ending balance in the Allowance for Uncollectibles would be €160,000, or €30,000 more than the aging-of-accounts method suggests.

Example 8 Assume the same information as in **Example 7** except that management estimates the ending balance in the Allowance for Uncollectibles is €200,000. A T-account representation of this information appears below:

Allowance for Uncollectibles			
		120,000	Beg. Bal.
Write-Offs	60,000		
		?	Bad Debt Expense
		200,000	End. Bal.

Under the aging-of-accounts method, Coral Designs solves for Bad Debt Expense: $€120,000 - €60,000 + \text{Bad Debt Expense} = €200,000$. The expense is €140,000:

Bad Debt Expense	140,000	
Allowance for Uncollectibles		140,000
To record the amount of Bad Debt Expense that ensures the ending balance in the Allowance for Uncollectibles is €200,000.		

The Bad Debt Expense of €140,000 estimated under the aging-of-accounts method is €40,000 more than the amount the percentage-of-sales method would compute.

Example 9 Assume the same information as provided in **Example 7** except that management estimates the ending balance in the Allowance for Uncollectibles is €45,000. A T-account representation of this information follows:

Allowance for Uncollectibles			
		120,000	Beg. Bal.
Write-Offs	60,000		
		?	Bad Debt Expense
		45,000	End. Bal.

When we solve for the expense, we see that in order for the ending balance in the Allowance for Uncollectibles to be €45,000, Coral Designs must record a €15,000 *debit* to this account and an offsetting *credit* to Bad Debt Expense.

Allowance for Uncollectibles			
		120,000	Beg. Bal.
Write-Offs	60,000		
Bad Debt Expense	?		
		45,000	End. Bal.

Coral Designs would record the following journal entry:

Allowance for Uncollectibles	15,000	
Bad Debt Expense		15,000
To record the credit to Bad Debt Expense that ensures the ending balance in the Allowance for Uncollectibles is €45,000.		

Example 9 illustrates a setting in which current information indicates that previous estimates of uncollectible accounts were too large. Coral Designs will not recognize any bad debt expense for 2013 and, in addition, it will reverse €15,000 previously recognized as bad debt expense. Therefore, Coral Designs's total expenses (of which bad debt expense is a component) are €15,000 *less* in 2013, and its net assets at year-end are €15,000 larger.

SUMMARY OF ACCOUNTING FOR UNCOLLECTIBLE ACCOUNTS

The accounting for uncollectible accounts using the allowance method involves four steps:

(1) Sale of Goods on Credit		
Accounts Receivable, Gross	Selling Price	
Sales Revenue		Selling Price
(2) Collection of Cash from Customers		
Cash	Amount Collected	
Accounts Receivable, Gross		Amount Collected
(3) Estimate of Expected Uncollectible Accounts¹⁴		
Bad Debt Expense	Estimated Uncollectible Amount	
Allowance for Uncollectibles		Estimated Uncollectible Amount
(4) Write-Off of Uncollectible Amounts Using the Allowance Method¹⁵		
Allowance for Uncollectibles	Actual Uncollectible Amount	
Accounts Receivable, Gross		Actual Uncollectible Amount

ANALYZING ACCOUNTS RECEIVABLE

This section considers financial statement presentation of accounts receivable, common financial ratios involving accounts receivable, and transfers of accounts receivable in exchange for cash.

Financial Statement Presentation Accounts receivable appear on the balance sheet at the amount the firm expects to collect. This net amount is the gross amount of receivables less the amount in the Allowance for Uncollectibles. **Exhibit 1.1** shows Great Deal, Inc.'s balance sheets for the years ending February 27, 2013 (fiscal 2012) and February 28, 2012 (fiscal 2011), with ending balances in Receivables of \$2,020 million and \$1,868 million, respectively.

Exhibit 8.5 shows changes to Great Deal's Allowance for Doubtful Accounts (an alternative name for the Allowance for Uncollectibles) during fiscal years 2012 and 2011.

Using the information in Great Deal's balance sheet (**Exhibit 1.1**) and in **Exhibit 8.5**, we can calculate the ending balance in Accounts Receivable, Gross, as of February 27, 2013, and February 28, 2012:

¹⁴The percentage-of-sales method estimates Bad Debt Expense directly and the aging-of-accounts method estimates the ending balance in the Allowance for Uncollectibles directly. Firms revise their estimates every reporting period and apply the new estimates prospectively.

¹⁵A firm writes off a specific customer's account when it determines that the account is uncollectible.

EXHIBIT 8.5**Great Deal, Inc., Allowance for Doubtful Accounts
(amounts in millions of US\$)**

Column A	Column B	Column C	Column D	Column E
Description	Balance at Beginning of Period	Additions	Deductions	Balance at End of Period
		Charged to Costs and Expenses		
Allowance for doubtful accounts:				
Year ended:				
February 27, 2013	\$ 97	\$48	\$(44) ^a	\$101
February 28, 2012	\$114	\$(5)	\$(12) ^a	\$ 97

^aDeductions consist of write-offs of uncollectible accounts, net of recoveries.

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$$\begin{aligned}
 \text{February 27, 2013, Accounts Receivable, Gross} &= \text{Accounts Receivable, Net} \\
 &\quad + \text{Allowance for Uncollectibles} \\
 &= \$2,020 \text{ million} + \$101 \text{ million} \\
 &= \$2,121 \text{ million}
 \end{aligned}$$

$$\begin{aligned}
 \text{February 28, 2012, Accounts Receivable, Gross} &= \text{Accounts Receivable, Net} \\
 &\quad + \text{Allowance for Uncollectibles} \\
 &= \$1,868 \text{ million} + \$97 \text{ million} \\
 &= \$1,965 \text{ million}
 \end{aligned}$$

We can derive the adjusting entry Great Deal made in the year ended February 27, 2013, to record bad debt expense. **Exhibit 8.5** shows an addition to the Allowance for Doubtful Accounts of \$48 million; this amount is bad debt expense. The adjusting entry would be as follows:

Bad Debt Expense	48	
Allowance for Doubtful Accounts		48

Great Deal uses the account title Allowance for Doubtful Accounts instead of Allowance for Uncollectible Accounts.

Exhibit 8.5 shows deductions to the Allowance for Doubtful Accounts of \$44 million during fiscal 2012, reflecting write-offs of specific customer accounts:

Allowance for Doubtful Accounts	44	
Accounts Receivable, Gross		44

We can also analyze Great Deal's cash collections from all of its customers, both cash sales and credit sales where the customer has paid. From **Exhibit 1.2** Great Deal's revenues for fiscal 2012 are \$49,694 million. For simplicity, we assume that all sales are credit sales. The cash collected from credit customers reduces Accounts Receivable, Gross. We calculate this amount using a T-account showing beginning and ending balances in Accounts Receivable, Gross, and other transactions that affected this account:

Accounts Receivable, Gross					
Beg. Bal.	1,965				
New Credit Sales	49,694	44	Write-Off		
			Cash Collected from Credit Customers	49,494	
End. Bal.	2,121				

By assumption credit sales are \$49,694 million; we previously analyzed write-offs of \$44 million. We solve for the Cash Collected from Credit Customers as follows:

$$\begin{aligned} \text{Ending Balance} &= \text{Beginning Balance} + \text{New Credit Sales} \\ &\quad - \text{Write-Offs} - \text{Cash Collected from Credit Customers} \\ \$2,121 &= \$1,965 + \$49,694 - \$44 - \text{Cash Collected from Credit Customers} \end{aligned}$$

Cash Collected from Credit Customers in the year ended February 27, 2013, was \$49,494 million. You can also see that assumptions about the portion of total sales made on credit are not crucial to this analysis of how much cash Great Deal collected from its customers. The entries in the T-account illustrate that for every dollar of assumed cash sales, new credit sales assumed declines by one dollar and the amount of Cash Collected from Customers also declines by one dollar.

Financial Ratios Involving Accounts Receivable The financial statements contain information for analyzing the collectibility of accounts receivable and the adequacy of the expense for uncollectible accounts. Typical ratios used for this analysis include the **accounts receivable turnover ratio** and **days receivables outstanding**, both described in **Chapter 7**. Next, we describe the write-off percentage, which analyzes uncollectible accounts specifically. Using information in **Exhibit 1.1** and **Exhibit 8.5**, we can calculate the amount written off in fiscal 2012 compared to the average amount owed by customers (average gross accounts receivable):

Year Ended	Accounts Written Off as Uncollectible	Accounts Receivable Net	Allowance for Doubtful Accounts	Accounts Receivable Gross	Write-Offs/Average Gross Accounts Receivable
February 27, 2013	\$44	\$2,020	\$101	\$2,121	1.08%
February 28, 2012	\$12	\$1,868	\$ 97	\$1,965	

In fiscal 2012, Great Deal's write-offs of uncollectible accounts receivable were 1.08% of gross accounts receivable.

Two ratios used to evaluate the allowance for uncollectibles are the ratio of Bad Debt Expense to Sales Revenue and the ratio of the Allowance for Uncollectibles to Accounts Receivable, Gross. **Exhibit 1.2** shows that Great Deal's sales revenues are \$49,694 million and \$45,015 million for the years ending February 27, 2013 and February 28, 2012, respectively. Combining this information with information in **Exhibit 8.5** we can calculate these ratios as follows:

Year Ended	Bad Debt Expense (Credit) (1)	Sales (2)	Bad Debt Expense (Credit) as a % of Sales (1)/(2) = (3)	Balance in Allowance Account (4)	Accounts Receivable, Gross (5)	Allowance Account as a % of Accounts Receivable (4)/(5) = (6)
February 27, 2013	\$48	\$49,694	0.097%	\$101	\$2,121	4.76%
February 28, 2012	\$(5)	\$45,015	(0.011%)	\$ 97	\$1,965	4.94%

The ratio of bad debt expense to sales was 0.097% in fiscal 2012. Because Great Deal credited bad debt expense in fiscal 2011, this ratio was (0.011%) in 2011. The allowance account as a percentage of gross accounts receivable declined between fiscal 2011 and fiscal 2012, from 4.94% to 4.76%.

Transfers of Accounts Receivable in Exchange for Cash A firm converts accounts receivable into cash by collecting cash from its customers or by transferring to others the receivables (the right to collect cash from customers) in exchange for cash. A firm that transfers its receivables in exchange for cash may show smaller (or no) accounts receivable, depending on the form of the transfer and the related accounting treatment. At least three forms of transfer are possible.

1. A firm may use its accounts receivable as collateral for a loan from a bank or other financial institution. The firm physically maintains control of the accounts receivable, collects cash from customers, and repays the loan. If the firm fails to repay the loan, the lender can claim the receivables. If the firm has used its accounts receivable as collateral for a loan, the firm will continue to show those receivables as an asset, and there will also be a loan payable liability. The firm should disclose the lending arrangement in its financial reports.
2. A firm may *factor* (sell) its accounts receivable to a bank or other financial institution in exchange for cash. In this case, the lender physically controls the receivables and collects cash from customers. Accounts receivable that the firm has factored do not appear on its balance sheet because the firm has sold them.
3. A firm may transfer the accounts receivable to a legally separate entity that issues debt securities to investors; the firm remits to investors the cash received from customers as those cash receipts occur. The firm may be obligated to pay the investors if the customers fail to make sufficient cash payments to pay the principal and interest on the debt securities. This arrangement is a **securitization**, a process that transforms an asset (accounts receivable) into debt securities held by investors.

While a detailed discussion of transfers of accounts receivable in exchange for cash is beyond the scope of this introductory book, we raise the issue here because of its importance in comparing accounts receivable across firms. In particular, if one firm transfers its receivables and a comparison firm does not, the accounts receivable balances and related ratios of the two firms will not be comparable, despite similarities between the two firms in product markets. **Chapter 12** discusses transfers of receivables in more detail.

► PROBLEM 8.2 FOR SELF-STUDY

Revenue recognition at time of sale. Prepare journal entries for each of the following hypothetical transactions and events during the year ending December 31, 2013. Scania is a large Swedish manufacturer of heavy trucks and buses, engines, and related equipment and services.

- a. February: Scania sells four truck engines for SEK20,000 per engine. The customer agrees to pay Scania within 60 days.
- b. March: Scania signs a contract with a customer for 50 transport containers, with a total selling price of SEK250,000. Scania expects to deliver the containers in June. The customer agrees to pay on delivery.
- c. April: The customer pays in full for the four truck engines in part a.
- d. May: Scania sells a truck to a customer for SEK725,000, which it delivers immediately. The customer pays Scania 20% of the price upon delivery and agrees to pay the remainder in 120 days.
- e. June: Scania delivers the containers (from part b), and the customer pays as promised.
- f. July: The customer in part d enters bankruptcy proceedings. Scania does not expect to collect any portion of the remaining receivable from this customer.
- g. December: Scania estimates that 2% of its credit sales of SEK70 billion during the year will be uncollectible.

SALES RETURNS: AN APPLICATION OF THE ALLOWANCE METHOD

We introduced the allowance method in the context of uncollectible accounts receivable. More generally, accountants use the allowance method when, at the time of sale, they can estimate with reasonable reliability the effects of events that will affect future cash flows, such as sales returns. A sales return occurs when a customer returns a product for a refund. When a customer has the right to return a product for a refund, and the firm can reasonably estimate the amount of returns at the time of sale, U.S. GAAP and IFRS require that the firm use the allowance method to estimate and recognize the effects of returns.¹⁶ Specifically, the selling firm debits a revenue contra account for expected returns to reduce current period revenues to the estimated amount that will *not* be refunded to customers who return sold items. By reducing current period revenues, the firm measures revenues based on the amount of cash it expects to collect from current period sales, including the effects of estimated returns. Both U.S. GAAP and IFRS forbid revenue recognition when customers have the right to return goods unless the firm can reasonably estimate the amount of returns and it uses an allowance method to incorporate those estimates into income computations. **Exhibit 8.6** shows a schedule for Great Deal, Inc., that is similar to **Exhibit 8.5**, except that it shows the activity in the Allowance for Sales Returns account.

At the start of fiscal 2012, the balance in Great Deal's Allowance for Sales Returns was \$18 million. This amount increased during the year by \$14 million. The journal entry to record this increase is

Sales Returns	14	
Allowance for Sales Returns		14

The Sales Returns account is a revenue contra account, accumulating subtractions from gross revenue. The debit to Sales Returns reduces Sales Revenue, Net, and therefore reduces income.¹⁷ The Allowance for Sales Returns account is also a contra account; it accumulates subtractions from Accounts Receivable, Gross. The balance in the Allowance for Sales Returns

EXHIBIT 8.6

Great Deal, Inc., Allowance for Sales Returns (amounts in millions of US\$)

Column A	Column B	Column C	Column D	Column E
Description	Balance at Beginning of Period	Additions		Balance at End of Period
		Charged to Costs and Expenses	Deductions	
Allowance for sales return, net:				
Year ended:				
February 3, 2013	\$18	\$14	\$15 ^a	\$17
January 28, 2012	\$16	\$11	\$ 9 ^a	\$18

^aDeductions consist of actual returns offset by the value of the merchandise returned and the sales commission reversed.

¹⁶Not all sales with a right of return qualify for revenue recognition. U.S. GAAP provides explicit criteria for a sale with a right of return to qualify for revenue recognition (FASB, *Statement of Financial Accounting Standards No. 48*, "Revenue Recognition When Right of Return Exists," 1981) (**Codification Topic 605**). IFRS does not provide explicit criteria. Determining whether a sale with a right of return qualifies for revenue recognition is beyond the scope of this book.

¹⁷The debit to Sales Returns increases the amount in that account, a contra to revenue. Subtracting the balance in Sales Returns from Sales Revenues reduces total revenues and net income.

is the firm's estimate of the receivables that it will cancel or the cash that it will pay to satisfy customers who return their merchandise. **Exhibit 8.6** shows that Great Deal's customer returns (including the effects of sales commissions) were \$15 in fiscal 2012. Thus, the ending balance in the Allowance for Sales Returns is \$17 (= \$18 + \$14 - \$15).

Sellers also use the allowance method to account for product warranties. A warranty promises the customer the right to repair or replacement if the purchased product is defective. The firm must be able to reasonably estimate expected warranty costs at the time of sale. If it cannot, it must delay revenue recognition until it can estimate the costs or learns their actual amount. We discuss the accounting for warranties in **Chapter 9**. More generally, variants of the allowance method appear in arrangements in which the selling firm recognizes revenue before it has resolved all uncertainty about future cash flows related to the sale.

INCOME RECOGNITION AFTER THE SALE

Some businesses provide substantial services after the time of sale. Other businesses face considerable uncertainty about cash collections. Both conditions introduce uncertainty that might preclude revenue recognition at the time of sale. The conditions relate to the two criteria for revenue recognition, repeated here:

- Criterion 1. The seller must have substantially performed its obligations to the customer.
- Criterion 2. The seller must have obtained an asset from the customer that it can reliably measure. If the asset is not cash, the seller must be reasonably certain of converting the asset into cash.

SUBSTANTIAL PERFORMANCE REMAINS

In **Examples 1–4** the seller receives cash from customers before it completes all, or substantially all, of its performance obligations. **Example 1** is Costco's receipt of \$50 for an annual membership; **Example 2** is Pol Roget's receipt of half the €15 million contract price for champagne; **Example 3** is Apple's receipt of \$2,500 before it supplies future non-software services and software upgrades; and **Example 4** is Bombardier's receipt of €250 million before it supplies 25 high-speed trains. Although the seller has received cash (criterion 2), it has not earned all of the revenues represented by the cash by providing goods and services (criterion 1). Instead, the seller has incurred an obligation to provide goods or services. The generic term for these liabilities is **deferred performance obligations**, and a common account title is **Advances from Customers**. Other common names for this account include **Deferred Revenues** and **Unearned Revenues**.¹⁸ Unlike other liabilities, such as accounts payable, which the firm typically settles by paying cash, the firm settles these performance obligations by delivering the promised goods or services. The firm recognizes revenue when it settles its obligation to the customer by performing as promised.

To illustrate the firm's accounting for cash received from customers before it has earned revenue by delivering goods or services, consider the sale of the \$50.00 annual membership. If Costco sold one membership one month before its reporting year's end, it would record the receipt of cash from the customer and the related performance obligation (to stand ready to provide access to shopping) as follows:

Cash	50.00	
Advances from Customers		50.00

Costco earns revenue by performing its obligations under the membership arrangement. This obligation entails allowing the membership-bearing customer to shop at any Costco store

¹⁸There is no standard terminology for this account, and some firms use names that are specific to their industries. For example, airlines commonly use the account title Air Traffic Liability. The account title *Deferred Revenues* sometimes confuses students who interpret it as an income statement account. We try to avoid using the word *revenues* in balance sheet account titles.

over the next 12 months. Costco recognizes as revenue \$4.17, or 1/12th of the \$50.00 fee, each month as it performs this obligation:

Advances from Customers	4.17	
Sales Revenue		4.17

After this journal entry, the Advances from Customers account has a balance of \$45.83 at the reporting period's year-end.

Apple's sale of a Mac computer follows similar procedures, with two complicating factors. First, the \$2,500 sales price includes three elements: (1) computer; (2) non-software services; and (3) software upgrades. Apple has earned the revenue from the computer when the customer takes delivery. It will earn the other revenue over the product's life. Apple will allocate the total sales revenue to the three elements of the sales arrangement, according to the relative selling prices of the elements. In this context selling price refers to the price for which the firm (or another firm selling a similar product or service) separately sells a deliverable component; in some case, the firm must estimate the selling price. The allocated revenue for a component is total revenue times the ratio of the separate selling price of that component to the sum of the separate selling prices of all of the components. For example, assume the following separate selling prices for the three components of this arrangement: computer \$2,200; non-software services \$300; software upgrades \$200. The sum of these separate selling prices is \$2,700. Therefore, Apple allocates the \$2,500 total revenue as follows (amounts are rounded to the nearest dollar):

- \$2,037 (= \$2,500 × [\$2,200/\$2,700]) to the computer,
- \$ 278 (= \$2,500 × [\$300/\$2,700]) to non-software services, and
- \$ 185 (= \$2,500 × [\$200/\$2,700]) to software upgrades
- \$2,500 (= \$2,037 + \$278 + \$185) total.

The second issue concerns the timing of revenue recognition for the separate components of the contract. Apple has performed its obligation to deliver a computer at the time of sale. Therefore, it will recognize \$2,037 of revenue when the customer takes delivery.¹⁹ The non-software services and the software upgrades are, at the time of sale, undelivered elements. Apple's footnote disclosures in its financial reports state that it recognizes revenue on undelivered elements on a straight-line basis over the device's estimated service life, ranging from 24 to 48 months. We will assume a service life of 48 months in this example. The following journal entries summarize Apple's accounting for the sale of one Mac computer. For simplicity, we assume the sale occurs on the first day of Apple's fiscal year.

At the Time of Sale

Cash	2,500	
Sales Revenue		2,037
Advances from Customers ²⁰		463

To record the sale of one Mac and related non-software services and software upgrades for \$2,500.

At the End of One Year

Advances from Customers	115.75	
Sales Revenue		115.75

At the end of the year, to recognize revenues associated with non-software services and software upgrades of \$115.75 (= \$463/48 months × 12 months).

¹⁹Apple will also record cost of goods sold, not considered in this example.

²⁰Apple uses the account title "Deferred Revenue."

▶ PROBLEM 8.3 FOR SELF-STUDY

Revenue recognition after sale when substantial performance remains. Prepare journal entries for each of the following hypothetical transactions and events affecting Scania during the fiscal year ended December 31, 2013.

- a. March: Scania signs a contract to deliver 50 transport containers for a total price of SEK250,000. The customer pays Scania the entire amount at the date both parties sign the contract. Scania expects to deliver the containers in June.
- b. May: Scania sells a truck to a customer for SEK725,000, which it delivers immediately. The customer pays Scania 20% at delivery and agrees to pay the rest in 60 days. The contract price includes a two-day training session that Scania will design and deliver in June, as well as customer support for three years following delivery of the truck. Separate selling prices are truck, SEK690,000; training session, SEK40,000; customer support, SEK50,000.
- c. June: Scania delivers the containers (part a) and the training session (part b).
- d. September: Scania and a customer promise to sign a contract in January 2014 for the delivery of 10 buses in exchange for SEK7 million. The customer agrees to pay Scania, in October, a deposit of SEK200,000.
- e. October: The customer in part d pays SEK200,000 to Scania.
- f. December: Scania recognizes eight months (May through December) of customer support provided in connection with the sale of the truck in part b.

SUBSTANTIAL UNCERTAINTY ABOUT CASH COLLECTIONS REMAINS

In some sales transactions the seller cannot reliably estimate the timing and amounts of cash that it will collect. An example is a franchise arrangement (**Example 5**) that obligates the franchisee to make substantial cash payments over an extended time period in exchange for goods and services that the seller typically provides long before it collects cash. The failure rate among franchises (and other small businesses) is high, and therefore the seller cannot reliably estimate the portion of the initial franchise fee that it will ultimately collect.

When substantial uncertainty exists at the time of sale regarding the amount or timing of cash collections, both U.S. GAAP and IFRS link revenue recognition to the receipt of cash. Two common accounting methods with this characteristic are the installment method and the cost recovery method.²¹ We describe these methods and the guidance that determines when a seller uses them.

Installment Method The **installment method** recognizes revenue as the seller collects cash from the customer. The seller applies the **gross margin percentage** on the transaction to calculate the portion of the total **gross margin** recognized in each accounting period. The gross margin equals sales revenue minus cost of goods sold. The gross margin percentage equals gross margin divided by sales revenue.

To illustrate, assume a customer agrees to pay £20,000 over the next three years in three installments of £7,500, £8,750, and £3,750.²² The retailer's cost of the item purchased is £14,000. Thus, the gross margin is £6,000 (= £20,000 – £14,000). The gross margin percentage is 30% (= £6,000/£20,000) of the total revenue. Immediately after the sale, the customer has physical possession of the inventory, and the seller has a receivable with substantial uncertainty of collection. At the time of sale, the seller recognizes an account receivable, credits inventory, and defers the gross margin on the sale until it collects cash.²³ In the example given, the journal entry at the time of sale is:

²¹U.S. GAAP describes these methods in paragraph 12 and related note 8 of Accounting Principles Board, *Opinion No. 10*, "Omnibus Opinion—1966," 1966 (**Codification Topic 605**). IFRS does not use these terms.

²²This example (and others in this chapter) ignores interest on the customer's delayed payments.

²³Deferred gross margin (or deferred gross profit) is not a liability because the seller has performed its obligation to the customer. Conceptually, deferred gross margin is a contra-asset account (FASB, *Statement of Financial Accounting Concepts No. 6*, "Elements of Financial Statements," 1985, par. 232–234); however, many firms display it among the current liabilities or between liabilities and shareholders' equity.

Accounts Receivable, Gross	20,000	
Inventory		14,000
Deferred Gross Margin		6,000

To credit the balance sheet Inventory account for inventory that the firm has sold, to recognize accounts receivable and to recognize the deferred gross margin.²⁴

The seller recognizes cash received as revenue. The gross margin percentage (30% in this example) times the cash received equals the gross margin recognized. Cost of goods sold is a plug figure (the amount required to make the journal entry balance). The journal entry to record the customer's first £7,500 installment payment, recognize revenue, and recognize cost of goods sold expense is

Cash	7,500	
Deferred Gross Margin	2,250	
Cost of Goods Sold (plug)	5,250	
Accounts Receivable, Gross		7,500
Sales Revenue		7,500

To record the first installment collection of £7,500, recognize revenue equal to cash received, reduce the Deferred Gross Margin account in an amount equal to the gross margin on the cash collected of £2,250 ($= 0.30 \times £7,500$), and recognize cost of goods sold (a plug figure). The contribution to income is £2,250 ($= £7,500$ revenue $- £5,250$ cost of goods sold).

The journal entry to record the second installment payment of £8,750 is

Cash	8,750	
Deferred Gross Margin	2,625	
Cost of Goods Sold (plug)	6,125	
Accounts Receivable, Gross		8,750
Sales Revenue		8,750

To record the second installment collection of £8,750, recognize revenue equal to cash received, recognize gross margin of £2,625 ($= 0.30 \times £8,750$), and recognize cost of goods sold (a plug figure). The contribution to income is £2,625 ($= £8,750$ revenue $- £6,125$ cost of goods sold).

The journal entry for the third installment payment of £3,750 is

Cash	3,750	
Deferred Gross Margin	1,125	
Cost of Goods Sold (plug)	2,625	
Accounts Receivable, Gross		3,750
Sales Revenue		3,750

To record the third installment collection of £3,750, recognize revenue equal to cash received, recognize gross margin of £1,125 ($= 0.30 \times £3,750$), and recognize cost of goods sold (a plug figure). The contribution to income is £1,125 ($= £3,750$ revenue $- £2,625$ cost of goods sold).

After the customer makes the third installment payment, the balance in Accounts Receivable, Gross, on the seller's balance sheet is zero, the seller's cumulative revenue is £20,000 ($= £7,500 + £8,750 + £3,750$), and cumulative cost of goods sold is £14,000 ($= £5,250 + £6,125 + £2,625$). The cumulative gross margin is £6,000 ($= £20,000 - £14,000 = £2,250 + £2,625 + £1,125$).

²⁴We include the deferred gross margin as a reduction of assets following *Concepts Statement 6*.

If the customer fails to make all the promised payments, the seller can repossess the sold item and include that item in its inventory at its net realizable value. The seller would also write off the remaining balances in the Accounts Receivable, Gross account, and in the Deferred Gross Margin account, recognizing a gain or loss on repossession. In this example, if the customer failed to make the third installment payment and the seller repossessed inventory with net realizable value of £2,600, the seller would make the following journal entry:

Inventory—Repossessed Items	2,600	
Deferred Gross Margin	1,125	
Loss on Repossession (plug)	25	
Accounts Receivable, Gross		3,750
To write off an uncollectible installment account receivable (£3,750) and the related gross margin (£1,125), recognize repossessed inventory at its net realizable value (£2,600), and recognize a loss (£25).		

Cost Recovery Method The **cost recovery method** matches the costs of generating revenue with cash receipts until the seller recovers all its costs. That is, the seller sets expenses equal to revenue in each period until it recovers all its costs, and does not recognize gross margin in income until it has recovered all of the costs of the sale. After cumulative cash receipts equal total costs, the seller reports revenue without any matching expenses in its income statement. The seller makes the same journal entry at the time of sale under the cost recovery method as under the installment method. The difference between the two methods arises later when the customer makes installment payments. Instead of applying the gross margin percentage to each cash collection from the customer, the seller sets cost of goods sold equal to revenue until it recovers the entire cost. We illustrate these differences using journal entries, assuming the same transaction terms as in the preceding example. We do not repeat the journal entry at the time of sale, which is the same for the cost recovery method as for the installment method.

The seller's journal entry to record the first cash collection of £7,500 is as follows:

Cash	7,500	
Cost of Goods Sold (plug)	7,500	
Accounts Receivable, Gross		7,500
Sales Revenue		7,500
To record the first collection of £7,500, recognize revenue equal to cash received, and recognize cost of goods sold equal to revenue. The seller has recovered £7,500 of its total costs of £14,000. The contribution to income is £0 (= £7,500 revenue – £7,500 cost of goods sold).		

The seller's journal entry to record the second cash collection of £8,750 is as follows:

Cash	8,750	
Deferred Gross Margin	2,250	
Cost of Goods Sold (plug)	6,500	
Accounts Receivable, Gross		8,750
Sales Revenue		8,750
To record the second collection of £8,750, recognize revenue equal to cash received, and recognize cost of goods sold = £6,500. This amount, combined with the previously recognized £7,500 expense, indicates that the seller has recovered its costs of £14,000. The contribution to income is £2,250 (= £8,750 revenue – £6,500 cost of goods sold).		

The seller's journal entry to record the third cash collection of £3,750 is as follows:

Cash	3,750	
Deferred Gross Margin	3,750	
Accounts Receivable, Gross		3,750
Sales Revenue		3,750

To record the third collection of £3,750 and recognize revenue equal to cash received. The seller has recovered its costs of £14,000, so it recognizes the entire amount of cash received as income. The contribution to income is £3,750 (= £3,750 revenue – £0 cost of goods sold).

If the customer fails to make all the promised payments, the seller can repossess the sold item. The accounting for repossession parallels that previously illustrated for the installment method.

Installment Method Compared to Cost Recovery Method The installment method reports income sooner than does the cost recovery method. This pattern holds independent of whether the customer makes all the promised payments. The differences arise from the differing logic supporting the two methods. The logic of the installment method assumes that the seller will receive all the promised cash.²⁵ The logic of the cost recovery method assumes that cash collection is highly uncertain. As a result, the cost recovery method defers the recognition of any income until the seller has recovered all costs.

U.S. GAAP permits firms to use the installment method or the cost recovery method only when receivables are both collectible over an extended period and the seller has no reasonable basis for estimating the amount of cash that it will collect.²⁶ IFRS does not contain this level of detail; however, its general guidance implies a qualitatively similar criterion.

► PROBLEM 8.4 FOR SELF-STUDY

Income recognition when collectibility is uncertain. On January 1, 2013, suppose that Scania agrees to sell two trucks for SEK1,080,000, which cost Scania SEK980,000, to Project Hope, a not-for-profit organization, that plans to open a transportation business. Project Hope has received partial funding for this venture, and its business plan, including forecasted cash flows, indicates significant uncertainty about its financial viability. Scania agrees to deliver the trucks in January and to permit Project Hope to pay in equal installments over 12 months, with the first payment due on June 30, 2013. Assume that Project Hope makes the first three payments and fails to make any other payments; also assume that Scania repossesses the two trucks in December 2013 when their net realizable value is SEK690,000. Prepare journal entries for this transaction assuming the following:

- a. Scania uses the installment method.
- b. Scania uses the cost recovery method.

INCOME RECOGNITION BEFORE DELIVERY

A firm sometimes recognizes revenue and expenses *before* it delivers the promised items to the customer, over the accounting periods during which it performs under a long-term contract. An example is Bombardier's sale of trains (**Example 4**). Long-term contracts (for example, producing or constructing airplanes, trains, ships, or buildings) often have three characteristics:

1. The period of construction (production) spans several accounting periods.
2. The seller identifies a customer, agrees on a contract price in advance, and has little doubt about the ability of the customer to make the agreed-on payments.
3. The buyer makes periodic payments of the contract price as work progresses. These are sometimes called **progress payments**.

²⁵Or that when collections from the customer cease, the seller can repossess the goods to cover the seller's as-yet-uncollected costs.

²⁶Note 8 to Accounting Principles Board, *Opinion No. 10*, "Omnibus Opinion—1966" (**Codification Topic 605**).

Long-term contracts with these characteristics may meet the criteria for recognizing revenue during the period of construction or production. These criteria include the following:

- The existence of an arrangement that specifies a buyer, a product to be delivered, and an agreed-on price.
- The seller reasonably expects the customer will pay the contract price in cash as construction progresses or when the seller completes the work.
- The seller can reliably estimate the costs it will incur in providing these future services.

When the arrangement meets these criteria, U.S. GAAP and IFRS require firms to recognize income using the percentage-of-completion method. When the arrangement does not meet the criteria, U.S. GAAP requires firms to recognize income using the completed contract method. IFRS does not permit the completed contract method and instead specifies a variant of the cost recovery method.²⁷ We discuss the percentage-of-completion and completed contract methods next.

PERCENTAGE-OF-COMPLETION METHOD

The **percentage-of-completion method** recognizes a portion of the contract price as revenue during each period of construction or production. The portion of revenue recognized is based on the proportion of total work performed during the period.²⁸ One commonly used measure of the proportion of total work performed is the ratio of costs incurred to date to the total estimated contract costs.²⁹ The firm typically accumulates these costs in an inventory account called **Construction in Progress** or **Construction in Process**. As the firm recognizes revenue for portions of the contract price, it also recognizes equal portions of the total estimated contract cost as expenses by debiting Cost of Goods Sold and crediting Construction in Progress. The percentage-of-completion method follows the accrual basis of accounting and matches expenses with related revenue. The schedule of cash collections (that is, progress payments) from the customer does not affect revenue recognition. Even if the contract specifies that the customer will pay the entire contract price when the seller delivers the product, the seller may use the percentage-of-completion method so long as the seller can reliably estimate the amount of cash it will receive and the costs it expects to incur in completing the job.

To illustrate the percentage-of-completion method, we revisit **Example 4**, in which Bombardier agrees to provide 25 trains over the next four years for a total contract price of €2 billion. The customer pays €250 million on signing the contract and will pay the remaining contract price in four equal installments of €437.5 million at the end of each year for four years. Bombardier estimates the total cost to fulfill this contract is €1.6 billion, to be incurred as follows: first year, €400 million; second year, €600 million; third year, €400 million; and fourth year, €200 million. It expects a gross margin of €400 million (= €2.0 billion – €1.6 billion) on this contract. Bombardier measures the percentage-of-completion as the ratio of total costs incurred to total costs anticipated, so it will recognize revenue and expense from the contract as follows (currency numbers are in millions of euros):³⁰

Year	Degree of Completion	Revenue	–	Expense	=	Profit
1	€400/€1,600 = 25.0%	€ 500		€ 400		€100
2	€600/€1,600 = 37.5%	750		600		150
3	€400/€1,600 = 25.0%	500		400		100
4	€200/€1,600 = 12.5%	250		200		50
		<u>€2,000</u>	–	<u>€1,600</u>	=	<u>€400</u>

²⁷U.S. GAAP guidance is *Accounting Research Bulletin No. 45*, “Long-Term Construction-Type Contracts,” 1955 (**Codification Topic 605**). IFRS guidance is *International Accounting Standard 11*, “Construction Contracts,” 1993.

²⁸In more complex situations, where cost estimates change as time passes, the amount of revenue per period depends on the cumulative work percentage done by the end of the period compared to the cumulative total at the end of the preceding period.

²⁹Another method, which we do not discuss or illustrate, is the engineering estimate method. In that method, experts estimate the fraction of the work done in any period by physical examination of the construction in progress.

³⁰In this example, Bombardier’s actual costs are identical to its expected costs each year and in total.

Bombardier's journal entry when it receives the initial cash payment is as follows:

Beginning of First Year

Cash	250.0	
Advances from Customers		250.0
To record the collection of €250 million at the time of contract signing.		

At the end of the first year, Bombardier will recognize the receipt of the first installment and the appropriate portion (25%, year 1 degree of completion) of revenue and expenses under the percentage-of-completion method:

End of First Year

Cash	437.5	
Advances from Customers		437.5
To record the first installment of the remaining contract price, €437.5 million (= 25% × [€2,000 – €250]).		

Advances from Customers	500.0	
Cost of Goods Sold	400.0	
Sales Revenue		500.0
Construction in Progress ³¹		400.0
At the end of the first year, the balance in Advances from Customers is €187.5 million (= €250.0 million + €437.5 million – €500.0 million).		

At the end of the second year, Bombardier will recognize the receipt of the second installment payment and the appropriate portion (37.5%, year 2 degree of completion) of total revenue and expenses under the percentage-of-completion method:

End of Second Year

Cash	437.5	
Advances from Customers		437.5
To record the second installment of the remaining contract price, €437.5 million (= 25% × [€2,000 – €250]).		

Accounts Receivable, Gross	125.0	
Advances from Customers	625.0	
Cost of Goods Sold	600.0	
Sales Revenue		750.0
Construction in Progress		600.0

Before Bombardier recognizes revenue in the second year, the balance in Advances from Customers is €625 million (= Beginning balance of €187.5 + €437.5). Bombardier first reduces the balance in Advances from Customers to zero (by debiting it for €625 million) and then records the remaining recognized revenue of €125 million (= €750 – €625) as a debit to Accounts Receivable, Gross.³²

At the end of the third year, Bombardier will recognize the receipt of the third installment payment and the appropriate portion (25.0%, year 3 degree of completion) of revenue and expenses under the percentage-of-completion method:

³¹For simplicity, we do not show the journal entries that debit the inventory account Construction in Progress and credit various asset and liability accounts as Bombardier accumulates contract costs.

³²Bombardier will also apply the allowance method for estimating uncollectible accounts receivable described earlier in this chapter.

End of Third Year

Cash	437.5	
Accounts Receivable, Gross		125.0
Advances from Customers		312.5

To record the third installment of the remaining contract price, €437.5 million (= 25% × [€2,000 – €250]). First Bombardier applies the cash collection to the amounts owed by the customer (Accounts Receivable, Gross) and then records any remainder as Advances from Customers.

Accounts Receivable, Gross	187.5	
Advances from Customers	312.5	
Cost of Goods Sold	400.0	
Sales Revenue		500.0
Construction in Progress		400.0

Before Bombardier recognizes revenue in the third year, the balance in Advances from Customers is €312.5 million. In recording revenue for the third year, Bombardier first reduces the balance in Advances from Customers to zero (by debiting it for €312.5) and then records the remaining recognized revenue, €187.5 million (= €500 – €312.5), as Accounts Receivable, Gross.

At the end of the fourth year, Bombardier will recognize the receipt of the final installment payment and the appropriate portion (12.5%, year 4 degree of completion) of revenues and expenses under the percentage-of-completion method:

End of Fourth Year

Cash	437.5	
Accounts Receivable, Gross		187.5
Advances from Customers		250.0

To record the final installment of the remaining contract price, €437.5 million (= 25% × [€2,000 – €250]). The seller first applies the cash collection to the amounts owed by the customer (Accounts Receivable, Gross) and then records any remainder as Advances from Customers.

Advances from Customers	250.0	
Cost of Goods Sold	200.0	
Sales Revenue		250.0
Construction in Progress		200.0

COMPLETED CONTRACT METHOD

The **completed contract method** also applies to long-term construction contracts and similar contracts. This method postpones revenue recognition until the seller completes all construction or production and transfers the finished item to the customer. U.S. GAAP specifies the completed contract method when the outcome of the contract is in doubt because of a lack of reliable estimates—of either costs or cash to be collected. Continuing the preceding example, if Bombardier used the completed contract method, it would recognize no revenue or expense from the train contract during the first three years. In the fourth year, upon delivery of the 25 trains, it would recognize revenue of €2.0 billion and cost of goods sold of €1.6 billion. Total gross profit is €400 million under both the percentage-of-completion and the completed contract methods, but the latter defers all revenue recognition until Bombardier completes the project. Applying the completed contract method while it is producing the trains, Bombardier would recognize cash collections from the customer (progress payments) as debits to Cash and credits to Advances from Customers, and would accumulate contract costs in a Construction in Process account.

PERCENTAGE-OF-COMPLETION METHOD COMPARED TO COMPLETED CONTRACT METHOD

The percentage-of-completion method provides information about the seller's performance during the contract period and the completed contract method reports all profit only when seller completes the contract. The percentage-of-completion method reflects current performance on a more timely basis than the completed contract method. The shorter the contract length, the smaller are the accounting differences between the two approaches.

Because persuasive evidence of an arrangement is a condition for recognizing revenue, firms would use the completed contract method if there is no contract with a specific customer. An example is the construction of residential housing on speculation. These situations require future marketing effort. Also, substantial uncertainty may exist regarding the selling price and therefore the amount of cash the seller will collect. In addition, if there is sufficient uncertainty about the total contract costs, the seller may not use the percentage-of-completion method—even when it has a contract with a specified price.

IFRS REQUIREMENTS FOR RECOGNIZING CONTRACT REVENUE WHEN THE SELLER CANNOT RELIABLY ESTIMATE THE OUTCOME

IFRS specifies the percentage-of-completion method when the seller can reliably estimate the outcome of the contract. If the seller cannot reliably estimate costs and revenues, then IFRS requires that the seller recognize revenues equal to recoverable costs incurred and expensed. This approach is a variant of the cost recovery method described earlier.

► PROBLEM 8.5 FOR SELF-STUDY

Income recognition for a long-term construction contract. Suppose that General Construction Company (GC) contracts with a Chinese customer in June 2013 to construct a building at a contract price of 145 million yuan (¥). GC plans to begin construction January 1, 2014, and to finish September 2016. GC estimates that its total construction cost will be ¥100 million. GC incurred ¥30 million in construction costs during 2014, ¥60 million during 2015, and ¥10 million during 2016. The customer agrees to make equal progress payments on the first day of each year. GC completed the building in September 2016. Calculate GC's gross profit (= revenue less expenses) on this contract during 2014, 2015, and 2016, assuming the following:

- GC uses the percentage-of-completion method.
- GC uses the completed contract method.
- GC uses the method specified by IFRS when it cannot reliably estimate the outcome of the contract. Assume that all costs incurred are recoverable.

SUMMARY

Revenue is the single largest recurring financial statement item for most firms and a key determinant of operating profitability. Revenue represents inflows of assets from transactions with customers. The timing and measurement of revenue and the associated expenses are subject to detailed guidance in U.S. GAAP and general guidance in IFRS. The guidance specifies the conditions for recognizing revenue before, at, and after the time of sale. The seller must have earned revenues in the sense that it has performed, or substantially performed, its obligations to the customer, and it can reliably estimate the cash or cash equivalent value of assets received from the customer. When either requirement fails, the seller must defer revenue recognition.

Accounting guidance also provides special procedures for contracts that contain multiple deliverables and for long-term contracts.

A firm's gross accounts receivable reflects the amounts customers have promised to pay. The balance sheet displays these receivables net of estimated uncollectible accounts. When the seller determines that a receivable has become uncollectible, it writes off the receivable.

APPENDIX 8.1: COMPARISON OF REVENUE RECOGNITION CRITERIA BETWEEN U.S. GAAP AND IFRS

REVENUE RECOGNITION UNDER U.S. GAAP

Conceptual guidance states that the seller recognizes revenue when the transaction meets both of the following conditions:³³

1. The seller has earned the revenue, meaning that the seller has substantially accomplished what it has promised the customer (the “earned” condition).
2. The revenue is realized or realizable, meaning that the seller has received cash or some other asset that it can convert to cash (the “realized or realizable” condition).

In addition, the Securities and Exchange Commission (SEC) of the United States has issued *Staff Accounting Bulletin No. 104 (SAB 104)*, which summarizes the following four conditions for revenue recognition:³⁴

1. Persuasive evidence of an arrangement exists.
2. Delivery has occurred or services have been performed.
3. The seller's price to the buyer is fixed or determinable.
4. Collectibility is reasonably assured; that is, the seller can measure the amount of revenue and is reasonably certain to collect it.

Conditions 2, 3, and 4 of *SAB 104* are similar to the two conditions stated in *Concepts Statement 5*. *SAB 104* also requires persuasive evidence that the seller has an arrangement with a customer in the form of a contract, or prior business dealings, or customary business practices. The arrangement states the responsibilities of the seller and its customers with respect to the nature and delivery of goods or services, the risks assumed by buyer and seller, the timing of cash payments, and similar factors.

REVENUE RECOGNITION UNDER IFRS

IFRS distinguishes between revenue from sales of goods and revenue from sales of services.³⁵ IFRS specifies five general conditions for recognizing revenue, all of which apply to the sale of goods; conditions 1 and 2 apply *only* to the sale of goods:

1. The seller has transferred to the buyer the significant risks and rewards of ownership of the goods.
2. The seller has not retained either effective control or the kind of involvement that is associated with ownership.
3. The amount of revenue can be measured reliably.
4. It is probable that the seller will obtain the economic benefits associated with the transaction.
5. The costs incurred or to be incurred can be measured reliably.

³³FASB, *Statement of Financial Accounting Concepts No. 5*, “Recognition and Measurement in Financial Statements of Business Enterprises,” 1984, par. 83–84.

³⁴SEC, *Staff Accounting Bulletin No. 104*, 17 CFR Part 211, December 2003.

³⁵International Accounting Standards Committee, *International Accounting Standard 18*, “Revenue,” 1993.

With regard to services, IFRS specifies conditions **3**, **4**, and **5**, plus one additional condition: *The stage of completion of the transaction at the end of the reporting period can be measured reliably.*

COMPARISON OF U.S. GAAP WITH IFRS

Within IFRS, conditions **1** and **2** are analogous to the “earned” condition of U.S. GAAP—they specify that the seller has performed its obligations. Conditions **3** and **4** are analogous to the “realized or realizable” condition of U.S. GAAP—they specify that the seller has obtained a reliably measurable asset that will result in benefits. Condition **5** in IFRS pertains to the measurement of cost or expense recognition.

U.S. GAAP and IFRS are consistent in that both rely on the idea of an earnings process (which IFRS describes in terms of the transfer of risk and reward of ownership) and the realization principle (which IFRS describes in terms of reliable measurement and the ability to obtain economic benefits). This does not mean, however, that revenue recognition is the same under U.S. GAAP and IFRS. U.S. GAAP provides over 200 specific pieces of detailed guidance, much of which is industry-specific or transaction-specific. IFRS contains one general standard and a handful of more specific standards. So, for example, U.S. GAAP contains specific guidance for revenue recognition for franchise fees, for sales of software, and for sales of real estate, whereas the general IFRS standard for revenue recognition does not address these industry-specific arrangements.³⁶

APPENDIX 8.2: SUMMARY OF JOINT FASB-IASB REVENUE RECOGNITION PROJECT

HISTORY AND OBJECTIVE OF THE PROJECT

The FASB and IASB issued a joint Discussion Paper in 2008 describing their initial proposals to improve and converge the guidance for recognizing revenue. The objectives of the project are to

- Issue a single accounting standard that would apply to most revenue arrangements and that would not differ substantially between U.S. GAAP and IFRS.
- Remove inconsistencies and weaknesses in the existing guidance.
- Reduce the number of different approaches to revenue recognition.
- Improve comparability and provide more useful information to users of financial reports.

The FASB and IASB issued a joint exposure draft in June 2010 and a revised exposure draft in January 2012. These exposure drafts describe the proposed revenue recognition requirements and seek input from financial statement preparers, users, auditors, and others. As this textbook goes to press, the FASB and IASB are considering that input. This Appendix summarizes certain features of the FASB–IASB proposals for revenue recognition.

PROPOSED GUIDANCE

Appendix 8.1 describes the conceptual guidance for revenue recognition under U.S. GAAP and IFRS that exists as this textbook goes to press. The guidance being developed by the FASB and IASB would replace that existing conceptual guidance with a single core principle:

The transfer of a good or service to a customer determines the timing of revenue recognition. The transfer occurs when the customer obtains control over the transferred item, which can occur at a point in time or over time.

³⁶FASB, *Statement of Financial Accounting Standards No. 45*, “Accounting for Franchise Fee Revenue,” 1981 (Codification Topic 952) and *Statement of Financial Accounting Standards No. 66*, “Accounting for Sales of Real Estate,” 1982 (Codification Topic 360).

The application of this core principle involves five steps, beginning with the requirement that an implicit or explicit contract exists between the seller and buyer:

1. Identify the contract with the customer.
2. Identify the separate performance obligations in the contract (this step could involve identifying separate components of a multiple deliverable arrangement).
3. Determine the transaction price.
4. Allocate the transaction price to the separate performance obligations.
5. Recognize revenue when a performance obligation is satisfied (that is, at the point when the customer obtains control of the good or service by, for example, taking legal title and physical possession). The proposals also clarify that a firm can satisfy a performance obligation over time, under certain conditions.

In many cases, the proposals would not affect current accounting practice. For example, the proposal does not affect revenue recognition for cash transactions at the point of sale. As another example, the proposed guidance does not rule out the percentage-of-completion method. Also, many of the current accounting practices that would be affected by the proposals apply to arrangements that are beyond the scope of this introductory textbook. There are, however, four proposed differences that would affect the accounting approaches covered in **Chapter 8**:

1. The proposals focus on the existence of a contract with a customer, not the receipt of an asset. The proposals would not require a collectibility threshold for revenue recognition, so the installment method and the cost recovery method could be affected. If, however, collectibility is sufficiently in doubt, a contract may not exist, precluding revenue recognition.
2. The proposals focus on a transaction price and not a fixed or determinable amount, as is currently required under *SAB 104*. The transaction price could include variable elements whose effect on the transaction amount would have to be estimated.
3. The proposed treatment of multiple-deliverable or multiple-element contracts requires the seller to evaluate the contract to determine which components are *distinct*. Distinct is a newly proposed term that refers to whether the seller regularly sells the good or service separately or whether the customer can benefit from the good or service on its own or with other items it can easily obtain. The proposals for allocating total sales revenues to separate elements, however, are similar to the procedures described for Apple in the chapter that are based on stand-alone selling prices for separate contract components, including estimates of those prices.
4. The proposals would require that the reduction in income associated with expected uncollectible receivables appear as a reduction in revenue, not as an expense, for example, Bad Debt Expense. This change would not affect income but would affect the line items on the income statement.

SOLUTIONS TO SELF-STUDY PROBLEMS

SUGGESTED SOLUTION TO PROBLEM 8.1 FOR SELF-STUDY

(Sony Corporation; revenue recognition at time of sale, or after sale, or before sale.)

- a. At the time of shipment to Great Deal, Sony has incurred most of its costs. Experience should provide Sony with sufficient evidence to estimate the cost of damaged and defective televisions. Thus, the arrangement appears to meet the first criterion for revenue recognition, substantial performance. The second criterion is also met because there is an agreed-on price (of \$2,000 per television), and Great Deal agrees to pay within 30 days. Sony may recognize the revenue from this transaction when Great Deal takes possession of the televisions, normally either when Great Deal receives the televisions or when Sony ships the televisions.

- b.** This arrangement is similar to **a**. At the time of shipment, Sony has met the first criterion for revenue recognition. There may be substantial uncertainty, however, about whether Great Deal will return the televisions for a refund. Sony can recognize revenues on this transaction at the earlier of two dates: (1) when Great Deal notifies Sony that it has sold all televisions, or (2) six months after Great Deal's receipt of the televisions. At both of these times, there is no uncertainty about the return of televisions to Sony. Great Deal has committed to pay Sony within 30 days. If Sony can reliably estimate the number of televisions it expects Great Deal to return, then U.S. GAAP might allow Sony to recognize revenue the same way as in part **a**, depending on other factors not discussed here.
- c.** In this setting, Great Deal acts as a consignee for Sony's televisions; Sony is the consignor. In a consignment arrangement, the consignor (Sony) sends goods (televisions) to a consignee (Great Deal) for sale, with Sony holding title until Great Deal makes a sale. Sony should not recognize revenue when it ships the televisions because the amount that Sony ultimately receives depends on whether and at what price Great Deal sells the televisions. Therefore, the amount of cash that Sony will collect is uncertain with regard to both amount and timing. Thus, Sony should recognize revenue only when it receives the cash from Great Deal or when Great Deal notifies Sony of the amounts it will remit for sales made this period.

SUGGESTED SOLUTION TO PROBLEM 8.2 FOR SELF-STUDY

(Scania; revenue recognition at time of sale.)

- a.** To record sale of four truck engines at SEK20,000 per engine, with payment from the customer to be received in 60 days.

Accounts Receivable, Gross	80,000	
Sales Revenue		80,000

- b.** Scania makes no journal entry at the time it signs the SEK250,000 contract for the 50 transport containers because there has been no performance and the customer has not made any payments.

- c.** Customer makes payment in full for four engines from part **a**.

Cash	80,000	
Accounts Receivable, Gross		80,000

- d.** To record sale of a truck for SEK725,000.

Cash	145,000	
Accounts Receivable, Gross	580,000	
Sales Revenue		725,000

- e.** To record revenue, delivery of containers, and receipt of customer payment.

Cash	250,000	
Sales Revenue		250,000

- f.** To write off an uncollectible account, for SEK580,000.

Allowance for Uncollectibles	580,000	
Accounts Receivable, Gross		580,000

- g. To record bad debt expense for the year.

Bad Debt Expense	1.4 billion	
Allowance for Uncollectibles		1.4 billion

SUGGESTED SOLUTION TO PROBLEM 8.3 FOR SELF-STUDY

(Scania; revenue recognition after sale when substantial performance remains.)

- a. To record the receipt of SEK250,000 as a customer advance on the contract to deliver 50 containers. Scania has not performed its obligation to deliver containers.

Cash	250,000	
Advances from Customers		250,000

- b. To record the sale of the truck, training session, and customer support.

Cash	145,000	
Accounts Receivable, Gross	580,000	
Sales Revenue		641,347
Advances from Customers		83,653

The sum of the separate selling prices of the three contract elements is SEK780,000 (= SEK690,000 + SEK40,000 + SEK50,000). The portion of the contract price allocated to the truck is SEK641,347 (= SEK725,000 × [SEK690,000/SEK780,000]). The portion attributable to the training session is SEK37,179 (= SEK725,000 × [SEK40,000/SEK780,000]), and the portion attributable to the customer support is SEK46,474 (= SEK725,000 × [SEK50,000/SEK780,000]).

- c. To record delivery of the containers (part a) and delivery of the training session (part b).

Advances from Customers	250,000	
Sales Revenue		250,000

Advances from Customers	37,179	
Sales Revenue		37,179

- d. No journal entry because there has been only an exchange of promises.
e. To record the payment made by the customer pursuant to the contract in part d.

Cash	200,000	
Advances from Customers		200,000

- f. The adjusting entry for eight months of customer support, May–December (part b).

Advances from Customers	10,328	
Sales Revenue		10,328

From part b, the portion of total contract revenue allocated to customer support is SEK46,474 (= SEK725,000 × [SEK50,000/SEK780,000]). Scania will recognize this amount as revenue ratably (equally) over the three-year (36-months) term of the customer support. 2013 revenue is SEK10,328 (= SEK46,474 × [8 months/36 months]) for support during May–December.

SUGGESTED SOLUTION TO PROBLEM 8.4 FOR SELF-STUDY

(Scania; income recognition when collectibility is uncertain.)

- a. Analysis and journal entries under the installment method.** At the time of sale, Scania derecognizes the two trucks, recognizes a receivable, and recognizes a deferred gross margin of SEK100,000 (= SEK1,080,000 – SEK980,000). The gross margin percentage is approximately 9.26% (= SEK100,000/SEK1,080,000). The journal entry at time of sale is

Accounts Receivable, Gross	1,080,000	
Inventory		980,000
Deferred Gross Margin		100,000

By convention, Scania might display the deferred gross margin among its liabilities; we classify it as a reduction of assets following *Concepts Statement 6*.

June–August: Project Hope makes three monthly payments. The journal entry to record each of the three payments is

Cash	90,000	
Deferred Gross Margin	8,334	
Cost of Goods Sold (plug)	81,666	
Sales Revenue		90,000
Accounts Receivable, Gross		90,000

Scania collects 1/12th of the total contract price, or SEK90,000 (= SEK1,080,000/12 months) and recognizes this amount as revenue. Under the installment method, Scania also recognizes gross margin = gross margin percentage (0.0926) × cash received (SEK90,000) or SEK8,334. After Project Hope has made three payments of SEK90,000 each, the balance in Accounts Receivable is SEK810,000 (= SEK1,080,000 – [3 × SEK90,000]). The balance in Deferred Gross Margin is SEK74,998 (= SEK100,000 – [3 × SEK8,334]).

After Project Hope fails to make the promised payments, in December 2013 Scania repossesses the two trucks when their net realizable value is SEK690,000:

Inventory—Repossessed Items	690,000	
Deferred Gross Margin	74,998	
Loss on Repossession (plug)	45,002	
Accounts Receivable, Gross		810,000

Scania writes off the remaining balances in Accounts Receivable and Deferred Gross Margin, recognizes the repossessed inventory at its net realizable value, and recognizes a loss.

- b. Analysis and journal entries using the cost recovery method.** At the time of sale, Scania makes the same journal entries under both the installment method and the cost recovery method.

June–August: Project Hope makes three monthly payments. The journal to record each of the three payments is

Cash	90,000	
Cost of Goods Sold	90,000	
Sales Revenue		90,000
Accounts Receivable, Gross		90,000

Scania collects 1/12th of the total contract price, or SEK90,000 (= SEK1,080,000/12 months). Under the cost recovery method, Scania recognizes cost of goods sold equal to revenue until it recovers the entire cost of SEK980,000. Gross margin each month during June–August is zero. After Project Hope has made three payments, the balance in Accounts Receivable is SEK810,000 (= SEK1,080,000 – [3 × SEK90,000]). The balance in Deferred Gross Margin is SEK100,000.

After Project Hope fails to make the promised payments, in December 2013 Scania repossesses the two trucks when their net realizable value is SEK690,000:

Inventory—Repossessed Items	690,000	
Deferred Gross Margin	100,000	
Loss on Repossession (plug)	20,000	
Accounts Receivable, Gross		810,000
Scania writes off the remaining balances in Accounts Receivable and Deferred Gross Margin, recognizes the repossessed inventory at its net realizable value and recognizes a loss.		

SUGGESTED SOLUTION TO PROBLEM 8.5 FOR SELF-STUDY

(General Construction Company; income recognition for a long-term construction contract.)

a. Percentage-of-completion method:

Year	Incremental Percentage Complete	Revenue Recognized	Expenses Recognized	Net Income
2014	30/100 (= 0.30)	¥ 43.5 million	¥ 30.0 million	¥13.5 million
2015	60/100 (= 0.60)	87.0 million	60.0 million	27.0 million
2016	10/100 (= 0.10)	14.5 million	10.0 million	4.5 million
Total	<u>100/100 (= 1.00)</u>	<u>¥145.0 million</u>	<u>¥100.0 million</u>	<u>¥45.0 million</u>

b. Completed contract method:

Year	Revenue Recognized	Expenses Recognized	Net Income
2014	¥ 0	¥ 0	¥ 0
2015	0	0	0
2016	145.0 million	100.0 million	45.0 million
Total	<u>¥145.0 million</u>	<u>¥100.0 million</u>	<u>¥45.0 million</u>

c. IFRS, when GC cannot reliably estimate the contract's outcome:

Year	Revenue Recognized	Expenses Recognized	Net Income
2014	¥ 30.0 million	¥ 30.0 million	¥ 0
2015	60.0 million	60.0 million	0
2016	55.0 million	10.0 million	45.0 million
Total	<u>¥145.0 million</u>	<u>¥100.0 million</u>	<u>¥45.0 million</u>

KEY TERMS AND CONCEPTS

Revenue recognition
 Revenue measurement
 Expense recognition
 Sales returns
 Multiple deliverable contract
 Percentage-of-completion method

Accounts receivable, trade receivables
 Uncollectible account
 Allowance method
 Allowance for Uncollectibles account
 Accounts Receivable, Gross account
 Accounts Receivable, Net account

Bad Debt Expense, Provision for Bad Debts, Provision for Uncollectible Accounts	Deferred performance obligations, Advances from Customers, Deferred Revenue, Unearned Revenues
Control (or controlling) account	Installment method
Writing off	Gross margin percentage, gross margin
Percentage-of-sales procedure	Cost recovery method
Aging-of-accounts-receivable procedure	Progress payments
Accounts receivable turnover ratio	Percentage-of-completion method
Days receivables outstanding	Construction in Progress, Construction in Process account
Securitization	Completed contract method

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

- Review the meaning of the terms and concepts listed above in Key Terms and Concepts.
- The cost recovery method and the completed contract method of recognizing revenues are similar in that both methods delay the recognition of income even if a firm collects cash. In what ways do the two methods differ?
- The accounting for a multiple-element contract separates the contract with a customer into pieces (components or deliverables) and assigns each component a portion of the total contract revenue. The percentage-of-completion method of accounting for a long-term construction contract also separates the contract for accounting purposes. How do the approaches used by the multiple-element contract method and the percentage-of-completion method to separate the contract differ from, and resemble, each other?
- The allowance method of accounting for uncollectible accounts receivable involves the creation of a contra account that shows the estimated amount of uncollectible receivables. Why would financial statement users want to know both this number and the gross amount of accounts receivable?
 - An old wisdom in tennis holds that if your first serves are always good, you are not hitting them hard enough. An analogous statement in business might be that if you have no uncollectible accounts, you probably are not selling enough on credit. Comment on the validity and parallelism of these statements.
 - When are more uncollectible accounts better than fewer uncollectible accounts?
 - When is a higher percentage of uncollectible accounts better than a lower percentage?
- Under what circumstances will the Allowance for Uncollectible Accounts have a debit balance during the accounting period? The balance sheet figure for the Allowance for Uncollectible Accounts at the end of the period should never show a debit balance. Why?
- Construction companies often use the percentage-of-completion method. Why doesn't a typical manufacturing firm use this method of income recognition?
- Both the installment method and the cost recovery method recognize revenue when a firm collects cash. Why, then, does the pattern of income (that is, revenues minus expenses) over time differ under these two methods?
- "When the total amount of cash that a firm expects to collect from a customer is highly uncertain, the cost recovery method seems more appropriate than the installment method." Explain.
- A magazine publisher offers a reduced annual subscription fee if customers pay for three years in advance. Under this subscription program, the magazine publisher receives from customers \$45,000, which it credits to Advances from Customers. The estimated cost of publishing and distributing magazines for these customers is \$32,000. Why does accounting report a liability of \$45,000 instead of \$32,000?
- Both bad debt expense and expected returns reduce income in the period of sale. How does the accounting for these two items differ and how is it similar?

12. Conceptually, what kind of account is the Deferred Gross Margin account that arises under the installment method of accounting? How is this account typically classified on balance sheets?

EXERCISES

13. **Revenue recognition for various businesses.** Discuss when each of the following types of businesses is likely to recognize revenue and related costs of sales:
- A shoe store.
 - A shipbuilding firm constructing an aircraft carrier under a government contract.
 - A real estate developer selling lots on long-term contracts with small down payments required.
 - A barbershop.
 - A citrus-growing firm.
 - A producer of television movies working under the condition that it will sell the rights to the movies to a television network for the first three years, and all rights thereafter revert to the producer.
 - A residential real estate developer who constructs houses only on speculation and later sells the houses to buyers.
 - A producer of fine whiskey that ages the whiskey from 6 to 12 years before sale.
 - A savings and loan association lending money for home mortgages.
 - A travel agency that sells tickets in one period to customers who take trips or return tickets in the next period.
 - A printer who prints only custom-order stationery.
 - A seller to food stores of coupons redeemable by food store customers for various household products.
 - A wholesale food distributor.
 - A livestock rancher.
 - A shipping company that loads cargo in one accounting period, carries cargo across the ocean in a second accounting period, and unloads the cargo in a third period; the shipping is all done under contract, and cash collection of shipping charges is relatively certain.
14. **Income recognition for various business arrangements.** Refer to the conceptual revenue recognition guidance given in **Appendix 8.1**. Applying this conceptual guidance, discuss the timing of revenue recognition and any related measurement issues.
- Company A develops software and sells it to customers for an up-front fee. Company A provides these customers with password-protected access to its Web site for two years after delivery of the software. With this access, customers can download certain data and other software. Company A has an obligation to provide updates on its Web site.
 - Company B develops software and sells it to newly formed storage application service providers (SAPs), who promise to pay for the software over the next two years. These SAPs in turn place the software on their Web sites and sell rights to access the software to their customers.
 - Company C develops software that it places on its Web site. It sells rights to its customers to access this software online for a period of two years. Customers pay an up-front fee for the right to access the software.
 - Company D maintains an auction site on the Web. It charges customers an up-front fee to list products for sale and a transaction fee when a sale takes place. The transaction fee is refundable if the auction winner fails to honor its commitment to purchase the product.
 - Company E sells products of various supplier companies on its Web site. Company E transmits customers' purchase requests to the supplier companies, who fill the orders. Customers pay for their purchases using third-party credit cards. Company E receives a fee from the supplier companies for each item sold.

- f. Company F sells products of various supplier companies on its Web site. It promises to the supplier companies to sell a minimum number of items each month and pays storage and insurance costs for that minimum number of units. Actual storage of these units takes place at the supplier companies' warehouses. The supplier companies also handle shipments to customers. Customers pay for their purchases using third-party credit cards.
- g. Company G manufactures and sells personal computers (PCs). Customers receive a \$400 rebate on the purchase of the computer if they will purchase Internet access services for three years after the purchase of the computer. Customers mail their rebate coupons to the Internet service provider, called an ISP. The ISP bears 90% of the initial cost of the rebate, and the PC manufacturer bears the other 10%. If customers do not subscribe for the full three-year period, the parties reallocate the cost of the rebate, \$360 ($= 0.90 \times \400) initially borne by the ISP and \$40 ($= 0.10 \times \400) by the manufacturer, resulting in the PC manufacturer's paying the ISP to reduce the ISP's share of the rebate's cost from \$360 to a smaller amount.
- h. Company H sells advertising space on its Web site to other companies. For an up-front fee, Company H guarantees to the other companies a certain minimum number of hits, viewings, or click-throughs each month of the one-year contract period. It must return a pro rata portion of the fee if the hits and click-throughs fall short of the guarantee.
- i. Company I sells advertising space on its Web site to other companies. It recently received 10,000 shares of common stock of Upstart Company in payment for certain advertising space. Upstart Company intends to make an initial public offering of its common stock in six months. At the most recent financing round, venture capitalists paid \$10 per share for the common stock.
- j. Company J and Company K both maintain Web sites. Each company sells advertising space to the other company for an agreed-on period, with no funds changing hands.
- 15. Meaning of allowance for uncollectible accounts.** Indicate whether each of the following accurately describes the meaning of the Allowance for Uncollectible Accounts account when properly used. If the description does not apply to this account, discuss why it does not.
- Assets available in case customers don't later pay what they owe.
 - Cash available in case customers don't later pay what they owe.
 - Estimates of the amount that customers who purchased goods this period, but who have not yet paid, and won't later pay.
 - Estimates of the amount of goods purchased by customers, whether paid or not, that the firm estimates those customers will return.
 - Estimates of the amount that customers who purchased goods at any time, but who have not yet paid, and won't later pay.
 - Estimates of amount the firm will owe to others if its customers who purchased goods this period don't later pay what they owe.
 - Estimates of amount the firm will owe to others if its customers who ever purchased goods don't later pay what they owe.
 - Estimates of the amount of sales for the current period that will become bad debt expense for the current period.
 - An amount of deferred revenue.
 - A part of retained earnings.
- 16. Revenue recognition at time of sale and advances from customers.** Pret a Manger is a food retailer with stores in the United Kingdom and the United States and is known for its fast but fresh food menu. A customer shopping at a London Heathrow store purchased a ham and cheese baguette (£4.50), a small fruit salad (£2.40), and a banana-bran muffin (£1.50). The customer paid with cash.
- What journal entry will Pret a Manger record for this transaction?
 - Suppose that, in addition to the above items, the customer purchased a Pret a Manger card (to use for future purchases at Pret a Manger stores) for £40.00. What journal entry will Pret a Manger record for this transaction?

- c. Suppose that, for the original transaction described in this problem, the customer did not pay with cash but used a Pret a Manger card purchased a month earlier. Assume there is a sufficient balance on the card to cover the cost of his purchases. What journal entry did Pret a Manger record?

17. Revenue recognition at time of sale and advances from customers. A customer shopping at Bed, Bath & Beyond, a home products retailer in the United States, made the following purchases: \$100 for bath towels, \$135 for an iron, \$45 for an ironing board, and \$250 for a gift certificate. Sales taxes on the purchase amounted to 5% of the total order. The customer paid with cash. What journal entry will Bed, Bath & Beyond make to recognize revenue on this transaction? Ignore the journal entries to recognize the expenses.

18. Revenue recognition at time of sale. Marks and Spencer Group, Plc., a U.K. retailer, applies IFRS and reports its results in millions of pounds sterling (£). The notes to its financial statements provide the following information:

- Revenue comprises sales of goods to customers less an appropriate deduction for returns and discounts. Marks and Spencer records revenues for sales of furniture and items purchased online upon delivery to the customer.
- Marks and Spencer records trade receivables at their nominal amount less an allowance for any doubtful accounts and sales returns. The beginning balance in the allowance for uncollectible accounts and sales returns was £1.1 million, and the ending balance was £3.3 million. There were no recoveries of uncollectible accounts during the year.

Assume that for the year ended March 29, 2013, Marks and Spencer reported revenues (before discounts and returns) of £9,022.0 million. The cost of merchandise sold in 2013 was £5,535.2 million. Assume that Marks and Spencer estimates discounts and returns of 1% of sales. Further assume that it made all sales on credit and that it estimates that 1.5% of revenues will be uncollectible.

- a. What journal entry did Marks and Spencer record during the year ended March 29, 2013, to recognize revenues and expenses?
- b. What journal entry did Marks and Spencer make in the year ended March 29, 2013, to recognize sales returns and bad debts expense?
- c. What was the combined amount of sales returns and write-offs of uncollectible accounts during the year ended March 29, 2013?

19. Revenue recognition at time of sale. Assume that Lentiva Group Limited provided the following description of its revenue recognition policies in the notes to its financial statements.

- Lentiva recognizes revenue from the sale of goods (such as sales of hardware and software) when it effectively transfers both ownership and risk of loss to the customer, generally when there is persuasive evidence a sales arrangement exists, the price is fixed or determinable, collectibility is reasonably assured, and delivery has occurred.
- Lentiva defers revenue from contracts to provide training services and amortizes those amounts as earned over the contract period, generally three years.

Assume that on January 1, 2013, Lentiva sold 50,000 laptop computers to a public education system for \$75 million. The price of the computers includes a contract for training services, which Lentiva will provide evenly over the next two years. The separate selling price of the training services is \$100 per laptop, and the separate selling price of a laptop is \$1,500. Lentiva's cost of a laptop is \$1,200, and the expected cost to provide the training is \$50 per laptop. At the time of sale, the customer paid Lentiva \$15 million, and promised to pay the remaining amount owed in 30 days. Assuming that the arrangement meets the first criterion to recognize revenue, what journal entries will Lentiva make on these dates:

- a. January 1, 2013?
- b. December 31, 2013?
- c. December 31, 2014?

20. Journal entries for coupons. Morrison's Cafeteria sells coupons that customers may use later to purchase meals. Each coupon book sells for \$25 and has a face value of \$30; that is, the customer can use the book to purchase meals with menu prices of \$30. On January 1, redeemable unused coupons that Morrison's had sold for \$4,000 were outstanding. Cash inflows during the next three months appear in the following table:

	March	February	January
Cash-Paying Customers	\$50,000	\$48,500	\$48,000
Sale of Coupon Books	<u>2,400</u>	<u>2,200</u>	<u>2,100</u>
Total Cash Receipts	<u>\$52,400</u>	<u>\$50,700</u>	<u>\$50,100</u>

Customers redeemed coupons with a discounted face value for meals as follows: January, \$1,600; February, \$2,300; March, \$2,100.

- a. Prepare journal entries for January, February, and March to reflect the above information.
 - b. What effect, if any, do the coupon sales and redemptions have on the liabilities on the March 31 balance sheet?
- 21. Journal entries for service contracts.** Abson Corporation began business on January 1, 2013, selling copiers. It also sells service contracts to maintain and repair copiers for \$600 per year. When a customer signs a service contract, Abson collects the \$600 fee and credits Service Contract Fees Received in Advance. Abson recognizes revenues on a quarterly basis during the year of coverage. For purposes of computing revenue, Abson assumes that all sales of service contracts occur midway through each quarter. Sales of contracts and service expenses for 2013 appear in the following table:

	Sales of Contracts	Service Expenses
First Quarter.	\$180,000 (300 contracts)	\$ 32,000
Second Quarter.	300,000 (500 contracts)	71,000
Third Quarter	240,000 (400 contracts)	105,000
Fourth Quarter	120,000 (200 contracts)	130,000

- a. Prepare journal entries for the first three quarters of 2013 for Abson Corporation. Assume that the firm prepares quarterly reports on March 31, June 30, and September 30, 2013.
 - b. What is the balance in the Service Contract Fees Received in Advance account on December 31, 2013?
- 22. Allowance method for uncollectible accounts.** Diversified Technologies opened for business on January 1, 2013. Sales on account during 2013 were \$126,900. Collections from customers from sales on account during 2013 were \$94,300. Diversified Technologies estimates that it will ultimately not collect 4% of 2013 sales on account. During 2013 the firm wrote off \$2,200 of accounts receivable as uncollectible. The firm uses the allowance method for uncollectible accounts.
- a. Compute the amount of bad debt expense for 2013.
 - b. Compute the December 31, 2013, balance sheet carrying value of accounts receivable.
- 23. Aging of accounts receivable.** York Company’s accounts receivable show the following balances:

Age of Accounts	Balance Receivable
0–30 Days	\$1,200,000
31–60 Days	255,000
61–120 Days	75,000
More than 120 Days.	30,000

York Company uses the aging-of-accounts-receivable procedure. The credit balance in the Allowance for Uncollectible Accounts is now \$16,000. Analysis of collection experience suggests that York should use the following percentages to estimate the amounts that will eventually prove uncollectible: 0–30 days, 0.5%; 31–60 days, 1.0%; 61–120 days, 10%; and more than 120 days, 30%. Prepare the journal entry to provide for estimated uncollectible accounts.

- 24. Aging of accounts receivable.** Dove Company's accounts receivable show the following balances by age:

Age of Accounts	Balance Receivable
Not yet due	\$1,200,000
0–30 Days	400,000
31–60 Days	90,000
61–120 Days	40,000
More than 120 Days	20,000

The credit balance in the Allowance for Uncollectible Accounts is now \$17,200. Dove Company's analyses of its collection experience suggest that Dove should use the following percentages to estimate the amounts that will eventually prove uncollectible: 0–30 days, half of 1.0%; 31–60 days, 1.0%; 61–120 days, 10%; and more than 120 days, 70%. Prepare the journal entry to record Dove's bad debt expense.

- 25. Aging of accounts receivable.** Hamilia S.A.'s financial records show the following balances in its accounts receivable:

Age of Accounts	Balance Receivable
0–30 Days	€980,000
31–60 Days	130,000
91–150 Days	102,000
More than 150 Days	68,000

Hamilia uses the aging-of-accounts-receivable procedure. At the end of the fiscal year, the credit balance in the Allowance for Uncollectible Accounts is €96,600. Hamilia's analysis of recent collection experience suggests it should use the following percentages to estimate the amounts that will eventually prove uncollectible: 0–30 days, 0.5%; 31–90 days, 3.0%; 91–150 days, 15%; and more than 150 days, 75%. Prepare the journal entry to provide for estimated uncollectible accounts.

- 26. Reconstructing events when using the allowance method.** Selected data from the accounts of Seward Corporation appear next; the firm's fiscal year ends on December 31.

	January 1	December 31
Accounts Receivable, Gross	\$82,900 Dr.	\$ 87,300 Dr.
Allowance for Uncollectible Accounts	8,700 Cr.	9,100 Cr.
Bad Debt Expense	—	4,800 Dr.
Sales Revenue	—	240,000 Cr.

The firm makes all sales on account. There were no recoveries during the year of accounts written off in previous years.

Give the journal entries for the following transactions and events during the year:

- a. Sales on account.
 - b. Recognition of bad debt expense.
 - c. Write-off of uncollectible accounts.
 - d. Collection of cash from customers from sales on account.
- 27. Allowance method: reconstructing journal entry from events.** (From a problem by S. A. Zeff.) During 2013, Pandora Company wrote off \$2,200 of accounts receivable as uncollectible. Pandora Company collected no cash during 2013 for amounts it had written off in previous years. The balance in the Allowance for Uncollectible Accounts account on the balance sheet was \$3,500 at the beginning of 2013 and \$5,000 at the end of 2013. Present the journal entry that the company made to provide for estimated uncollectibles during 2013.

- 28. Allowance method: reconstructing journal entries from events.** (From a problem by S. A. Zeff.) The balance sheets of Milton Corporation on December 31, 2013 and 2014, showed gross accounts receivable of \$15,200,000 and \$17,600,000, respectively. The balances in the Allowance for Uncollectible Accounts account at the beginning and end of 2014 were credits of \$1,400,000 and \$1,550,000, respectively. The income statement for 2014 shows that the expense for estimated uncollectible accounts was \$750,000, which was 1% of sales. The firm makes all sales on account. There were no recoveries during 2014 of accounts written off in previous years. Give all the journal entries made during 2014 that affect Accounts Receivable and the Allowance for Uncollectible Accounts.
- 29. Reconstructing events from journal entries.** Give the likely transaction or event that would result in making each of the independent journal entries that follow.

a.	Bad Debt Expense	2,300	
	Allowance for Uncollectible Accounts		2,300
b.	Allowance for Uncollectible Accounts	450	
	Accounts Receivable		450
c.	Allowance for Uncollectible Accounts	200	
	Bad Debt Expense		200

- 30. Journal entries for the allowance method.** Data related to sales on account of Heath Company appear next. Heath Company began operating in 2011.

Year	Sales on Account	Accounts Written Off as Uncollectible in Year		
		2011	2012	2013
2011	\$ 340,000	\$1,800	\$5,800	\$ 3,000
2012	450,000	—	2,500	8,200
2013	580,000	—	—	2,900
	<u>\$1,370,000</u>	<u>\$1,800</u>	<u>\$8,300</u>	<u>\$14,100</u>

Heath Company estimates that 3% of sales on account will ultimately become uncollectible. Uncollectible accounts generally occur within three years of the year of sale.

- a.** Prepare journal entries to recognize bad debt expense and to write off uncollectible accounts for 2011, 2012, and 2013 using the allowance method.
- b.** Does 3% of sales on account appear to be a reasonable rate for estimating uncollectibles for Heath Company?
- 31. Journal entries for the allowance method.** The following data relate to sales made on account by Schneider Corporation. The firm began operations in 2011.

Year	Sales on Account	Accounts Written Off as Uncollectible in Year		
		2011	2012	2013
2011	\$ 750,000	\$1,300	\$ 8,700	\$ 3,900
2012	1,200,000	—	2,500	16,600
2013	2,400,000	—	—	3,100
	<u>\$4,350,000</u>	<u>\$1,300</u>	<u>\$11,200</u>	<u>\$23,600</u>

Schneider Corporation estimates that 2% of sales on account will ultimately become uncollectible. Uncollectible accounts generally occur within three years of the year of sale.

- a.** Prepare journal entries to recognize bad debt expense and to write off uncollectible accounts for 2011, 2012, and 2013 using the allowance method.

- b. Does 2% of sales on account appear to be a reasonable rate for estimating this firm's uncollectibles?
32. **Reconstructing events when using the allowance method.** Assume the following data from the accounts of Fujitsu Limited for the years ended March 31, 2012, and March 31, 2011. Fujitsu reports its results in millions of yen (¥). For purposes of this problem, assume that Fujitsu applies U.S. GAAP or IFRS.

	March 31, 2012	March 31, 2011
Accounts Receivable, Gross	¥1,054,048	¥885,300
Allowance for Uncollectible Accounts	(6,906)	(6,781)
Sales Revenue	5,100,163	—

Assume Fujitsu estimates that 1% of sales, which are all on account, will become uncollectible. There were no recoveries during the year of accounts written off in previous years. Provide journal entries to record the following:

- a. Sales on account during the year.
- b. Recognition of bad debt expense.
- c. Write-off of actual uncollectible accounts during the year.
- d. Collection of cash from customers from sales on account during the year.
33. **Effects of transactions involving suppliers and customers on cash flows.** WollyMartin Limited, a large retailer, provided the following information from its accounting records for the year ended September 30, 2013:

Selected Balance Sheet Accounts	September 30, 2013	September 30, 2012
Accounts Receivable	€ 8,600	€ 8,000
Less: Allowance for Uncollectibles	(750)	(700)
Merchandise Inventory	11,200	11,000
Accounts Payable	7,500	7,000
Selected Income Statement Accounts	2013	
Sales Revenue	€130,000	
Bad Debt Expense	(2,000)	
Cost of Goods Sold	(85,000)	

WollyMartin's business is characterized by many retail customers—some of whom have not paid for goods they have purchased—and many suppliers of goods, some of whom have delivered goods for which the firm has not yet paid. WollyMartin settles all its accounts with customers and suppliers with cash, never with noncash assets.

- a. Calculate the amount of cash WollyMartin received from its customers during the year.
- b. Calculate the amount of cash WollyMartin paid to its suppliers during the year.
34. **Percentage-of-completion and completed contract methods of income recognition.** The Shannon Construction Company agreed to build a warehouse for \$6,000,000. Expected and actual costs to construct the warehouse were as follows: 2012, \$1,200,000; 2013, \$3,000,000; and 2014, \$600,000. The firm completed the warehouse in 2014. Compute revenue, expense, and income before income taxes for 2012, 2013, and 2014 using the percentage-of-completion method and the completed contract method.
35. **Percentage-of-completion and completed contract methods of income recognition.** Raytheon has agreed to construct missile detection system for \$900 million. Expected and actual costs to construct the system were as follows: 2011, \$200 million; 2012, \$200 million; and 2013, \$300 million. Raytheon completed the system in 2013. Compute revenue, expense, and income before income taxes for 2011, 2012, and 2013 using the percentage-of-completion method and the completed contract method.
36. **Installment and cost recovery methods of income recognition.** During the year ended December 31, 2013, Cunningham Realty Partners sold a tract of land costing \$80,000 for \$120,000.

The customer agreed to pay the purchase price in four equal annual installments, with the first payment made on December 31, 2013. Compute revenue, expense, and income before income taxes for each of the four years using the installment method and the cost recovery method.

- 37. Installment and cost recovery methods of income recognition.** During the year ended December 31, 2012, an aircraft manufacturer sold a jet for \$72 million; assume that the cost to produce the jet was \$57 million. The customer agreed to pay the manufacturer \$24 million per year, for three years, with the first payment made on December 31, 2012. Compute revenue, expense, and income before income taxes for each of the three years using the installment method and the cost recovery method.

PROBLEMS

- 38. Revenue recognition at and after time of sale.** Assume that during December 2013, Nordstrom sold \$20 million of merchandise and another \$12 million of gift cards, of which \$24 million was on credit and the rest in cash. Nordstrom acquired the merchandise for \$7.2 million. Further assume that Nordstrom estimates that 1% of all credit sales in December will be uncollectible, and customers will return 2% of all merchandise sold in December. Gift card sales are not included in merchandise sales for the purposes of estimating sales returns.
- What journal entries will Nordstrom make in December 2013 to record December sales?
 - Assume that Nordstrom closes its books monthly. What adjusting entries will Nordstrom make in December 2013?
 - Assume no other transactions affecting taxable income for the month. How much income did Nordstrom earn before taxes in December 2013?
 - In January 2014, customers used gift cards to purchase \$6 million of merchandise, with a cost to Nordstrom of \$3.6 million. What journal entries will Nordstrom make in January 2014 to account for these sales? Assume the same sales return percentage as in December 2013.
- 39. Revenue recognition at and after time of sale.** Hilton Garden Inn, a division of Hilton Hotels, offers its customers two choices when reserving rooms. The customer may purchase a nonrefundable internet special of \$150 per night, or pay at the refundable rate of \$220 per night. Whether a customer purchases the nonrefundable internet special or the refundable room, the customer must charge the entire amount to a credit card at the time of booking. For the internet special, subsequent cancellation of the reservation results in the customer forfeiting the entire amount of the reservation. For the refundable room, cancellation prior to 3:00 p.m. of the date of arrival results in a refund of the amount of the reservation and cancellation after 3:00 p.m. results in a forfeiture of one day at the reserved rate (\$220). What journal entries would Hilton Garden Inn record for the following transactions assuming it attempts to make correct entries every day? Ignore the journal entries involving expenses. Assume that credit card companies credit Hilton Garden Inn's bank account with cash on the same day that Hilton Garden Inn transmits a charge to a customer's credit card, which is the day of the initial reservation.
- On February 2, 2013, a customer makes a nonrefundable internet special reservation for four nights beginning February 16, 2013. The customer arrives at the hotel on February 16, 2013, and departs on February 20, 2013.
 - On February 2, 2013, a customer makes a nonrefundable internet special reservation for four nights beginning February 16, 2013. On February 14, 2013, the customer cancels the reservation.
 - On February 2, 2013, a customer makes a refundable reservation for four nights beginning February 16, 2013. The customer arrives at the hotel on February 16, 2013, and departs on February 20, 2013.
 - On February 2, 2013, a customer makes a refundable reservation for four nights beginning February 16, 2013. On February 14, 2013, the customer cancels the reservation.
 - On February 2, 2013, a customer makes a refundable reservation for four nights beginning February 16, 2013. At 6:00 p.m. on February 16, 2013, the customer cancels the reservation.

- 40. Revenue recognition at and after time of sale.** Stone Pest Control offers extermination services to customers in various arrangements and packages. For example, a customer could call Stone as needed to come out and spray for insects; for this service, Stone charges \$80 per service call. For a separate termite inspection, Stone charges a selling price of \$100. Alternatively, the customer can sign an annual \$300 contract with Stone for quarterly service visits plus one termite inspection. The annual contract also permits the customer to request spraying services at any time between quarterly visits, at no extra charge. Stone estimates that the average contract customer requests one service call per year, outside of the scheduled quarterly visits. For each of the following transactions, provide the journal entries that Stone would make to recognize revenues. Ignore the journal entries involving expenses.
- January 2, 2013, a customer calls Stone to come out and spray for insects. The customer has no contract with Stone. Stone performs the service on January 4, 2013, and the customer pays in cash.
 - January 2, 2013, a customer calls Stone to come out and spray for insects and inspect for termites. The customer has no contract with Stone. Stone performs the services on January 4, 2013, and the customer pays in cash.
 - January 2, 2013, a customer calls Stone to come out and spray for insects and inspect for termites. The customer signs a contract with Stone on January 4, 2013, the same date that Stone provides the first quarterly service and inspects for termites. The customer pays the entire contract price in cash on January 4.
 - How should Stone account for the spraying services that occur between scheduled quarterly services?
 - April 30, 2013, the customer in part **c** calls and asks Stone to come out and spray for ants.
- 41. Analyzing changes in accounts receivable.** Selected data from the financial statements of Kajima Corporation appear next for the years ended March 31, 2009, through March 31, 2012. Kajima applies Japanese accounting standards and reports its results in millions of yen (¥). For purposes of this problem, assume that Kajima applies U.S. GAAP or IFRS.

	2012	2011	2010	2009
Balance Sheet				
Accounts and Notes Receivable, Gross	¥ 630,044	¥ 468,387	¥ 455,517	¥382,692
Allowance for Doubtful Accounts	5,286	10,673	8,341	13,441
Income Statement				
Revenues (assume 100% on credit)	1,891,466	1,775,274	1,687,380	
Bad Debt Expense	1,084	3,152	2,999	

- Prepare journal entries for 2010, 2011, and 2012 to record the following:
 - Revenues.
 - Recognition of bad debt expense.
 - Write-off of actual uncollectible accounts.
 - Collection of cash from customers.
- Compute the following ratios, combining Accounts and Notes Receivable:
 - Accounts receivable turnover ratio for 2010, 2011, and 2012. Use total sales in the numerator and average accounts receivable (net) in the denominator.
 - Bad debt expense divided by revenues on account for 2010, 2011, and 2012.
 - Allowance for uncollectible accounts divided by accounts receivable (gross) at the end of 2010, 2011, and 2012.
 - Write-offs of actual uncollectible accounts divided by average accounts receivable (gross) for 2010, 2011, and 2012.
- What do the ratios computed in part **b** suggest about the collection experience of Kajima Corporation during 2010–2012?

- 42. Analyzing changes in accounts receivable.** The financial statements and notes for Polaris Corporation reveal the following for the four years ending in March 2010–2013 (amounts in millions of US\$):

	2013	2012	2011	2010
Total Sales	\$4,880.1	\$4,295.4	\$3,746.3	\$3,305.4
Bad Debt Expense	36.8	40.1	20.1	20.1

	End of March				
	2013	2012	2011	2010	2009
Accounts Receivable, Gross	\$ 680.4	\$ 605.6	\$ 599.2	\$ 566.7	\$539.5
Less: Allowance for Uncollectible Accounts . .	<u>(172.0)</u>	<u>(138.1)</u>	<u>(115.0)</u>	<u>(111.0)</u>	<u>(97.8)</u>
Accounts Receivable, Net . .	<u>\$ 508.4</u>	<u>\$ 467.5</u>	<u>\$ 484.2</u>	<u>\$ 455.7</u>	<u>\$441.7</u>

Assume that Polaris’s credit sales as a percent of total sales was 75% in each year.

- Compute the amount of accounts written off as uncollectible during 2010–2013.
 - Compute the amount of cash collections from credit customers during each of the four years ending in March 2010–2013.
 - Compute the total amount of cash collected from customers during each of the four years ended March 2010–2013.
 - Calculate the accounts receivable turnover ratio for the years ended March 2010–2013. Use total sales in the numerator and average accounts receivable, net, in the denominator.
- 43. Analyzing disclosures of accounts receivable.** Aracruz Celulose, a Brazilian pulp manufacturer, applies U.S. GAAP and reports its results in thousands of U.S. dollars. For the years ended December 31, 2012 and 2011, Aracruz reported the following information pertaining to accounts receivable:

	December 31, 2012	December 31, 2011
Accounts Receivable, Gross	\$365,921	\$290,429
Allowance for Doubtful Accounts	4,318	4,634
Write-Offs	433	25

At December 31, 2010, the Allowance for Doubtful Accounts had a balance of \$4,067.

- What is the carrying value of accounts receivable on Aracruz’s balance sheets for the years ended December 31, 2012, and December 31, 2011?
 - What is the total amount that customers owe Aracruz as of December 31, 2012, and December 31, 2011?
 - What journal entries did Aracruz make in 2012 and 2011 to recognize Bad Debt Expense?
- 44. Analyzing disclosures of accounts receivable.** Metso Corporation is a Finnish engineering firm specializing in design and development for the paper and pulp industry. Metso applies IFRS and reports its results in millions of euros (€). For the years ended December 31, 2012 and 2011, Metso reported the following information pertaining to accounts receivable:

	December 31, 2012	December 31, 2011
Accounts Receivable, Net	€1,274	€1,218
Allowance for Doubtful Accounts	36	35
Bad Debt Expense	13	10
Other Charges to Allowance	(7)	(4)

The Other Charges to Allowance reflect the effects of business acquisitions and exchange rates. At December 31, 2010, the Allowance for Doubtful Accounts had a balance of €35.

- a. What is the carrying value of accounts receivable on Metso's balance sheets for the years ended December 31, 2012, and December 31, 2011?
 - b. What is the total amount that customers owe Metso as of December 31, 2012, and December 31, 2011?
 - c. What journal entries did Metso make in 2012 and 2011 to recognize write-offs of uncollectible accounts?
- 45. Reconstructing transactions affecting accounts receivable and uncollectible accounts.** The sales, all on account, of Pins Company in 2013, its first year of operations, were \$700,000. Collections totaled \$500,000. On December 31, 2013, Pins Company estimated that 2% of all sales would probably be uncollectible. On that date, Pins Company wrote off specific accounts in the amount of \$8,000.

The balances in selected accounts on December 31, 2014, are as follows:

Accounts Receivable, Gross (Dr.)	\$300,000
Allowance for Uncollectible Accounts (Dr.)	10,000
Sales Revenues (Cr.)	800,000

On December 31, 2014, Pins Company carried out an aging of its accounts receivable balances and estimated that the 2014 ending balance of accounts receivable contained \$11,000 of probable uncollectibles. That is, the allowance account should have an \$11,000 ending credit balance. It made adjusting entries appropriate for this estimate. Some of the \$800,000 sales during 2014 were for cash and some were on account; the problem purposefully does not give the amounts.

- a. What was the balance in the Accounts Receivable, Gross, at the end of 2013? Give the amount and whether it was a debit or a credit.
 - b. What was the balance in the Allowance for Uncollectible Accounts account at the end of 2013? Give the amount and whether it was a debit or a credit.
 - c. What was bad debt expense for 2014?
 - d. What was the amount of specific accounts receivable written off as being uncollectible during 2014?
 - e. What were total cash collections in 2014 from customers (for cash sales and collections from customers who had purchased on account in either 2013 or 2014)?
 - f. What was the net balance of accounts receivable included in the balance sheet asset total for December 31, 2014?
- 46. Effect of errors involving accounts receivable on financial statement ratios.** Indicate—using O/S (overstated), U/S (understated), or NO (no effect)—the pretax effect of each of the following errors on (1) the rate of return on assets ratio, (2) the accounts receivable turnover ratio, and (3) the liabilities to assets ratio. Each of these ratios is less than 100% before discovering the error.
- a. A firm using the allowance method neglected to provide for estimated uncollectible accounts at the end of the year.
 - b. A firm using the allowance method neglected to write off specific accounts as uncollectible at the end of the year.
 - c. A firm credited a check received from a customer to Advances from Customers even though the customer was paying for purchases previously made on account.
 - d. A firm recorded as a sale a customer's order received on the last day of the accounting period, even though the firm will not ship the product until the next accounting period.
 - e. A firm sold goods on account to a customer and properly recorded the transactions in the accounts. The customer returned the goods within a few days of the sale, before paying for them, but the firm neglected to record the return of the goods in its accounts. The firm normally treats sales returns as a reduction in Sales Revenue.
- 47. Income recognition for a nuclear generator manufacturer.** The French energy company, Areva Group, recently won a \$2 billion contract to build a uranium enrichment plant.

Areva began construction in 2013 and expects to complete it by 2019. Assume that the customer agrees to pay as follows: at the time of signing on December 20, 2012, \$20 million; on December 31, 2013–2018, \$100 million; and at completion on December 31, 2019, \$1,380 million. Assume further that Areva incurs the following costs in constructing the generator: 2013, \$340 million; 2014–2018, \$238 million per year; and 2019, \$170 million. Areva uses a Construction in Process account to accumulate costs. Although the costs involve a mixture of cash payments, credits to assets, and credits to liability accounts, assume for purposes of this problem that all costs are paid in cash.

- a. Calculate the amount of revenue, expense, and income before income taxes that Areva Group will report for years 2013–2019 under each of the following revenue recognition methods:
 - (1) Percentage-of-completion method.
 - (2) Completed contract method.
- b. Show the journal entries that Areva Group will make for this contract in 2012, 2013, 2014–2018, and 2019 for each of the revenue recognition methods examined in part a.

48. Income recognition for a contractor. On October 15, 2010, Flanikin Construction Company contracted to build a shopping center at a contract price of \$180 million. The schedule of expected and actual cash collections and contract costs is as follows:

Year	Cash Collections from Customers	Estimated and Actual Cost Incurred
2010.....	\$ 36,000,000	\$ 12,000,000
2011.....	45,000,000	36,000,000
2012.....	45,000,000	48,000,000
2013.....	<u>54,000,000</u>	<u>24,000,000</u>
	<u>\$180,000,000</u>	<u>\$120,000,000</u>

- a. Calculate the amount of revenue, expense, and net income for each of the four years under the following revenue recognition methods:
 - (1) Percentage-of-completion method.
 - (2) Completed contract method.
- b. Show the journal entries Flanikin will make in 2010, 2011, 2012, and 2013 for this contract. Flanikin accumulates contract costs in a Contract in Process account. Although the costs involve a mixture of cash payments, credits to assets, and credits to liability accounts, assume for purposes of this problem that all costs are recorded as credits to Accounts Payable.
- c. Which method do you believe provides the better measure of Flanikin Construction Company’s performance under the contract? Why?

49. Income recognition when collection from the customer is uncertain. Furniture Retailers sells furniture to retail customers, offering extended payment terms. In January 2013, a customer buys a full set of dining room and living room furniture for \$8,400 on an installment plan, with no down payment and monthly payments of \$400, beginning January 31, 2013. The cost of the furniture to Furniture Retailers is \$6,800. Furniture Retailers classifies Deferred Gross Margin as a liability on its balance sheet. Ignore interest on unpaid accounts receivable. What journal entries will Furniture Retailers make (1) at the time of sale in January 2013 and (2) when it receives each monthly payment from the customer under each of the following methods of recognizing revenue:

- a. Installment method.
- b. Cost recovery method.

50. Revenue recognition when collection is uncertain. Appliance Sales and Service sells major household appliances to retail customers, offering extended payment terms. Its fiscal year ends on June 30. In July of 2013, a customer bought a freezer, a refrigerator, and a convection oven on an installment plan, with no down payment and 10 monthly payments of \$244, beginning July 31, 2013. The gross margin percentage on this arrangement is 9%. Appliance Sales and Service classifies Deferred Gross Margin as a liability on its balance sheet. Ignore interest on unpaid accounts receivable.

- a. Assume the customer makes all 10 payments. What journal entries will Appliance Sales and Service make (1) at the time of sale in July 2013 and (2) when it receives each monthly payment from the customer under each of the following methods of recognizing revenue?
- (1) Installment method.
 - (2) Cost recovery method.
- b. Assume the customer stops making payments after making the November 2013 payment. In December 2013, Appliance Sales and Service repossesses all three appliances and estimates that it could sell the repossessed appliances for \$980. What journal entries would Appliance Sales and Services make under each of the following methods of recognizing revenue:
- (1) Installment method.
 - (2) Cost recovery method.

51. Point-of-sale versus installment method of income recognition. The J. C. Spangle catalog company began business on January 1, 2012. Activities of the company for the first two years are as follows:

	2013	2012
Sales, All on Account.	\$300,000	\$200,000
Collections from Customers:		
On 2012 Sales.	110,000	90,000
On 2013 Sales.	120,000	—
Purchase of Merchandise	240,000	180,000
Inventory of Merchandise at 12/31	114,000	60,000
All Expenses Other Than Merchandise, Paid in Cash.	44,000	32,000

- a. Prepare income statements for 2012 and 2013, assuming that the company uses the accrual basis of accounting and recognizes revenue at the time of sale.
- b. Prepare income statements for 2012 and 2013, assuming that the company uses the accrual basis of accounting and recognizes revenue at the time of cash collection following the installment method of accounting. “All Expenses Other Than Merchandise, Paid in Cash” are period expenses.
- 52. Revenue recognition for a franchise.** Pickin Chicken, Inc., and Country Delight, Inc., both sell franchises for their chicken restaurants. The franchisee receives the right to use the franchisor’s products and to benefit from national training and advertising programs. The franchisee agrees to pay \$50,000 for exclusive franchise rights in a city. Of this amount, the franchisee pays \$20,000 on signing the franchise agreement and promises to pay the remainder in five equal annual installments of \$6,000 each, starting one year after signing the franchise agreement. Pickin Chicken recognizes franchise revenue as it signs agreements, whereas Country Delight recognizes franchise revenue on an installment basis. In 2011, each company sold eight franchises. In 2012, each sold five franchises. In 2013, neither company sold a franchise.
- a. Calculate the amount of revenue recognized by each company during 2011–2017.
 - b. When do you think a franchisor should recognize franchise revenue? Why?
- 53. Income recognition for various types of business.** Most firms recognize at least some revenues at the time of sale or delivery of goods and services and, following the principles of the accrual basis of accounting, match expenses either with associated revenues or with the period when they consume resources in operations. **Exhibit 8.7** presents common-size income statements for seven firms for a recent year, with all amounts expressed as a percentage of total revenues. **Exhibit 8.7** also indicates the revenues generated by each firm for each dollar of assets in use on average during the year. A brief description of the activities of each firm follows.
- Amgen** engages in the development, manufacturing, and marketing of biotechnology products. Developing and obtaining approval of biotechnology products takes 10 or more years. Amgen has two principal products that it manufactures and markets and several more products in the development pipeline.

EXHIBIT 8.7

**Common-Size Income Statement for Selected Companies
(Problem 53)**

	Amgen	Brown-Forman	Deere	Fluor	Golden West	Merrill Lynch	Rockwell Collins
Revenues							
Sales of Goods	98.7%	99.9%	83.6%	—	—	—	99.3%
Sales of Services	—	—	—	99.7%	2.0%	47.5%	—
Interest on Investments	1.3	0.1	16.4	0.3	98.0	52.5	0.7
Total Revenues	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Expenses							
Cost of Goods or Services Sold	(14.3)	(35.5)	(69.4)	(95.6)	—	(43.3)	(77.4)
Selling and Administrative	(23.4)	(33.1)	(11.4)	(0.6)	(15.9)	—	(12.6)
Other Operating ^a	(26.4)	(15.4)	(3.5)	—	(3.3)	—	—
Interest	(0.7)	(1.3)	(11.0)	(0.2)	(60.4)	(47.2)	(0.9)
Income Before Income Taxes	35.2%	14.7%	4.7%	3.6%	20.4%	9.5%	9.1%
Income Tax Expense	(16.1)	(5.9)	(1.6)	(1.3)	(8.4)	(3.9)	(3.5)
Net Income	19.1%	8.8%	3.1%	2.3%	12.0%	5.6%	5.6%
Revenues/Average Total Assets	0.9	1.3	0.7	3.1	0.1	0.1	1.2

^aRepresents research and development costs for Amgen and Deere, excise taxes for Brown-Forman, and a provision for loan losses by Golden West.

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Brown-Forman is a distiller of hard liquors. After combining the ingredients, the company ages the liquors for five or more years before sale.

Deere manufactures farm equipment. It sells this equipment to a network of independent distributors, who in turn sell the equipment to final consumers. Deere provides financing and insurance services both to its distributors and to final consumers.

Fluor engages in construction services on multiyear construction projects. It subcontracts most of the actual construction work and receives a fee for its services.

Golden West (now part of Wachovia) is a savings and loan company. It takes deposits from customers and lends funds, primarily to individuals for home mortgages. Customers typically pay a fee (called “points”) at the time of loan origination based on the amount borrowed. Their monthly mortgage payments include interest on the outstanding loan balance and a partial repayment of the principal of the loan.

Merrill Lynch (now a part of Bank of America) engages in the securities business. It obtains funds primarily from short-term capital market sources and invests the funds primarily in short-term, readily marketable financial instruments. It attempts to generate an excess of investment returns over the cost of the funds invested. Merrill Lynch also offers fee-based services, such as financial consulting, buying and selling securities for customers, securities underwriting, and investment management.

Rockwell Collins is a technology-based electronics and aerospace company. It engages in research and development on behalf of its customers, which include the U.S. government and private-sector entities. Its contracts tend to run for many years on a continually renewed basis.

- a. When should each of these companies recognize revenue? What unique issues does each company face in the recognition of expenses?
- b. Suggest possible reasons for differences in the net income divided by revenues percentages for these companies.

54. Understanding the purpose of the Allowance for Uncollectible Accounts account. A member of the Audit Committee of a firm asks the chief financial officer (CFO) the following question: “How do you know the Allowance for Uncollectible Accounts is adequate?” Discuss the adequacy or inadequacy of each of the following independent responses.

- a. “I think it much more likely than not that the amount of cash and marketable securities is adequate to cover any cash shortage caused by customers’ not paying what they owe.”

- b. "I have checked the Bad Debt Expense for sales made this past period and found the amount reasonable."
- c. "I have performed an aging of all accounts receivable for all sales this period and found the amount reasonable."
- d. "I have performed an aging of all accounts receivable and found the amount reasonable."
- e. "We performed a detailed confirmation of receivables from customers whose accounts the firm wrote off as uncollectible this period and found the decision to write them off suitable under the circumstances."
- f. "We performed a detailed confirmation of receivables from customers whose accounts the firm has neither collected nor written off by the end of this period and found the decisions suitable under the circumstances."
- g. "I know the allowance account was correct at the end of last period, and I checked the Bad Debt Expense for this period using a percentage of sales recommended for this class of customers by the top two credit reporting agencies."

Working Capital

1. Identify the principal components of working capital (other than accounts receivable and advances from customers, discussed in **Chapter 8**, and marketable securities, discussed in **Chapter 13**) and the transactions that give rise to each component. Components include cash, prepayments, inventory, accounts payable, short-term notes, accrued liabilities (such as wages payable and taxes payable), warranties, and restructuring liabilities.
2. Understand inventory components, inventory cost flows, and the accounting for inventory in merchandising and manufacturing firms.
3. Understand the recognition and measurement of warranty liabilities and restructuring liabilities.

LEARNING OBJECTIVES

UNDERLYING CONCEPTS AND TERMINOLOGY

Chapter 3 introduced the distinction between *current* assets and liabilities and *noncurrent* assets and liabilities. For an asset, the current–noncurrent distinction refers to whether a firm will convert the benefit to cash, or consume it, or sell it within one operating cycle. For a liability, the distinction refers to whether a firm will pay or otherwise settle the obligation within one operating cycle. Because the operating cycle for most firms is one year or less, one year is the conventional cutoff for distinguishing a current from a noncurrent asset or liability. **Working capital** is the difference between a firm's current assets and its current liabilities. The **current ratio**, also called the **working capital ratio**, is current assets divided by current liabilities.

Both working capital and the current ratio provide information about **liquidity**. Liquidity refers to a firm's ability to meet short-term obligations as they come due. A firm whose current assets exceed its current liabilities has positive working capital and a current ratio that exceeds one. When current liabilities exceed current assets, working capital is negative and the current ratio is less than one. Although most firms have positive working capital, negative working capital does not mean a firm cannot meet its near-term obligations. A firm may, for example, have a bank line of credit that allows it to borrow cash to meet short-term obligations.

Exhibit 1.1 (page 8) shows Great Deal's balance sheet for fiscal years ending in 2013 and 2012; **Exhibit 1.5** (page 12) shows similar information for Thames Group for the years ending December 31, 2013 and 2012. Great Deal's balance sheet reveals working capital of \$1,588 (= \$10,566 – \$8,978) million, and a current ratio of 1.18, as of February 27, 2013. As of this date, Great Deal had \$1.18 in current assets for each \$1.00 of liabilities due within the next year. Thames had negative working capital of €483 (= €11,004 – €11,487) million. Thames's current liabilities, however, include a *Reserves for Contingencies*, explained in Note 22 of its financial statements. Much of this amount will not require a cash outlay within a year of the balance sheet date; the discussion of why will come later in the book. For now, keep in mind that mechanical computations of financial statement ratios across companies will often not yield comparable results.

The accountant's definition of working capital (total current assets minus total current liabilities) differs from the definition often used in finance, because of the treatment of items that do

not clearly relate to a firm's operations. Working capital as defined in finance equals current **operating assets** minus current **operating liabilities**, excluding current assets and current liabilities that reflect the firm's financing structure, called **financial assets** and **financial liabilities**. Thames's balance sheet in **Exhibit 1.5** makes such distinctions easy to see, as it classifies current financial liabilities separately from current operating liabilities. The general rule to distinguish an operating asset (operating liability) from a financing asset (financial liability) is its purpose. Specifically, does the firm use the item directly in operations, or does the firm use it to finance those operations? On the asset side, current financial assets typically include assets that generate interest or investment income, such as marketable securities and other short-term investments.¹ On the liability side, current financial liabilities typically include obligations that accrue interest. Examples include short-term bank borrowings and the current portion of long-term debt. In this book, we use the term *working capital* as the accountant uses it.

The rest of this chapter focuses on specific current assets (cash, prepayments, and inventory) and specific current liabilities (accounts payable, short-term borrowings, accrued liabilities, income taxes payable, warranties, and restructuring liabilities).²

PRINCIPAL CURRENT ASSET ACCOUNTS

CASH AND CASH EQUIVALENTS

Cash includes currency, money orders, bank checks, checking accounts, and time deposits. Many firms combine cash and **cash equivalents** in a single line on the balance sheet. Cash equivalents refer to liquid short-term assets in which the firm has temporarily invested excess cash. Generally, investments with maturities of three months or less qualify as cash equivalents. Firms classify instruments with longer maturities as short-term investments or marketable securities. The measurement of cash and cash equivalents is the cash value of the instruments included in this category.

PREPAYMENTS

Prepayments (also called **prepaid assets**³) are assets that represent services a firm has paid for before consuming them. Examples include rent and insurance payments made before the firm consumes rent and insurance services. For example, if on August 1 a firm pays £18,000 for insurance coverage for the next 12 months, the firm would record the following journal entry:

Prepaid Insurance	18,000	
Cash		18,000
To record the cash paid for insurance coverage over the next 12 months.		

At the end of each of the next 12 months, the firm records the following adjusting entry:

Insurance Expense	1,500	
Prepaid Insurance		1,500
To record £1,500 (= £18,000/12 months) of insurance services consumed during the month.		

If the firm prepared a balance sheet as of December 31, the prepayment would be £10,500 (= £18,000 – [5 months × £1,500/month]).

¹A user of the financial statements cannot see management's intent in holding marketable securities and other short-term investments. For example, management might plan to use these assets to support an operating strategy. If so, management will classify these securities or investments as operating assets.

²**Chapter 8** describes two working capital accounts associated with revenues (accounts receivable and advances from customers). We defer discussion of other current asset and current liability accounts to later chapters. For example, we describe marketable securities in **Chapter 13**, the current portion of long-term debt in **Chapter 11**, and the current portion of deferred taxes in **Chapter 12**.

³Since all assets are prepaid, we prefer the term *prepayments*, but practice often refers to *prepaid assets*.

INVENTORY

Inventory refers to items a firm holds for sale or for further processing as part of its operations. When a firm sells inventory, the carrying amount of that inventory becomes an expense, Cost of Goods Sold. Inventories are a major asset for merchandising and manufacturing firms, and cost of goods sold is typically their largest expense.

The *inventory equation* describes changes in inventory. The following equation measures all quantities in physical units:

$$\underbrace{\text{Beginning Inventory} + \text{Additions}}_{\text{Good Available for Sale (or Use)}} - \text{Withdrawals} = \text{Ending Inventory}$$

A firm that begins a period with 2,000 pounds of sugar (beginning inventory) and purchases (adds) 4,500 pounds has 6,500 (= 2,000 + 4,500) pounds available for sale or use. The term *goods available for sale* (or *use*) refers to the sum of Beginning Inventory plus Additions. If the firm uses (withdraws) 5,300 pounds, 1,200 pounds of sugar remain at the end of the period (ending inventory).

The inventory equation can also be written as follows:

$$\underbrace{\text{Beginning Inventory} + \text{Additions}}_{\text{Good Available for Sale (or Use)}} - \text{Ending Inventory} = \text{Withdrawals}$$

If the firm begins the period with 2,000 pounds of sugar, purchases 4,500 pounds, and observes 1,200 pounds on hand at the end of the period, the firm used 5,300 (= 2,000 + 4,500 – 1,200) pounds of sugar during the period.⁴

Financial statements report financial amounts (such as dollars, euros, and yuan), not physical amounts (such as units, kilograms, and cubic feet). The accountant transforms physical quantities of inventories into financial amounts by assigning costs to those physical quantities. When acquisition costs are constant, all inventory items carry the same per-unit cost. Physical quantities and financial amounts change together so that variation in the monetary amounts recorded for inventories results from changes in quantities. Issues in inventory accounting arise because the per-unit acquisition costs of inventory items change over time.

The remainder of this section discusses three issues in inventory accounting:

1. The types of costs included in the acquisition cost of inventory.
2. The treatment of changes in the market value of inventories subsequent to acquisition.
3. The cost-flow assumption used to trace the movement of costs into and out of inventory, including the effects of per-unit inventory costs changing over time.

ISSUE 1: COSTS INCLUDED IN INVENTORY

The principle for cost inclusion is that the balance sheet amount for inventory should include all costs incurred to acquire goods and prepare them for sale.

Merchandising firms, such as Great Deal, acquire inventory items ready for sale. Acquisition cost includes the invoice price less discounts for prompt payment, plus the cost of transporting, receiving, unpacking, inspecting, and shelving, as well as costs incurred to record the purchases in the accounts.

Manufacturing firms, such as Thames Group, do not acquire inventory items ready for sale. Manufacturing firms transform raw materials, purchased parts, and components into finished products in factories. The acquisition cost of manufactured inventories includes three categories of costs:

- **Direct Materials** (also called **Raw Materials**): The cost of materials a manufacturing firm can trace directly to units of product it manufactures. For example, direct materials for Thames would include the steel, plastic, nuts, bolts, assembled CD/radios and navigation systems, and other items that physically become part of a manufactured item.

⁴This form of the inventory equation requires that the firm know Goods Available for Sale and Ending Inventory. From those known quantities, it computes Withdrawals. Computing the amount of withdrawals this way is called the *periodic inventory method*. When the firm counts items as it withdraws them from inventory, it is using the so-called *perpetual inventory method*.

- **Direct Labor:** The cost of labor to transform raw materials into a finished product. This cost for Thames includes the compensation of factory workers on the production line.
- **Manufacturing Overhead:** A variety of indirect costs that the firm cannot directly trace to products manufactured but that are essential for production to occur, for example, depreciation, insurance and taxes on manufacturing facilities, supervisory factory labor, and supplies for factory equipment.

Until a manufacturing firm sells its products and recognizes revenue, it treats all manufacturing costs as **product costs**. Product costs are assets. The firm accumulates product costs in various inventory accounts: raw materials, work in process (also called work in progress), and finished goods. (Refer to **flow of costs** in the **Glossary** for a diagram showing product cost accumulation.) U.S. publicly traded firms must disclose the amounts of each of these three components of inventory in their financial reports, usually in a note. IFRS notes that information about inventory components “is useful to financial statement users.”⁵ As an illustration, Thames’s balance sheet (**Exhibit 1.5**, page 12) reports a carrying value for inventory of €2,210.8 million for the year ended December 31, 2013. **Exhibit 9.1** shows the components of Thames’s inventory, as revealed in Note 15 to its financial statements (in millions of €).⁶

A manufacturing firm, like a merchandising firm, also incurs marketing costs (for example, sales commissions and depreciation, insurance and taxes on the sales staff’s automobiles) and administrative costs (for example, salary of the chief executive officer, depreciation on computers used in human resources). Both merchandising and manufacturing firms treat selling and administrative costs as **period expenses**. Period expenses are not assets. Firms recognize these costs as expenses in the period when they consume the goods or services.

Overview of the Accounting Process for a Manufacturing Firm Figure 9.1 summarizes the flow of costs for a manufacturing firm, and **Figure 9.2** shows the flow of manufacturing costs through the various accounts.

A manufacturing firm maintains separate accounts for inventories at various stages of completion. The **Raw Materials Inventory** account shows the cost of raw materials purchased but not yet transferred to the factory floor. The manufacturing firm records purchases of raw materials as debits to the Raw Materials Inventory account. When the manufacturer physically transfers raw materials to the factory floor, it also transfers the cost of the raw materials from the Raw Materials Inventory account to the Work-in-Process Inventory account. It records this transfer as a credit to the Raw Materials Inventory account for the cost of the raw materials transferred and a debit to the Work in Process Inventory account. The balance in Raw Materials Inventory is the cost of raw materials on hand in the storeroom or warehouse.

EXHIBIT 9.1**Thames
Note 15: Inventories**

	2013	2012
Raw Materials	€ 530.5	€ 504.1
Work-in-Progress (including construction contracts)	1,195.7	1,191.1
Semi-Finished and Finished Products	859.6	859.9
Finished Goods for Resale	125.1	145.1
Total Gross	€2,710.9	€2,700.2
Provisions [Note A]	(500.1)	(472.8)
Total Net	<u>€2,210.8</u>	<u>€2,227.4</u>

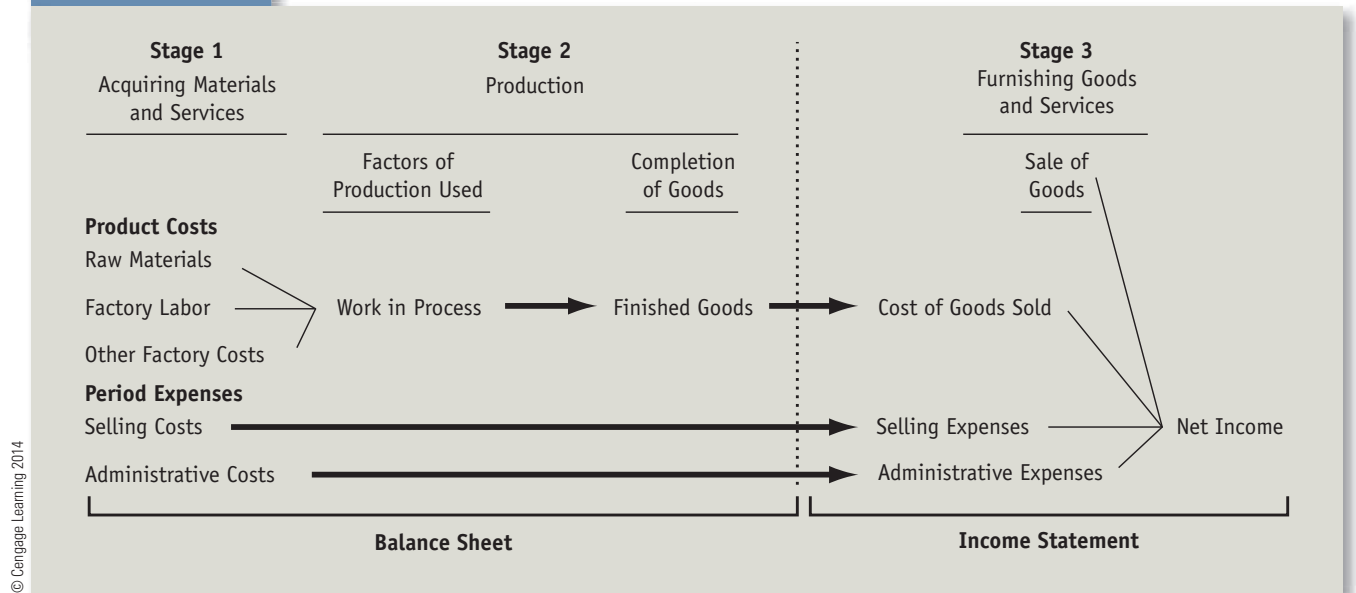
Note A: The term *Provisions* indicates amount by which the total gross value of inventory exceeds a measure of the market value of those inventories, labeled “Total net.”

⁵International Accounting Standards Board, *International Accounting Standard 2*, Inventories, revised 2003, par. 37.

⁶Thames subtracts a provision from inventory. This provision represents the amount by which Thames estimates the cost of inventory exceeds its replacement values.

FIGURE 9.1

Diagram of Cost Flows



The **Work-in-Process Inventory** account (also called **Work-in-Progress Inventory** account) accumulates the cost of raw materials transferred to the factory floor, the cost of direct labor used in production, and manufacturing overhead costs. At the completion of the manufacturing process, the firm physically transfers completed units from the factory floor to the finished goods storeroom. It also transfers the product costs of those completed units to **Finished Goods Inventory**. The firm credits the Work-in-Process Inventory account for the manufacturing costs assigned to the finished units transferred to the finished goods storeroom and debits the Finished Goods Inventory account. This journal entry reduces the balance in Work-in-Process Inventory and increases the balance in Finished Goods Inventory. The balance in the Work-in-Process Inventory account measures the accumulated product costs for units not yet finished.

The **Finished Goods Inventory** account measures the manufacturing cost of units completed but not yet sold. The sale of manufactured goods to customers results in a transfer of their cost from the Finished Goods Inventory account to the **Cost of Goods Sold** account, an expense reducing net income and ultimately retained earnings. The journal entry is a debit to Cost of Goods Sold and a credit to Finished Goods Inventory.

Example 1 Moon Products began its Belgian operations on January 1 by issuing 10,000 shares of €10 par value common stock for €30 per share. Transactions during January and the related journal entries follow:

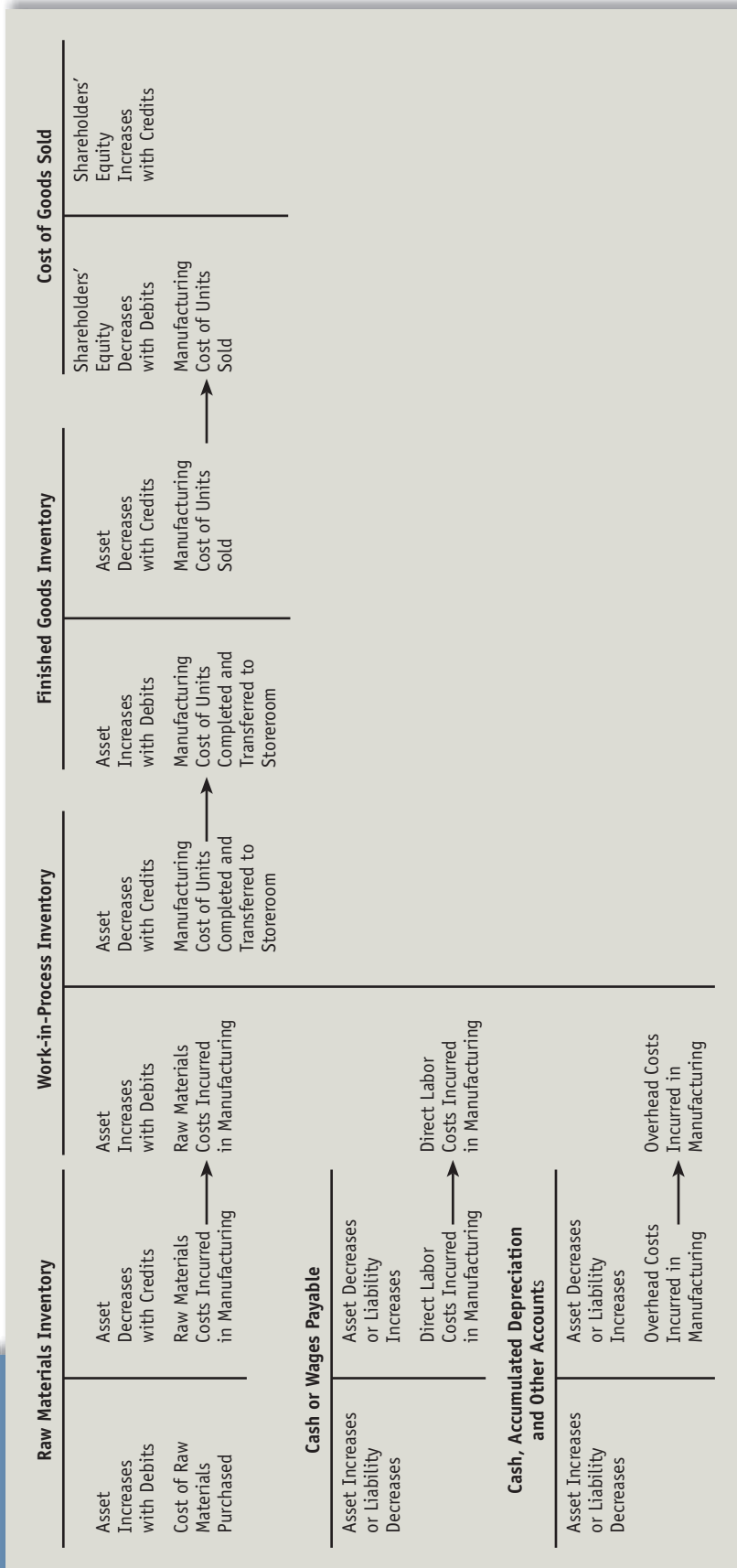
- (1) The firm rents a building and pays 12 months rent in advance, in cash. The amount is €250,000.

Prepaid Rent	250,000	
Cash		250,000
To record prepayment of 12 months rent.		

- (2) The firm purchases on account raw materials costing €25,000.

Raw Materials Inventory	25,000	
Accounts Payable		25,000
To record purchase of inventory on account.		

FIGURE 9.2 Flow of Manufacturing Costs Through the Accounts



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- (3) The firm issues, to producing departments, raw materials costing €20,000.

Work-in-Process Inventory	20,000	
Raw Materials Inventory		20,000
To record the transfer of raw materials to producing departments.		

- (4) The total payroll for January is €60,000: €40,000 paid to factory workers and €20,000 paid to marketing and administrative personnel.

Work-in-Process Inventory	40,000	
Salaries Expense	20,000	
Cash		60,000
To record payroll costs: €40,000 product cost and €20,000 period expense.		

A manufacturing firm records nonmanufacturing costs as expenses of the period when the firm consumes the services. It consumes the services of marketing and administrative personnel when employees provide those services. Journal entry (4) illustrates the difference between recording a product cost and recording a period expense. The first debit increases an asset account and the second increases an expense, thereby reducing shareholders' equity. Entries (5) and (6) also split a single item between a product cost and a period expense.

- (5) Expenditures for utilities during January are €1,200. Of this amount, €1,000 is for manufacturing activities and €200 is for marketing and administrative activities.

Work-in-Process Inventory	1,000	
Utilities Expense	200	
Cash		1,200
To record utilities costs: €1,000 product cost and €200 period expense.		

- (6) Refer to entry (1). Rental expense for January is €20,833 (= €250,000/12 months). The firm uses 70% of the rented space for manufacturing purposes and 30% for administrative (nonmanufacturing) purposes.

Work-in-Process Inventory	14,583	
Rent Expense	6,250	
Prepaid Rent		20,833
To record the consumption of prepaid rent services: €14,583 product cost and €6,250 period expense.		

- (7) Units completed during January and transferred to the finished goods storeroom have a manufacturing cost of €48,500.⁷

Finished Goods Inventory	48,500	
Work-in-Process Inventory		48,500
To record the transfer of completed units to finished goods inventory.		

⁷In practice, firms use cost accounting methods, taught in other courses, to compute the cost of goods manufactured and transferred to the finished goods inventory.

(8) Sales during January total €75,000, of which €25,000 is on account.

Cash	50,000	
Accounts Receivable	25,000	
Sales Revenue		75,000
To record sales of €75,000.		

(9) The cost of the goods sold during January is €42,600.

Cost of Goods Sold	42,600	
Finished Goods Inventory		42,600
To record cost of sales of €42,600.		

Exhibit 9.2 presents a statement of income before taxes for Moon Products for January. **Exhibit 9.3** shows the T-accounts summarizing the journal entries affecting the inventory accounts during the month. Moon Products earned income before taxes of €5,950 in January. At the end of January, Moon Products has a balance of €5,000 in Raw Materials Inventory, €27,083 in Work-in-Process Inventory, and €5,900 in Finished Goods Inventory. Moon

EXHIBIT 9.2

Moon Products Income Statement For January

Sales Revenue		€75,000
Less Expenses:		
Cost of Goods Sold	€42,600	
Salaries Expense	20,000	
Utilities Expense	200	
Rent Expense	<u>6,250</u>	
Total Expenses		<u>69,050</u>
Income Before Taxes		<u>€ 5,950</u>

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EXHIBIT 9.3

Moon Products T-Accounts Showing Inventory Transactions During January

Raw Materials Inventory				Work-in-Process Inventory			
✓	0			✓	0		
(2)	25,000	20,000	(3)	(3)	20,000		
				(4)	40,000	48,500	(7)
				(5)	1,000		
				(6)	14,583		
✓	5,000			✓	27,083		
Finished Goods Inventory				Cost of Goods Sold			
✓	0						
(7)	48,500	42,600	(9)	(9)	42,600		
✓	5,900						

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Products's balance sheet for January would show a carrying value for Inventories of €37,983 (= €5,000 + €27,083 + €5,900).

Summary of Accounting for Manufacturing Operations The accounting procedures for the marketing and administrative costs of manufacturing firms resemble those for merchandising firms. The firm expenses these period costs when it consumes the services. The accounting procedures for a manufacturing firm differ from those for a merchandising firm in the treatment of inventories. A merchandising firm acquires products ready for sale. It debits purchases of merchandise to the Inventory account and credits the Inventory account when it sells the merchandise. A manufacturing firm incurs costs to transform raw materials into work in process and then into finished products. When a manufacturing firm consumes raw materials, labor services, and factory overhead services in the manufacturing process, the consumption results in the creation of an asset—partially completed and completed units of inventory. Until the manufacturing firm sells the units produced, it accumulates (debits) manufacturing costs in asset accounts—the Raw Materials Inventory account, the Work-in-Process Inventory account, and the Finished Goods Inventory account. Upon sale, the firm credits the finished goods inventory account and debits cost of goods sold for the cost of the units sold.

► PROBLEM 9.1 FOR SELF-STUDY

Flow of manufacturing costs through the accounts. The following data relate to the manufacturing activities of Haskell Ltd. during March:

	March 1	March 31
Raw Materials Inventory	£42,400	£ 46,900
Work-in-Process Inventory	75,800	63,200
Finished Goods Inventory	44,200	46,300
Factory Costs Incurred During the Month		
Raw Materials Purchased		60,700
Labor Services Received		137,900
Heat, Light, and Power		1,260
Other Factory Costs		
Rental Charges for Factory Equipment		1,800
Rental Charges on Factory Building		4,100
Prepaid Insurance Expired		1,440
Revenues and Non-Factory Costs		
Sales Revenue		400,000
Selling and Administrative Expenses		125,000

- Calculate the cost of raw materials used during March.
- Calculate the cost of units completed during March and transferred to finished goods.
- Calculate the cost of units sold during March.
- Calculate income before taxes for March.

ISSUE 2: VALUATION SUBSEQUENT TO ACQUISITION

Both U.S. GAAP and IFRS require firms to initially record inventories at acquisition cost (**Issue 1** discussed above). The market value of inventories held by a firm may change, however. This section discusses the treatment of changes in the market value of inventories subsequent

to acquisition. U.S. GAAP and IFRS defined market value differently, but both base the definition on variants of the cost to replace the inventory (**replacement cost**).⁸

Increases in Market Value Inventories may increase in market value subsequent to acquisition for various reasons. The increase is called a *holding gain*. For example, a shortage of a raw material (such as rare earth minerals) may increase the market value of that raw material and therefore increase the market value of inventory of which the raw material is a component. A new labor agreement may increase labor cost and thereby increase the replacement cost of manufactured inventories. If a firm were to remeasure its inventories to the higher replacement cost, or market value, it would make an entry such as the following:

Inventories	X	
Unrealized Holding Gain on Inventories.		X
To record an increase in the market value of inventories		

Neither U.S. GAAP nor IFRS permit firms to remeasure inventories upward to an amount exceeding acquisition cost.⁹ Although an increase in the market value of inventory may allow the firm to raise its selling price, the firm does not realize the benefit of that increase until it sells the inventory. Both U.S. GAAP and IFRS delay recognition of a holding gain on inventories until the firm sells the inventory.

Decreases in Market Value Inventories can decrease in market value for various reasons. The decrease is called a *holding loss*. A competitor may introduce a technologically superior product; a product may include materials found to contain a health hazard; the introduction of a lower-cost raw material lowers the manufacturing cost of a product using that raw material as a component.

Both U.S. GAAP and IFRS require firms to write down (that is, reduce the balance sheet carrying value of) inventories when their replacement cost declines below acquisition cost. Accountants refer to the inventory as *impaired* and refer to this valuation as the **lower-of-cost-or-market basis**.¹⁰ The journal entry to record the inventory impairment results in a loss and a new lower balance sheet carrying value. U.S. GAAP does not permit firms to recognize subsequent value increases. In contrast, IFRS permits firms to reverse previous impairments, up to the amount of the original acquisition cost of the inventory, if the circumstances that caused the inventory impairment no longer exist.

To illustrate inventory impairment, if Great Deal experienced a decline of \$5,000 in the market value of inventory with an acquisition cost of \$119,000, it would make the following journal entry to recognize the impairment:

Unrealized Holding Loss on Inventories	5,000	
Inventory		5,000
To record an inventory impairment loss of \$5,000.		

The Unrealized Holding Loss on Inventory (sometimes called Impairment Loss) is an expense of the period. Many firms include the unrealized holding loss in cost of goods sold.

Consider, for example, the calculations in **Exhibit 9.4** where beginning inventory is \$19,000, purchases are \$100,000, and ending inventory has a cost of \$25,000 and a market value of \$20,000. Cost of Goods Sold is \$5,000 larger when the firm records ending inventory at lower of cost or market than when it records the inventory at acquisition cost. The loss of \$5,000 increases Cost of Goods Sold by \$5,000 and reduces Net Income by \$5,000, compared to the acquisition cost basis. The firm should disclose large write-downs included in Cost of Goods Sold in the notes so that users of financial statements understand the components of the Cost of Goods Sold account.

⁸Refer to the **Glossary** at the entry for *lower of cost or market*.

⁹An exception to this rule for agricultural assets is beyond the scope of this book.

¹⁰AICPA, Committee on Accounting Procedures, *Accounting Research Bulletin No. 43*, "Inventory Pricing," 1953 (**Codification Topic 330**); International Accounting Standards Board, *International Accounting Standard 2*, "Inventories," revised 2003. Refer to the **Glossary** at the entry for *lower of cost or market*.

EXHIBIT 9.4**Calculating Cost of Goods Sold Using Different Bases of Inventory Valuation**

	Cost Basis	Lower-of-Cost-or-Market Basis
Beginning Inventory	\$ 19,000	\$ 19,000
Purchases	<u>100,000</u>	<u>100,000</u>
Goods Available for Sale.	\$119,000	\$119,000
Less Ending Inventory	<u>(25,000)</u>	<u>(20,000)</u>
Cost of Goods Sold	<u>\$ 94,000</u>	<u>\$ 99,000</u>

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If the same inventory increased \$3,000 in market value in the subsequent period, under U.S. GAAP, the firm would continue to report the inventory at \$20,000, the lower of cost or market. If, however, Great Deal prepared its financial statements in accordance with IFRS, it would reverse a portion of its previous impairment by making the following journal entry:

Inventory	3,000	
Unrealized Holding Gain on Inventory		3,000
To record a partial recovery of previous inventory impairment, permitted under IFRS but not under U.S. GAAP.		

Firms in industries that frequently experience inventory price fluctuations often use an allowance account to record lower-of-cost-or-market adjustments.¹¹ For example, **Exhibit 9.5** shows the sort of disclosure Nestlé Group has used to describe its inventory allowance account. Nestlé Group's balance sheet for Year 7 shows inventories with a carrying value of \$9,272 million. The *gross* amount of inventory is \$9,547 million, equal to the *net* (balance sheet carrying value) inventory amount of \$9,272 million plus the ending balance in the Allowance for Write-Downs of \$275 million. The firm estimates the impairment in inventory arising from application of the lower-of-cost-or-market rule and records the impairment in an inventory contra account, the Allowance for Write-Down at Net Realizable Value. If the firm had lower-of-cost-or-market adjustments of \$100 million in Year 7, it would have recorded the following journal entry:

Unrealized Holding Loss on Inventory	100	
Allowance for Write-Down at Net Realizable Value		100
To record an inventory impairment loss of \$100. The Unrealized Holding Loss would reduce income in the current period. The Allowance account did not increase by the full amount of \$100 between the end of Year 6 and the end of Year 7 because other inventory items increased in fair value, partially offsetting the impairment loss.		

EXHIBIT 9.5**Inventory Year Ended December 31, Year 7 and Year 6, Based on Disclosures of Nestlé Group****10. Inventories**

	Year 7	Year 6
Raw Materials, Work in Progress, and Sundry Supplies	\$3,590	\$3,102
Finished Goods	5,957	5,164
Allowance for Write-Down at Net Realizable Value	<u>(275)</u>	<u>(237)</u>
	<u>\$9,272</u>	<u>\$8,029</u>

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¹¹Under U.S. GAAP, a firm would not record an inventory impairment loss in its interim (quarterly) financial statements if "substantial evidence exists that market prices will recover before the inventory is sold" (**Codification Topic 330-10-55**).

Under IFRS, the firm would reverse the write-downs in the Allowance for Inventory Impairment account, as long as those reversals do not exceed the cumulative amount of prior write-downs.¹² The lower-of-cost-or-market basis for inventory valuation is a conservative accounting policy for two reasons:

1. It recognizes losses from decreases in market value before a sale occurs but recognizes gains from increases in market value above original acquisition cost only when a sale occurs;
2. It reports inventories on the balance sheet at amounts that are never greater, but may be less, than acquisition cost.¹³

Subsequent Sale of Inventory Adjusted to Lower of Cost or Market As long as the inventory that a firm has written down remains salable, the firm will record revenues on the eventual sale of the items. The firm will debit Cost of Goods Sold and credit Inventory at the time it recognizes revenue. The difference between the amount of revenue and the amount of cost of goods sold is the gross margin on the transaction. Holding the selling price constant, the lower-of-cost-or-market adjustment reduces the carrying value of the inventory in the period of write-down but increases the gross margin recognized on the eventual sale of the inventory in a future period.

If the write-down and the sale of inventory occur in the same reporting period, the income statement for that period captures both effects. The impairment loss (mark-down) will offset the lower market value of inventory recognized as cost of goods sold. If the firm sells the marked-down inventory in a later reporting period, the impairment loss will reduce income in an earlier period, but the later, higher gross margin in the period of sale will partly offset the loss. For example, if Great Deal estimates that unsold women's clothing with a carrying value of \$400 million has minimal market value given a change in fashion, Great Deal would record an impairment loss of \$400 million, reducing the carrying value of this inventory to zero. If Great Deal sells the clothes for \$5 million in a subsequent accounting period, it would recognize zero cost of goods sold and a gross margin of \$5 million on the sale, for a net margin of $-\$395$ ($= -\$400 + \5) million over the two periods. Had Great Deal not used lower of cost or market, the net margin in the period of sale would have been the same, $-\$395$ million. Lower of cost or market does not change total net income over the life of the item, but it does result in lower reported income in the earlier periods.

Summary of the Effects of Inventory Remeasurements The gain or loss associated with any one unit of inventory is the difference between its selling price and its acquisition cost. Inventory remeasurement rules determine *when* this gain or loss appears in the financial statements over the accounting periods between acquisition and final disposition. If a firm remeasures inventory upward to an amount exceeding acquisition cost (not generally permitted by U.S. GAAP or IFRS), income in the period of the inventory write-up would be higher than if the firm had used the acquisition cost basis, but in a later period when the firm sells the inventory, income will be lower. The later, lower income results from the inventory having a higher balance sheet carrying value and therefore causing a larger cost of goods sold expense. When a firm uses the lower-of-cost-or-market basis, income in the period of an inventory write-down will be lower than if the firm had used the acquisition cost basis, but income in a later period, when the firm sells the inventory, will be higher. Thus, income for each accounting period considered in isolation depends on the valuation of inventory on the balance sheet.

ISSUE 3: COST-FLOW ASSUMPTIONS

If the accounting records contain information on both the cost of the beginning inventory for a period (which equals the ending inventory of last period) and information on purchases made or production costs incurred during the current period, firms can easily measure the cost of

¹²Further, because the firm makes lower-of-cost-or-market adjustments for each type or class of inventory, a firm using IFRS might record *both* an impairment charge on one class of inventory *and* a reversal on a different class of inventory in the same year.

¹³Consult the **Glossary** for the definition of *conservatism* in accounting. Conservative accounting policies result in both lower asset totals and lower retained earnings totals, thus implying lower cumulative net income totals. Conservatism does not mean reporting lower income in every period. Over long-enough time spans, an accounting policy that results in lower income in earlier periods must result in higher income in some subsequent periods. The conservative accounting policy results in lower income in the early periods.

goods available for sale or use. Firms can usually match units sold and units in ending inventory with specific purchases using product bar codes or other identifiers.¹⁴ Using the identifier, the firm can trace the unit back to its purchase invoice or cost record.¹⁵ This is an example of the **specific identification** system for computing cost of goods sold.

To illustrate the specific identification system, assume a cycling store has a beginning inventory consisting of bicycle 1, for which it paid \$2,500. Suppose that during the period the store purchases bicycle 2 for \$2,900 and bicycle 3 for \$3,000, and that it sells one bicycle for \$5,500. The three bicycles are physically identical; the store acquired them at different times as their acquisition costs changed, so only their costs differ.

We can write the inventory equation as follows, measuring all quantities in dollars of cost:

$$\begin{array}{rcccccc} \text{Beginning Inventory} & + & \text{Purchases} & - & \text{Cost of Goods Sold} & = & \text{Ending Inventory} \\ \$2,500 & + & \$5,900 & - & ? & = & ? \end{array}$$

If the cycling store uses the specific identification system, and uses serial numbers or product bar codes to identify bicycle 2 as the unit sold, the cost of goods sold is \$2,900, and the ending inventory consisting of bicycles 1 and 3 is \$5,500 (= \$2,500 + \$3,000).

If a firm does not have a system for the specific identification of units sold and units remaining in inventory, it will have records of the cost of the beginning inventory and the cost of purchases, but not for the cost of goods sold or for ending inventory. It can use a physical count of the ending inventory to obtain the number of units in ending inventory, but it will not have records of the costs of those units. Instead, it has records of the costs of units available for sale during the period (the cost of beginning inventory plus the cost of purchases). It could compute the cost of the units in ending inventory (or, conversely, cost of goods sold) using the most recent costs, the oldest costs, or the average cost of the units available for sale. Once it determines a cost for one unknown quantity—either ending inventory or cost of goods sold—the inventory equation automatically determines the cost for the other quantity. The sum of the two unknowns, Cost of Goods Sold and Ending Inventory, must equal the Cost of Goods Available for Sale (= Beginning Inventory + Purchases). The higher the cost assigned to one unknown, the lower must be the cost assigned to the other.

In short, the firm must either know or make an assumption about which units it has sold or which units remain in inventory. Specific identification avoids making an assumption but is not practicable if inventory items are sufficiently similar and fluid, for example, gasoline in a storage tank or limestone in a quarry. Even when technology that allows firms to track the cost of each item in inventory (such as scanners for product bar codes) exists, it may not be cost effective to do so. For example, a home improvements store likely does not use a bar code system to track pieces of lumber or hammers sold.

Neither U.S. GAAP nor IFRS requires firms to use specific identification. Both allow firms to select a **cost-flow assumption**. *That cost-flow assumption need not match the actual physical flow of units within the firm.* Typical cost-flow assumptions are as follows:

1. Weighted average.
2. First-in, first-out (FIFO).
3. Last-in, first-out (LIFO), which U.S. GAAP permits, but IFRS does not.

We illustrate each of these cost-flow assumptions using the data provided in **Exhibit 9.6**.

Under the **weighted-average** cost-flow assumption, a firm calculates the average of the costs of all units available for sale during the accounting period, including the cost applicable to the beginning inventory. This weighted-average cost applies to the units sold during the period and to the units on hand at the end of the period. Column (2) in **Exhibit 9.6** illustrates the weighted-average cost-flow assumption. The weighted-average cost of each bicycle available for sale

¹⁴Although in theory a firm could apply similar identifiers to manufactured items and work in process, it can be impractical to use specific identification for products that contain thousands of parts, each created by its own manufacturing operation. Many firms use standard cost systems to allocate costs to products manufactured. Standard costing is an important topic in managerial and cost accounting.

¹⁵When a firm computes the cost of goods sold each time it sells an inventory item, it uses a *perpetual inventory system*. When a firm computes the cost of goods sold at the end of each period by taking a physical inventory and assumes that it sold any items not in ending inventory, it uses a *periodic inventory system*. See the **Glossary** for a description of these two inventory systems. We assume use of a periodic system throughout this book, unless we make a specific contrary statement or show a specific entry for cost of goods sold at the time of sale in an example.

EXHIBIT 9.6

Comparison of Cost-Flow Assumptions Historical Cost Basis

Assumed Data

Beginning Inventory:	Bicycle 1 Cost	\$2,500
Purchases:	Bicycle 2 Cost	2,900
	Bicycle 3 Cost	<u>3,000</u>
Cost of Goods Available for Sale		<u>\$8,400</u>
Sales Revenues: One bicycle		<u>\$5,500</u>

Financial Statements	Cost Flow Assumption		
	FIFO	Weighted Average	LIFO
	(1)	(2)	(3)
Sales Revenues	\$5,500	\$5,500	\$5,500
Cost of Goods Sold	<u>2,500^a</u>	<u>2,800^b</u>	<u>3,000^c</u>
Gross Margin on Sales	<u>\$3,000</u>	<u>\$2,700</u>	<u>\$2,500</u>
Ending Inventory	<u>\$5,900^d</u>	<u>\$5,600^e</u>	<u>\$5,400^f</u>

^aBicycle 1 costs \$2,500.

^bAverage bicycle costs \$2,800 (= \$8,400/3).

^cBicycle 3 costs \$3,000.

^dBicycles 2 and 3 cost \$2,900 + \$3,000 = \$5,900.

^eTwo bicycles at average cost 2 × \$2,800 = \$5,600.

^fBicycles 1 and 2 cost \$2,500 + \$2,900 = \$5,400.

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during the period is \$2,800 [= $\frac{1}{3} \times (\$2,500 + \$2,900 + \$3,000)$]. Cost of Goods Sold is thus \$2,800, and ending inventory is \$5,600 (= $2 \times \$2,800$).

The **first-in, first-out (FIFO)** cost-flow assumption assigns the costs of the earliest (or *first*) units acquired to the units sold and assigns the costs of the most recent acquisitions to the ending inventory. This cost-flow assumption matches the physical flow of goods and materials if the firm uses/sells the oldest materials and goods first. Column (1) of Exhibit 9.6 illustrates FIFO, which assigns to cost of goods sold the cost of bicycle 1, while the costs of bicycles 2 and 3 remain in inventory. FIFO is like a conveyor belt: the first costs come off first for use or sale, while the last costs remain at the end of the period.

The **last-in, first-out (LIFO)** cost-flow assumption assigns the costs of the latest (or *last*) units acquired to the withdrawals and assigns the costs of the oldest units to the ending inventory. Some argue that LIFO matches current costs to current revenues and, therefore, that LIFO better measures income. Column (3) of Exhibit 9.6 illustrates LIFO, which assigns to cost of goods sold the cost of bicycle 3 while the costs of bicycles 1 and 2 remain in inventory. LIFO is like a stack of trays in a cafeteria: the last cost, on the top of the stack, is the first expensed, and the longest held unit, which in times of rising prices will have the lowest cost, remains as long as the firm has inventories. LIFO does *not* reflect typical physical inventory flows. That is, the next product a firm sells is typically not the last one that it purchased or produced. As described next, firms use LIFO because it produces a cost of goods sold figure based on more recent costs and, therefore, in some cases results in lower net income and reduced tax payments.

As noted earlier, IFRS prohibits use of the LIFO cost-flow assumption. The U.S. taxing authorities permit a firm to use LIFO for income tax purposes as long as it also uses LIFO for financial reporting purposes.¹⁶ In periods of rising inventory acquisition costs and increasing inventory quantities, LIFO results in a higher cost of goods sold, a lower reported periodic income, and lower current income taxes than either FIFO or the weighted-average cost-flow assumption. The data in Exhibit 9.6 illustrate this pattern, which shows that, during this period characterized by increasing bicycle costs (from \$2,500 to \$2,900 to \$3,000), LIFO results in the smallest gross margin (\$2,500) of the three cost-flow assumptions. LIFO does not, however,

¹⁶The requirement that U.S. firms using LIFO for tax-reporting purposes must also use LIFO for financial-reporting purposes is called the *LIFO conformity rule*. U.S. disclosure rules require that a LIFO firm must disclose ending inventory either at its current cost or on a FIFO cost-flow basis. Coupled with other financial statement information, this disclosure provides sufficient information to permit financial statement users to calculate the values of inventory and cost of goods sold under a FIFO cost-flow assumption or an approximation thereto.

always provides a lower amount of net income, as we discuss in **Appendix 9.1** to this chapter, because inventory quantities or acquisition costs of inventory need not always increase.

COMPARISON OF AND CHOICE AMONG COST-FLOW ASSUMPTIONS

Note from **Exhibit 9.6** that cost of goods sold plus ending inventory equals \$8,400, the total cost of goods available for sale, in all three cases. When purchase prices change, no cost-flow assumption places up-to-date costs on both the income statement and the balance sheet. For example, in a period of rising prices (as in **Exhibit 9.6**), if cost of goods includes recent, higher acquisition prices, as occurs under LIFO, then older, lower acquisition prices must appear in the cost of ending inventory on the balance sheet. As long as firms use acquisition costs for valuing inventory, either the income statement or the balance sheet will reflect current cost figures, but not both.

Of the three cost-flow assumptions, FIFO results in balance sheet figures that are closest to current cost because the latest purchases dominate the ending inventory amounts. The FIFO cost of goods sold will be out of date because FIFO assumes that the earlier acquisition costs of the beginning inventory and the earliest inventory acquisitions during the period become expenses. When purchase prices rise, FIFO usually leads to the highest reported net income of the three methods, and when purchase prices fall, it leads to the smallest.

LIFO ending inventory can contain costs of items acquired many years previously. When inventory costs have been rising and inventory amounts increasing, LIFO can produce balance sheet figures much lower than current costs, while LIFO's cost of goods sold figure approximates current costs. Of the three cost-flow assumptions, LIFO usually results in the smallest net income when inventory costs are rising (highest cost of goods sold) and the largest net income when inventory costs are falling (lowest cost of goods sold). Also, LIFO results in the least fluctuation in gross margins in businesses in which selling prices tend to change as acquisition costs of inventories change.

The weighted-average cost-flow assumption falls between the other two in its effects, but it resembles FIFO more than LIFO in its effects on the financial statements. When inventory turns over rapidly, the weighted-average inventory cost-flow assumption provides amounts virtually identical to FIFO amounts. The remaining discussion treats FIFO and weighted average as the same in terms of income statement effects.

Differences in cost of goods sold and inventories under different cost-flow assumptions relate in part to the rate of change in inventory acquisition costs. Using older purchase prices for inventories under LIFO or using older purchase prices for cost of goods sold under FIFO has little impact if prices are stable. As the rate of price change increases, the effect of using older versus more recent prices increases, resulting in larger differences in cost of goods sold and inventories between FIFO and LIFO.

Differences in cost of goods sold also relate in part to the rate of *inventory turnover*—that is, the speed with which the firm sells its products. As inventory turnover increases, current-period inventory acquisitions make up an increasing portion of the cost of goods available for sale. Because the cost-flow assumption does not affect the current period's cost of purchases, cost of goods sold amounts will not vary as much with the choice of cost-flow assumption. Even with rapid inventory turnover, inventory amounts on the balance sheet can still differ significantly depending on the cost-flow assumption. The longer a firm uses LIFO, the greater will be the difference between inventories based on LIFO and FIFO cost-flow assumptions. **Appendix 9.1** to this chapter describes the financial statement effects introduced by the difference in inventories accounted for under LIFO versus FIFO.

► PROBLEM 9.2 FOR SELF-STUDY

Computing cost of goods sold and ending inventory under various cost-flow assumptions. **Exhibit 9.7** presents data on beginning inventory, purchases, withdrawals, and ending inventory for June and July.

- a. Compute the cost of goods sold and the ending inventory for June using (1) FIFO, (2) LIFO, and (3) weighted-average cost-flow assumptions.
- b. Compute the cost of goods sold and the ending inventory for July using (1) FIFO, (2) LIFO, and (3) weighted-average cost-flow assumptions.

EXHIBIT 9.7

Data for Inventory Calculations
(Problem 9.2 for Self-Study)

	Units	Unit Cost	Total Cost
ITEM X			
Beginning Inventory, June 1	—	—	—
Purchases, June 1	100	\$10.00	\$1,000
Purchases, June 7	400	11.00	4,400
Purchases, June 18	<u>100</u>	12.50	<u>1,250</u>
Total Goods Available for Sale	600		\$6,650
Withdrawals During June	(495)		?
Ending Inventory (June 30) and Beginning Inventory (July 1)	105		\$?
Purchases, July 5	300	13.00	3,900
Purchases, July 15	200	13.50	2,700
Purchases, July 23	<u>250</u>	14.00	<u>3,500</u>
Total Goods Available for Sale	855		\$?
Withdrawals During July.	(620)		?
Ending Inventory (July 31).	<u>235</u>		<u>\$?</u>

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ANALYZING INVENTORY DISCLOSURES

The financial statements and notes provide information for analyzing the effects of inventories and cost of goods sold on measures of profitability and risk. This section illustrates several such analyses.

Two ratios introduced in **Chapter 7** that pertain to inventory management are the **cost of goods sold percentage** and the **inventory turnover ratio**. The cost of goods sold percentage is the ratio of cost of goods sold to sales revenue. The larger this ratio, the greater the portion of sales revenue required to cover the costs of the product and, therefore, the less is available to contribute to profitability. Industry economic characteristics, business strategies, and operating environments affect cost of goods sold percentages. Highly competitive markets force firms to set prices closer to the cost of the product (resulting in a high cost of goods sold percentage) than do less competitive markets. The inventory turnover ratio, equal to cost of goods sold divided by the average inventory during the period, measures how quickly firms sell their inventory.

We can calculate the cost of goods sold percentage and the inventory turnover ratio for Great Deal for the fiscal year ending February 27, 2013, using data from its balance sheet shown in **Exhibit 1.1** (page 8) and from its income statement shown in **Exhibit 1.2** (page 9). Great Deal's cost of goods sold percentage is 75.5%:

$$\frac{\text{Cost of Goods Sold}}{\text{Sales Revenue}} = \frac{\$37,534}{\$49,694} = 75.5\%$$

Its inventory turnover ratio is 7.3:

$$\frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} = \frac{\$37,534}{0.5 \times (\$5,486 + \$4,753)} = 7.3$$

An inventory turnover ratio of 7.3 implies that items remain in Great Deal's inventory for an average of 50 days (= 365 days / 7.3 times per year) before Great Deal sells them.

Both the cost of goods sold percentage and the inventory turnover ratio use cost of goods sold, so there can, but need not, be a relation between them.¹⁷ Changes in the cost of goods sold percentage affect the profit margin. Changes in inventory turnover affect total asset

¹⁷**Chapter 7** presented the disaggregation of the rate of return on assets (ROA) into the profit margin multiplied by total asset turnover.

turnover. The following sections describe possible explanations for various combinations of changes in the cost of goods sold percentage and the inventory turnover ratio.

Increasing Cost of Goods Sold Percentage and Increasing Inventory Turnover Ratio This combination results in a lower profit margin and an increased total asset turnover. The net effect on ROA depends on which effect dominates. The firm may have shifted its sales mix toward faster-moving products that generate smaller gross margin, or it may have increased the proportion of manufacturing outsourced to other manufacturers. Outsourcing reduces raw materials and work-in-process inventories, but the firm must share some of the profit margin with the supplier, the outsourcing firm.

Decreasing Cost of Goods Sold Percentage and Increasing Inventory Turnover Ratio This combination increases both the profit margin and the total asset turnover and thereby increases ROA. This combination might occur if the firm improves its inventory control systems and increases its inventory turnover. The savings in storage and obsolescence costs reduce the cost of goods sold percentage.

Or, demand for the firm's products might increase and inventory moves more quickly. The increased demand permits the firm to raise prices and thereby lower the cost of goods sold percentage. If a manufacturing firm has both a high proportion of fixed costs in its cost structure and excess capacity to meet the increase in demand, then cost of goods sold will increase, but unit costs will decline because the firm will not incur additional fixed costs. As a result, its cost of goods sold percentage will decline.

Increasing Cost of Goods Sold Percentage and Decreasing Inventory Turnover Ratio This combination decreases both the profit margin and the total asset turnover and lowers ROA. This combination might occur if a firm experiences a buildup of obsolete inventory and must write-down the cost of the inventory to lower of cost or market or reduce selling prices. If a manufacturing firm with a high proportion of fixed costs experiences a decline in demand, production will slow, as will inventory turnover; per-unit manufacturing cost increases because the firm must spread, or allocate, the same amount of fixed cost over fewer units produced.

Decreasing Cost of Goods Sold Percentage and Decreasing Inventory Turnover Ratio This combination increases the profit margin but decreases the total asset turnover. The net effect on ROA depends on which effect dominates. This combination could occur if a firm reduced the amount of outsourcing and thereby captured more of the gross margin, while the need for more raw materials and work-in-process inventories slows the inventory turnover. Or, the firm shifts its sales mix toward higher-margin products that sell more slowly.

Other explanations could cause the various combinations discussed above. Additional combinations of changes in one of the two ratios and not in the other are also possible.

► PROBLEM 9.3 FOR SELF-STUDY

Effect of cost-flow assumptions on financial ratios. Refer to the data in **Problem 9.2 for Self-Study**. Assume the following:

	July 31	June 30
Current Assets Excluding Inventories	\$3,480	\$1,650
Current Liabilities	4,820	2,290

- Compute the current ratio for June 30 and July 31 using (1) FIFO, (2) LIFO, and (3) weighted-average cost-flow assumptions for inventories. Assume for this part that there are no differences in income taxes payable related to the three cost-flow assumptions.
- Compute the inventory turnover ratio (= cost of goods sold/average inventory) for July using (1) FIFO, (2) LIFO, and (3) weighted-average cost-flow assumptions.

PRINCIPAL CURRENT LIABILITY ACCOUNTS

Current liabilities are due within the next operating cycle, normally one year. They include accounts payable, short-term notes payable, accrued liabilities (such as for payroll and income taxes), deferred performance obligations (including advances from customers and warranty liabilities), and restructuring liabilities. Current liabilities also include the portion of long-term debt requiring payment within the year after the balance sheet date.¹⁸

A firm continually pays its current liabilities and replaces them with new ones in the course of business operations. Because the firm will not pay these obligations for several weeks or months after the current balance sheet date, they have a present value less than the amount to be paid.¹⁹ The firm typically reports these items at the full amount owed because, considering the small difference between the amount owed and its present value, a separate accounting for this difference (as interest expense) would not be cost-effective.

ACCOUNTS PAYABLE

A firm typically defers payment for items purchased from its suppliers until it receives a bill (invoice) from the supplier, at which point it records a liability called **accounts payable** (sometimes called **trade payables**). The firm may not pay the bill immediately but instead accumulate it with other bills until a specified time of the month when it pays all bills. Because these accounts do not accrue explicit interest, the firm obtains funding from its suppliers by delaying payments. Delays that are too lengthy can lead to poor credit ratings and to restrictions on future credit.

Chapter 7 introduced the accounts payable turnover ratio—the ratio of purchases during the period to average accounts payable. Recall the inventory equation, with terms rearranged:²⁰

$$\text{Beginning Inventories} + \text{Purchases} = \text{Cost of Goods Sold} + \text{Ending Inventories}$$

Using the information in Great Deal's balance sheet (**Exhibit 1.1**, page 8) and its income statement (**Exhibit 1.2**, page 9) for the fiscal year ended February 27, 2013, we can calculate Great Deal's purchases using the preceding equation (dollar amounts in millions):

$$\begin{aligned} \$4,753 + \text{Purchases} &= \$37,534 + \$5,486 \\ \text{Purchases} &= \$38,267 \end{aligned}$$

Great Deal's accounts payable turnover ratio is, then

$$\frac{\text{Purchases}}{\text{Average Accounts Payable}} = \frac{\$38,267}{0.5 \times (\$5,276 + \$4,997)} = 7.5$$

One way to understand an accounts payable turnover ratio of 7.5 focuses on the number of days, on average, the company owes its suppliers before paying its purchase invoices. This measure of the efficiency of accounts payable management divides the accounts payable ratio into 365, to obtain days accounts payable. Great Deal's days accounts payable for the year ended February 27, 2013, is 49 days ($= 365/7.5$), implying that Great Deal pays its suppliers on average about every 50 days.

We now introduce the **cash cycle** (also called the **earnings cycle** or the **operating cycle**). The cash cycle is the time between a firm's first acquiring inventory (or components thereof), then making and selling the product, and ultimately receiving cash from customers and paying cash to suppliers. The cash cycle is Days Inventory + Days Accounts Receivable – Days Accounts Payable. Using data for Great Deal for the fiscal year ended February 27, 2013, we can calculate the cash cycle as follows:

¹⁸We discuss this item in **Chapter 11**.

¹⁹**Appendix 9.1** in this chapter explains the concept of present value.

²⁰This discussion assumes that all credits to Accounts Payable relate to purchases of inventory, and all debits relate to payments to suppliers of that inventory. In reality, Accounts Payable could also include a liability for the purchase of administrative items, such as office supplies.

$$\begin{array}{r} 50 \text{ days} \\ (\text{Days Inventory}) \end{array} + \begin{array}{r} 10 \text{ days} \\ (\text{Days Accounts Receivable})^{21} \end{array} - \begin{array}{r} 49 \text{ days} \\ (\text{Days Accounts Payable}) \end{array} = 11 \text{ days}$$

This means that Great Deal's operations require cash funding for 11 days, a short period compared to some retailers. If Great Deal were to reduce the number of days units remain in inventory (that is, increase inventory turnover), or collect from customers more quickly (increase receivables turnover), or pay its suppliers more slowly (reduce accounts payable turnover), its cash cycle would decrease. All else equal, the shorter the cash cycle, the more profitable the firm.

Most firms have positive cash cycles. One exception, Dell Inc., a manufacturer and distributor of laptop and desktop computers, has a *negative* cash cycle. For one typical year, Dell reported financial information that reveals an accounts receivable turnover of 11.6 (or days accounts receivable of 31.5), inventory turnover of 53.8 (or days inventory of 6.8), and accounts payable turnover of 4.4 (or days accounts payable of 83.0). Dell's cash cycle is, therefore, -44.7 days ($= 31.5 \text{ days} + 6.8 \text{ days} - 83.0 \text{ days}$). Dell's negative cash cycle means that, on net, Dell receives interest-free financing from its suppliers for about 45 days. Dell's cash cycle is unusual in part because of its high inventory turnover ratio. Because Dell does not build a computer until the customer places the order, it does not have much inventory (especially finished goods inventory) on its balance sheet. The time between production of the computer and sale of the computer is small, so the inventory turnover ratio is high.

SHORT-TERM NOTES AND INTEREST PAYABLE

Firms obtain financing for less than a year from banks or other lenders by signing a short-term **note payable**. In return for the cash it receives from the lender, the borrower records a current liability, Notes Payable. Suppose that on June 1, 2013, Great Deal borrows \$1,000,000 from the local bank, promising to pay interest at 6% per year. On June 1, 2013, it records the following journal entry:

Cash	1,000,000	
Notes Payable		1,000,000
To record \$1,000,000 bank loan.		

As time passes, the borrower makes entries, usually adjusting entries, debiting Interest Expense and crediting Interest Payable, to reflect interest that has been accrued but not yet paid. For example, at the end of February 2014 (the end of its 2013 fiscal year), Great Deal would make the following adjusting journal entry to record accrued interest:

Interest Expense	45,000	
Interest Payable		45,000
To record interest at 6% per year for nine months (June – February); $0.06 \times 1,000,000 \times (9/12) = \$45,000$.		

When the borrower makes interest payments, the entry credits Cash and debits Interest Payable. The lending agreement will also specify the payments the borrower must make to reduce the principal for Notes Payable. If Great Deal pays, in full, its obligations to the bank on May 30, 2013, it would show the following two journal entries:

Interest Expense	15,000	
Interest Payable		15,000
To record the remaining interest at 6% per year for the final three months (March – May), $0.06 \times 1,000,000 \times (3/12) = \$15,000$.		

(continued)

²¹We derived this number in **Chapter 7**; see page 229.

Notes Payable	1,000,000	
Interest Payable.	60,000	
Cash		1,060,000
To record payment of the interest and repayment of principal.		

WAGES, SALARIES, AND OTHER PAYROLL ITEMS

The end of a firm's reporting period often does not coincide with the schedule for making wage and salary payments to employees. For example, a firm might end its fiscal reporting period on December 31, but not have paid all the amounts owed for work done prior to this date. To ensure that their financial statements reflect amounts owed to employees, firms debit **Wages and Salaries Expense** and credit **Wages and Salaries Payable** for the amount employees have earned but firms have not yet paid as of the end of the reporting period.

Employees owe part of their wages to governments for income and other taxes. They may also owe other amounts for union dues and insurance plans. These amounts are part of the employer's wage expense, but the employer withholds those amounts from each employee's gross pay and then pays them on each employee's behalf to the governments, unions, and insurance companies. In addition, the employer may itself pay various payroll taxes and may have agreed to pay for other fringe benefits, such as paid vacations. The employer must accrue the costs of the earned but unused vacations (including the payroll taxes and fringe benefits on them) at the time the employees earn them, not when employees take vacations and receive their wages. This treatment results in charging each month of the year with a portion of the cost of vacations rather than allocating all the costs to the period when employees take their vacations.

Example 2 Assume that the Sacramento Radio Shack's employees earn \$100,000 and that the employer (Sacramento Radio Shack) withholds taxes averaging 40% of these amounts for various taxes. In addition, employees in aggregate owe \$500 for union dues to be withheld by the employer and \$3,000 for health insurance. Sacramento Radio Shack must also pay various payroll taxes averaging 18% of gross wages, as well as \$4,500 to Fireman's Fund for payments to provide life and health insurance coverage. Employees have earned vacation pay estimated to be \$4,000; Sacramento Radio Shack estimates employer payroll taxes and fringe benefits to be 18% of the gross amount of vacation pay.

The journal entries that follow record these wages. If production workers had earned some of the wages, the firm would debit those amounts to Work-in-Process Inventory rather than to Wages and Salaries Expense.

Wages and Salaries Expense	100,000	
Taxes Payable to Various Governments.		40,000
Withheld Dues Payable to Union.		500
Insurance Premiums Payable		3,000
Wages and Salaries Payable		56,500
To record wage expense; plug for \$56,500 payable to employees.		

Wages and Salaries Expense	18,000	
Insurance Expense	4,500	
Payroll Taxes Payable		18,000
Insurance Premiums Payable		4,500
To record employer's expense for amounts not payable to employees.		

Wages and Salaries Expense	4,720	
Estimated Vacation Wage and Fringes Payable.		4,720
To record estimate of vacation pay and fringes thereon earned during the current period of \$4,720 (= \$4,000 + [0.18 × \$4,000]).		

INCOME TAXES PAYABLE

Most businesses organized as corporations pay income taxes based on their taxable income (the income reported on the tax return).²² Some jurisdictions do not levy taxes on income earned by corporations. Taxable income (which usually differs from pretax income reported in financial statements) and corporate income tax rates determine the amount of income taxes payable. That is, in many jurisdictions the income reported to the taxing authorities, which we always refer to as *taxable income*, differs from the amount of income reported on the income statement, which we always refer to as *pretax income*. The difference between taxable income and pretax income (sometimes called “book income”) arises from several factors, as **Chapter 12** describes.

For now, we note that a firm reports the amount of taxes it must pay to the taxing authorities in the current liability account, **Income Taxes Payable**. Some firms use a more general account title, **Taxes Payable**, reflecting the inclusion of other types of taxes (for example, property taxes, sales taxes, city and state taxes). A typical entry to record taxes payable would debit tax expense and credit taxes payable.

PRODUCT WARRANTIES

Chapter 8 introduced deferred performance liabilities in the form of advances from customers. A deferred performance liability arises when a firm accepts payments from a customer but has not delivered the product or rendered the service to the customer. Another deferred performance liability arises when a firm agrees to provide a **warranty** for service or repairs for some period after a sale. At the time of the sale, the firm will estimate the likely amount of the **warranty liability**. (Firms using IFRS would use the term **warranty provision** instead of warranty liability.²³)

As time passes, firms gain information about both actual warranty usage and actual warranty expenditures. To illustrate the accounting for warranty costs, assume that Thames sold air traffic control systems for €280 million during the accounting period. Thames estimates that it will eventually spend approximately 4% of the sales revenue to satisfy warranty claims for the systems. The current period expense for warranties is, therefore, €11.2 (= 0.04 × €280) million. Thames will make the following entry at the time of the sale of the air traffic control systems:

Accounts Receivable	280.0	
Warranty Expense	11.2	
Sales Revenue		280.0
Warranty Liability		11.2

To record sales and estimated liability for warranties on items sold. Thames would also record cost of goods sold immediately if it used a perpetual method and at the end of the period if it used a periodic method.

Thames recognizes warranty expense, and a related warranty liability, in the period that it recognizes revenue, not when it incurs costs to make repairs. The selling price of a warranted product includes amounts for the product sold and for the future warranty services. Recognizing warranty expense in the period of sale results in matching warranty expense against the related sales revenue. In this case, both the amount and the timing of the liability are uncertain, but Thames can estimate them with reasonable precision. Both U.S. GAAP and IFRS require that firms accrue the expense and the related warranty liability when they can “reasonably estimate” the amount.

In a subsequent period, Thames spends €4.8 million for repairs under the warranty. At this time, it would make the following journal entry:

²²In contrast, businesses organized as partnerships or sole proprietorships do not pay income taxes. Instead, most taxing authorities tax the income of the business entity as income of the individual partners or the sole proprietor. Each partner or sole proprietor adds his or her share of business income to income from all other (nonbusiness) sources in preparing an individual income tax return.

²³The word *provision* usually refers to an expense in U.S. GAAP, but to a liability in IFRS. See the **Glossary**.

Warranty Liability.	4.8	
Cash (or other assets consumed for repairs).		4.8
To record repairs made. The firm does not recognize expense when it provides warranty services, because it recognized the expense at the time of sale.		

Expenditures to satisfy warranty claims do not affect net income. The net income effect occurs in the period of sale when Thames recognizes an expense equal to the *expected* expenditures to satisfy warranty claims arising from products sold in that period. With experience, the firm will adjust Warranty Expense to maintain the Warranty Liability (or Warranty Provision for IFRS firms) at each balance sheet date with a credit balance that reasonably estimates the cost of repairs it will make under warranties outstanding at that time.

The accounting for warranties resembles the allowance method for uncollectible accounts receivable discussed in **Chapter 8** and is, therefore, sometimes referred to as the “allowance method for warranties.” Under the **allowance method for warranties**, current period income reflects an estimate of the cost of future warranty expenditures for products sold during the current period. The firm revises this estimate over time so that its balance sheet contains a warranty obligation whose amount is a reasonable estimate of the cost the firm will incur to satisfy the remaining warranty obligations. The firm treats any reversal of previously accrued warranty charges as a change in accounting estimate, which increases net income immediately.

When the warranty period is one year or less, the warranty liability is a current liability. When the warranty period exceeds one year, the firm will record both a current portion of the liability and a noncurrent portion. Firms using IFRS classify both amounts as Provisions on the balance sheet. U.S. GAAP provides no common terminology for warranty liabilities. Often, firms aggregate them in Other Liabilities.

► PROBLEM 9.4 FOR SELF-STUDY

Warranty liabilities. During the year ended December 31, 2013, Swede Trucks reported the following information for its liability for Product Obligations (amounts in millions of euros). For this exercise, ignore exchange rate differences. Swede Trucks uses IFRS terminology where *Provision* means liability.

	Product Obligations
2013	
1 January	€ 1,028
Provisions during the year	1,339
Provisions used during the year.	-1,056
Provisions reversed during the year	-230
Exchange rate differences.	-24
31 December.	€ 1,057

- What amount did Swede Trucks report for Product Obligations on its balance sheet at the end of 2013?
- What journal entry did Swede Trucks make to record warranty expense during 2013? What effect did this journal entry have on Swede Trucks’ net income for 2013?
- What journal entry did Swede Trucks make in 2013 for actual expenditures to settle its warranty obligations? What effect did this journal entry have on Swede Truck’s net income for 2013?
- During 2013, what journal entry, if any, did Swede Trucks make to reverse previously accrued warranty charges? What effect did this journal entry have on Swede Truck’s net income for 2013?

RESTRUCTURING LIABILITIES

Periodically, a firm may decide to restructure all or some portion of its operations. A **restructuring** involves substantial changes to the scope or conduct of the business. Examples of restructuring activities include selling or closing divisions or plants, combining offices, moving operations from one location to another, terminating employees or leases, and selling assets. Firms restructure their operations because they believe the restructured firm will operate more efficiently and profitably.

Both U.S. GAAP and IFRS require that firms estimate the costs of a restructuring effort and record this estimate as an expense, with an associated **restructuring liability** (U.S. GAAP terminology) or **restructuring provision** (IFRS terminology).²⁴ If restructuring efforts extend beyond one year, the firm's balance sheet will display both current and noncurrent restructuring liabilities or provisions. U.S. GAAP and IFRS differ with respect to the timing of recognition. Under U.S. GAAP firms recognize restructuring charges only under the following conditions:

1. Management has committed to the plan of restructuring.
2. The restructuring costs meet the definition of a liability—a present obligation that the firm has little or no discretion to avoid.

Under IFRS, firms recognize restructuring costs when the firm has committed to and approved a restructuring plan that management will control. The commitment requires that management has estimated the timing and costs of actions and that it has identified and notified employees for whom the plan will terminate. IFRS does not require that the restructuring costs meet the definition of a liability, so firms usually recognize restructuring costs earlier under IFRS than they do under U.S. GAAP.

Under both U.S. GAAP and IFRS, the accounting for restructuring charges is similar to the accounting for warranty expenditures using the allowance method. To illustrate the journal entries, consider financial statements for Swede Trucks for 2013, which show a Restructuring Provision (Liability) of €38 million as of December 31, 2013. Swede Trucks uses IFRS terminology where *Provision* means liability; notes to the financial statements show the following (in millions of euros):

2013	
1 January	€ 45
Provisions during the year	14
Provisions used during the year	-18
Provisions reversed during the year	-2
Exchange rate differences	-1
31 December	<u>€ 38</u>

The beginning balance in the Restructuring Provision (a liability) account was €45 million. During 2013, Swede Trucks recognized restructuring charges of €14 million (described as “Provisions during the year”) and made the following journal entry:

Restructuring Expense	14	
Restructuring Provision		14
To record restructuring charges for the year.		

Swede Trucks also reports that during 2013 it made expenditures of €18 million for the restructuring efforts (described as “Provisions used during the year”):

Restructuring Provision	18	
Cash (or other assets consumed for restructuring)		18
To record restructuring expenditures.		

²⁴FASB, **Codification Topic 420**; IASB, *International Accounting Standard 37*, “Provisions, Contingent Assets and Contingent Liabilities,” 1998.

Finally, ignoring the effect of changes in foreign currency exchange rates, Swede Trucks also reports that during 2013 it reversed €2 million of previously recorded restructuring charges (described as “Provisions reversed during the year”):

Restructuring Provision	2	
Restructuring Expense		2
To reverse previously recorded restructuring charges.		

► PROBLEM 9.5 FOR SELF-STUDY

Journal entries for transactions involving current liabilities. Prepare journal entries for each of the following transactions of Ashton S.A. during the year ended December 31, 2008. Ashton uses IFRS to prepare its financial reports.

- a. January 2: The firm borrows €10,000 on a 9%, 90-day note from First National Bank.
- b. January 3: The firm acquires merchandise costing €8,000 from suppliers on account.
- c. January 10: The firm receives €1,500 from a customer as a deposit on merchandise that Ashton expects to deliver in February.
- d. Month of January: The firm sells merchandise costing €6,000 to customers on account for €12,000.
- e. Month of January: The firm pays suppliers €8,000 of the amount owed for purchases of merchandise on account and collects €7,000 of amounts owed by customers.
- f. January 31: Products sold during January include a two-year warranty. Ashton S.A. estimates that warranty claims will equal 8% of sales. No customer made warranty claims during January.
- g. January 31: Employees earned wages of €4,000 for the month of January. The firm withholds the following from the amounts it pays to employees: 20% for income taxes, 10% for pension and welfare taxes, and €200 for union dues. In addition, the employer must pay pension and welfare taxes of 10% and employment taxes of 3.5%. These wages and taxes remain unpaid at the end of January.
- h. January 31: The firm accrues interest expense on the bank loan (see transaction a).
- i. January 31: The firm accrues income tax expense, but makes no payment, at a rate of 40% on net income during January.
- j. February 1: Ashton pays employees their January wages net of withholdings.
- k. February 10: The firm delivers merchandise costing €800 to the customer in transaction c in full satisfaction of its order.
- l. February 15: The firm remits payroll taxes and union dues to government and union authorities.
- m. February 20: A customer who purchased merchandise during January returns goods for warranty repairs. The repairs cost the firm €220, which it paid in cash.
- n. March 14: Ashton decides to restructure its operations and has committed to a restructuring plan that management has approved and will control. Management has identified and notified employees whose employment will be terminated. The estimated costs for the restructuring plan activities are €50,000.
- o. June 20: Ashton begins closing plants pursuant to the March restructuring plan and incurs cash payments of €20,000. At this time, Ashton also realizes that its estimate of total restructuring costs is too high, by €12,500.

SUMMARY

Working capital is the difference between a firm's current assets and its current liabilities. Current assets include cash, accounts receivable (discussed in **Chapter 8**), marketable securities (discussed in **Chapter 13**), prepayments, and inventory. Current liabilities include accounts payable, short-term notes payable, the current portion of long-term debt (discussed in **Chapter 11**), advances from customers (discussed in **Chapter 8**), certain short-term liabilities (such as wages payable and taxes payable), the current portion of deferred taxes (discussed in **Chapter 12**), certain short-term warranties, and the portion of restructuring obligations management expects to settle in the next year.

Of the working capital accounts discussed in this chapter, inventory is the most complex. Inventory measurements affect the income statement (through cost of goods sold and through impairment charges) and the balance sheet, which reports the carrying value of inventory at the end of the reporting period. The sum of cost of goods sold and the ending inventory balance must equal the sum of the beginning inventory balance plus purchases or other acquisitions of inventory during the period. The amounts allocated to expense (cost of goods sold) and the inventory asset (ending inventory balance) will always sum to a given amount. The split between expense and asset results in part from the firm's choices of the cost-flow assumption (FIFO, LIFO, and weighted average). When prices are rising and inventory amounts are increasing, LIFO (the last-in, first-out cost-flow assumption) results in the largest cost of goods sold and the smallest balance sheet carrying value of inventory. FIFO (the first-in, first-out cost-flow assumption) results in balance sheet carrying values that approximate current cost.

APPENDIX 9.1: A CLOSER LOOK AT LIFO'S EFFECTS ON FINANCIAL STATEMENTS

LIFO usually presents a cost of goods sold figure that reflects current costs. If a taxpayer uses LIFO, in periods of rising prices, LIFO also generally results in reporting lower taxable income and, therefore, incurring lower income tax payments. U.S. tax rules permit LIFO for tax purposes, but few other jurisdictions do. U.S. firms that use LIFO for tax purposes must also use LIFO for financial-reporting purposes, so they report lower net income to shareholders than they would have reported if they had used FIFO (the LIFO conformity rule is described in footnote 16). The deferral of income taxes increases the present value of the cash flows for LIFO firms, despite reporting lower earnings to shareholders.

LIFO LAYERS

In any year when inventory purchases exceed sales, the quantity of units in inventory increases. The amount added to inventory for that year is called a **LIFO inventory layer**. For example, if a firm acquires 100 cell phones each year and sells 98 cell phones each year for four years, starting in 2009, its inventory at the end of the fourth year, 2012, contains 8 units. The cost of the 8 units under LIFO is the cost of phones numbered 1 and 2 (2009), 101 and 102 (2010), 201 and 202 (2011), and 301 and 302 (2012). Common terminology would say that this firm has four LIFO layers, each labeled with its year of acquisition. The physical units on hand would almost certainly be the units most recently acquired in 2012, units numbered 393 through 400, but they would appear on the balance sheet at costs incurred for purchases during each of the four years.

DIPPING INTO LIFO LAYERS

A U.S. firm using LIFO must consider the implications of dipping into LIFO layers, also called **LIFO liquidation**. LIFO reduces current taxes in periods of rising purchase prices and rising inventory quantities. If inventory quantities decline the opposite effect occurs in the year of

EXHIBIT 9.8**Data for Illustration of LIFO Layers
(Inventory at January 1, 2012)**

	LIFO Layers		Cost	
	Year Purchased	Number of Units	Per Unit	Total Cost
2005.....		100	\$ 50	\$ 5,000
2006.....		110	60	6,600
2007.....		120	80	9,600
2008.....		<u>130</u>	100	<u>13,000</u>
		<u>460</u>		<u>\$34,200</u>

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the decline: older, lower costs per unit of prior years' LIFO layers leave the balance sheet and become expenses. If a firm reduces end-of-period physical inventory quantities below the beginning-of-period quantities, cost of goods sold will reflect the current period's purchases plus a portion of the older and lower costs in the beginning inventory. The firm will have lower cost of goods sold, implying larger reported income and larger income taxes in that period than if the firm had maintained its ending inventory at beginning-of-period levels.

To illustrate, assume that LIFO inventory at the beginning of 2012 consists of 460 units with a total cost of \$34,200, as in **Exhibit 9.8**. Assume that the cost at the end of 2012 is \$120 per unit and that the income tax rate is 40%. If 2012 ending inventory drops to 100 units, all 360 units purchased in 2009, 2010, and 2011 will enter cost of goods sold. These 360 units cost \$29,200 (= \$6,600 + \$9,600 + \$13,000), but the current cost of comparable units is \$43,200 (= 360 units × \$120 per unit). Cost of goods sold will be \$14,000 smaller (= \$43,200 – \$29,200) than if quantities had not declined because the firm dipped into old LIFO layers. Income subject to income taxes will be \$14,000 larger, and income after taxes will be \$8,400 (= [1 – 0.40] × \$14,000) larger than if quantities had not declined from 460 to 100 units. LIFO results in firms deferring taxes as long as they do not dip into LIFO layers.

LIFO BALANCE SHEET

LIFO usually leads to a balance sheet amount for inventory that is materially less than the current cost of that inventory. The U.S. Securities and Exchange Commission (SEC) has worried that this out-of-date information might mislead readers of financial statements. As a result, the SEC requires SEC registrants that use LIFO to disclose, in notes to the financial statements, the amounts by which inventories based on FIFO or current cost exceed their amounts as reported with a LIFO cost-flow assumption. Some managers refer to the excess of FIFO or current cost over LIFO cost of inventories as the **LIFO reserve**. Another term, less commonly used, is “LIFO valuation allowance.”

CONVERTING FINANCIAL STATEMENT INFORMATION FROM LIFO TO FIFO

Using disclosures of the excess of FIFO or current cost inventories over LIFO inventories, the analyst can compute inventories and cost of goods sold assuming a FIFO cost flow and thereby obtain comparable data between a LIFO firm and its FIFO competitor. To illustrate the conversion, consider the information reported by Super Soap Company (SSC) for the year ended December 31, 2012. **Exhibit 9.9** shows SSC's income statement, **Exhibit 9.10** shows the asset portion of the balance sheet, and **Exhibit 9.11** shows excerpts from the disclosures that relate to inventories, which the U.S. SEC requires of LIFO firms.

SSC's disclosures reveal that it uses the FIFO method for about 80% of its inventories and LIFO for the remainder (20%). When a firm reports using LIFO for a material portion of its inventory, common practice in the United States describes it as a LIFO firm—even though in this case SSC uses FIFO for a majority (80%) of its inventories.

Exhibit 9.12 shows the conversion of inventories and cost of goods sold from a LIFO to a FIFO cost-flow assumption. The inventory amounts in the first column under LIFO appear on SSC's balance sheet, and cost of goods sold and sales come from the income statement. We compute purchases using the inventory equation. The amounts disclosed for the excess of

EXHIBIT 9.9

Super Soap Company
Consolidated Income Statement
For the Year Ended December 31, 2012

Net sales	\$13,789.7
Cost of sales	<u>6,042.3</u>
Gross profit	7,747.4
Selling, general, and administrative expenses	4,973.0
Other (income) expense, net	<u>121.3</u>
Operating profit	2653.1
Interest expense, net	<u>156.6</u>
Income before income taxes	2,496.5
Provision for income taxes	<u>759.1</u>
Net income	<u>\$ 1,737.4</u>
Earnings per common share, basic	<u>\$ 3.35</u>
Earnings per common share, diluted	<u>\$ 3.20</u>

Based on the financial statements of Colgate Palmolive Company

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EXHIBIT 9.10

Super Soap Company
Excerpt from Consolidated Balance Sheet

As of December 31,	2012	2011
Assets		
Current Assets		
Cash and cash equivalents	\$ 428.7	\$ 489.5
Receivables (net of allowances of \$50.6 and \$46.4, respectively)	1,680.7	1,523.2
Inventories	1,171.0	1,008.4
Other current assets	<u>338.1</u>	<u>279.9</u>
Total current assets	3,618.5	3,301.0
Property, plant, and equipment, net	3,015.2	2,696.1
Goodwill, net	2,272.0	2,081.8
Other intangible assets, net	844.8	831.1
Other assets	<u>361.5</u>	<u>228.0</u>
Total assets	<u>\$10,112.0</u>	<u>\$9,138.0</u>

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FIFO over LIFO permit the computation of beginning and ending inventories under FIFO in the third column. SSC reports that at the end of 2012, the excess of FIFO cost over LIFO cost was \$87.4 million (\$46.9 million at the end of 2011). This means that if SSC had used FIFO to measure all inventories, the inventories would have been \$87.4 million higher than reported at the end of 2012 and \$46.9 million higher than reported at the beginning of 2012. Purchases are the same under LIFO and FIFO. Using the inventory equation, we calculate cost of goods sold under FIFO as \$6,041.8 million, compared to \$6,042.3 million under LIFO. The gross margin under LIFO is \$7,747.4, as compared to \$7,787.9 under FIFO. The larger gross margin under FIFO suggests that inventory costs increased during the year.

We can compute inventory turnover ratios under LIFO and FIFO as follows:

$$\text{LIFO: } \$6,042.3 / [0.5 \times (\$1,008.4 + \$1,171.0)] = 5.5 \text{ times per year}$$

$$\text{FIFO: } \$6,001.8 / [0.5 \times (\$1,055.3 + \$1,258.4)] = 5.2 \text{ times per year}$$

EXHIBIT 9.11**Super Soap Company
Excerpts from Inventory Disclosures**

INVENTORIES

Inventories are stated at the lower of cost or market. The cost of approximately 80% of inventories is measured using the first-in, first-out (FIFO) method. The cost of all other inventories, predominantly in the United States and Mexico, is measured using the last-in, first-out (LIFO) method.

16. SUPPLEMENTAL BALANCE SHEET INFORMATION

Inventories	2012	2011
Raw materials and supplies	\$ 258.2	\$ 248.3
Work-in-process	43.7	45.4
Finished goods	869.1	714.7
Total Inventories	<u>\$1,171.0</u>	<u>\$1,008.4</u>

Inventories valued under LIFO amounted to \$498.8 and \$438.2 at December 31, 2012 and 2011, respectively. The excess of current cost over LIFO cost at the end of each year was \$87.4 and \$46.9, respectively. The liquidations of LIFO inventory quantities had no effect on income in 2012, 2011, and 2010.

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EXHIBIT 9.12**Super Soap Company
Derivation of FIFO Income from Financial Statements and Notes
(all dollar amounts in millions)**

(Amounts shown in boldface appear in SSC's financial statements. We derive other amounts as indicated.)

	LIFO Cost-Flow Assumption (actually used)	+	Excess of FIFO over LIFO Amount	=	FIFO Cost-Flow Assumption (hypothetical)
Beginning Inventory	\$ 1,008.4		\$ 46.9		\$ 1,055.3
Purchases	6,204.9 ^a		0.0		6,204.9
Cost of Goods Available for Sale	\$ 7,213.3		\$ 46.9		\$ 7,260.2
Less Ending Inventory	1,171.0		87.4		1,258.4
Cost of Goods Sold	\$ 6,042.3		\$(40.5)		\$ 6,001.8
Sales	13,789.7		0.0		13,789.7
Less Cost of Goods Sold	6,042.3		(40.5)		6,001.8
Gross Margin on Sales	<u>\$ 7,747.4</u>		<u>\$ 40.5</u>		<u>\$ 7,787.9</u>

^aComputation of Purchases not presented in financial statements:

$$\begin{array}{rclclcl} \text{Purchases} & = & \text{Cost of Goods Sold} & + & \text{Ending Inventory} & - & \text{Beginning Inventory} \\ \$6,204.9 & = & \mathbf{\$6,042.3} & + & \mathbf{\$1,171.0} & - & \mathbf{\$1,008.4} \end{array}$$

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The inventory turnover ratio under LIFO is misleading because it uses relatively current costs in the numerator and the older cost of LIFO layers in the denominator. The inventory turnover under FIFO more accurately measures the actual turnover of inventory because it uses relatively current cost data in both the numerator and the denominator.

Consider also the current ratio (= current assets/current liabilities) as a measure of short-term liquidity. If a firm uses LIFO in periods of rising prices while inventory quantities increase, the amount of inventory included in the numerator of the current ratio will be smaller than if the firm measured inventory at more current costs using FIFO. Hence, the unwary reader may underestimate the liquidity of a company that uses a LIFO cost-flow assumption.

THE LIFO-FIFO CHOICE

U.S. firms face the choice between the LIFO and FIFO cost-flow assumptions because U.S. tax authorities allow LIFO for tax purposes. (Recall that IFRS forbids LIFO for financial reporting.) For U.S. firms, the decision as to which cost-flow assumption to use will depend on several factors:

- 1. The extent of changes in manufacturing or purchase costs:** When such costs do not change significantly, then the three cost-flow assumptions provide similar amounts for inventories and cost of goods sold.
- 2. The rate of inventory turnover:** The faster the rate of inventory turnover, the smaller are the differences in inventories and cost of goods sold among the three cost-flow assumptions.
- 3. The direction of expected changes in costs:** FIFO results in higher net income and income taxes when total costs increase and lower net income and income taxes when costs decrease.
- 4. The relative emphasis on reporting higher earnings to shareholders versus saving income taxes:** U.S. issue only.
- 5. The increased record-keeping costs of LIFO (for example, keeping track of LIFO layers for all of a firm's products) and its inconsistency with the usual physical flow of inventories:** U.S. issue only.
- 6. The requirement that U.S. firms must use LIFO for financial reporting if they use LIFO for income tax reporting.**

In recent years more than half of U.S. firms use FIFO for a significant portion of their inventories, and more than one-quarter use LIFO for a significant portion. Fewer than one-third of the firms use weighted average or specific identification. Industries with many firms using LIFO include the chemical industry and manufacturers of industrial and farm equipment. Retailing firms also use LIFO extensively. The industries with the smallest proportion of firms using LIFO include technology-based firms, which experience decreasing production costs, such as computers and other electronic equipment. Most foreign tax authorities do not allow LIFO for income tax reporting, so most companies that use LIFO for U.S. inventories use FIFO for inventories abroad.

► PROBLEM 9.6 FOR SELF-STUDY

Assessing the impact of a LIFO layer liquidation. Refer to the data in **Problem 9.2 for Self-Study**. During August the firm purchased 600 units for \$15 each and sold 725 units.

- Compute the cost of goods sold and the ending inventory for August using (1) FIFO, (2) LIFO, and (3) weighted-average cost-flow assumptions.
- Calculate the effect of the LIFO liquidation on net income before income taxes for the year.

SOLUTIONS TO SELF-STUDY PROBLEMS

SUGGESTED SOLUTION TO PROBLEM 9.1 FOR SELF-STUDY

(Haskell Ltd; flow of manufacturing costs through the accounts.)

a.	Beginning Raw Materials Inventory	£ 42,400
	Raw Materials Purchased	60,700
	Raw Materials Available for Use	£103,100
	Subtract Ending Raw Materials Inventory	(46,900)
	Cost of Raw Materials Used	<u>£ 56,200</u>

b.	Beginning Work-in-Process Inventory	£ 75,800
	Cost of Raw Materials Used (from part a)	56,200
	Direct Labor Costs Incurred	137,900
	Heat, Light, and Power Costs	1,260
	Rental Charges for Factory Equipment	1,800
	Rental Charges for Factory Building	4,100
	Prepaid Insurance Costs Consumed	<u>1,440</u>
	Total Beginning Work-in-Process and Manufacturing Costs Incurred	£278,500
	Subtract Ending Work-in-Process Inventory	<u>(63,200)</u>
	Cost of Units Completed and Transferred to Finished Goods Storeroom	<u>£215,300</u>
c.	Beginning Finished Goods	£ 44,200
	Cost of Units Completed and Transferred to Finished Goods Storeroom (from part b)	215,300
	Subtract Ending Finished Goods Inventory	<u>(46,300)</u>
	Cost of Goods Sold	<u>£213,200</u>
	Income before taxes is £61,800 (= £400,000 – £213,200 – £125,000)	

SUGGESTED SOLUTION TO PROBLEM 9.2 FOR SELF-STUDY

(Computing cost of goods sold and ending inventory under various cost-flow assumptions.)

- See Exhibit 9.13.
- See Exhibit 9.14.

SUGGESTED SOLUTION TO PROBLEM 9.3 FOR SELF-STUDY

(Effect of cost-flow assumptions on financial ratios.)

- Current Ratio

EXHIBIT 9.13

Suggested Solution to Problem 9.2 for Self-Study, Part a

	Units	Unit Cost	Total Cost		Weighted Average
			FIFO	LIFO	
Beginning Inventory	—	—	—	—	—
Purchases, June 1	100	\$10.00	\$ 1,000	\$ 1,000	\$ 1,000
Purchases, June 7	400	11.00	4,400	4,400	4,400
Purchases, June 18	<u>100</u>	<u>12.50</u>	<u>1,250</u>	<u>1,250</u>	<u>1,250</u>
Total Goods Available for Sale	600		\$ 6,650	\$ 6,650	\$ 6,650
Withdrawals During June	<u>(495)</u>		<u>(5,345)^a</u>	<u>(5,595)^c</u>	<u>(5,486)^e</u>
Ending Inventory	<u>105</u>		<u>\$ 1,305^b</u>	<u>\$ 1,055^d</u>	<u>\$ 1,164^f</u>

$$^a(100 \times \$10.00) + (395 \times \$11.00) = \$5,345.$$

$$^b(100 \times \$12.50) + (5 \times \$11.00) = \$1,305.$$

$$^c(100 \times \$12.50) + (395 \times \$11.00) = \$5,595.$$

$$^d(100 \times \$10.00) + (5 \times \$11.00) = \$1,055.$$

$$^e495 \times (\$6,650/600) = \$5,486.$$

$$^f105 \times (\$6,650/600) = \$1,164.$$

EXHIBIT 9.14**Suggested Solution to Problem 9.2 for Self-Study, Part b**

	Units	Unit Cost	Total Cost		Weighted Average
			FIFO	LIFO	
Beginning Inventory, July 1	105	See Exhibit 9.13	\$ 1,305	\$ 1,055	\$ 1,164
Purchases, July 5	300	\$13.00	3,900	3,900	3,900
Purchases, July 15	200	13.50	2,700	2,700	2,700
Purchases, July 23	250	14.00	3,500	3,500	3,500
Total Goods Available for Sale . . .	855		\$11,405	\$11,155	\$11,264
Withdrawals During July.	(620)		(8,115) ^a	(8,410) ^c	(8,168) ^e
Ending Inventory	235		\$ 3,290 ^b	\$ 2,745 ^d	\$ 3,096 ^f

^a $\$1,305 + (300 \times \$13.00) + (200 \times \$13.50) + (15 \times \$14.00) = \$8,115.$

^b $(235 \times \$14.00) = \$3,290.$

^c $(250 \times \$14.00) + (200 \times \$13.50) + (170 \times \$13.00) = \$8,410.$

^d $\$1,055 + (130 \times \$13.00) = \$2,745.$

^e $620 \times (\$11,264/855) = \$8,168.$

^f $235 \times (\$11,264/855) = \$3,096.$

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	FIFO	LIFO	Weighted Average
June 30			
$(\$1,650 + \$1,305)/\$2,290$	1.29		
$(\$1,650 + \$1,055)/\$2,290$		1.18	
$(\$1,650 + \$1,164)/\$2,290$			1.23
July 31			
$(\$3,480 + \$3,290)/\$4,820$	1.40		
$(\$3,480 + \$2,745)/\$4,820$		1.29	
$(\$3,480 + \$3,096)/\$4,820$			1.36

b. Inventory Turnover Ratio

July			
$\$8,115/0.5(\$1,305 + \$3,290)$	3.53		
$\$8,410/0.5(\$1,055 + \$2,745)$		4.43	
$\$8,168/0.5(\$1,164 + \$3,096)$			3.83

SUGGESTED SOLUTION TO PROBLEM 9.4 FOR SELF-STUDY

(Swede Trucks; warranty liabilities.)

- Swede Trucks's balance sheet for the year ended December 31, 2013, shows an ending balance in Product Obligations of €1,057 million.
- Journal entry made to record warranty expense during 2013 (described as "Provisions during the year"):

Warranty Expense	1,339	
Warranty Provision		1,339
This journal entry reduced Swede Trucks 2013 income by €1,339 million.		

- c. Journal entry made in 2013 for actual expenditures under warranty (described as “Provisions used during the year”):

Warranty Provision	1,056	
Cash (or other assets consumed for repairs)		1,056
This journal entry had no effect on Swede Truck’s 2013 income.		

- d. Journal entry made to reverse previously accrued warranty charges (described as “Provisions reversed during the year”):

Warranty Provision	230	
Warranty Expense		230
This journal entry increased Swede Truck’s 2013 income by €230 million.		

SUGGESTED SOLUTION TO PROBLEM 9.5 FOR SELF-STUDY

(Ashton S.A.; journal entries for transactions involving current liabilities.)

a. *January 2*

Cash	10,000	
Note Payable		10,000
To record 90-day, 9% bank loan.		

b. *January 3*

Merchandise Inventory	8,000	
Accounts Payable		8,000
To record purchases of merchandise on account.		

c. *January 10*

Cash	1,500	
Advances from Customers		1,500
To record advance from customer on merchandise scheduled for delivery in February.		

d. *Month of January*

Accounts Receivable	12,000	
Sales Revenue		12,000
To record sales on account during January.		

Cost of Goods Sold	6,000	
Merchandise Inventory		6,000
To record the cost of merchandise sold.		

e. *Month of January*

Accounts Payable	8,000	
Cash		8,000
To record payments to suppliers for purchases on account.		

	Cash	7,000	
	Accounts Receivable		7,000
	To record collections from customers for sales on account.		
f.	<i>January 31</i>		
	Warranty Expense	960	
	Warranty Liability		960
	To record estimated warranty cost for goods sold during January; $0.08 \times \$12,000 = \text{€}960$.		
g.	<i>January 31</i>		
	Wages Expense	4,000	
	Withholding Taxes Payable		800
	Pension and Welfare Taxes Payable		400
	Withheld Union Dues Payable		200
	Wages Payable		2,600
	To record January wages net of taxes and union dues withheld.		
	Wages Expense	540	
	Pension and Welfare Taxes Payable		400
	Unemployment Taxes Payable		140
	To record employer's share of payroll taxes.		
h.	<i>January 31</i>		
	Interest Expense	75	
	Interest Payable		75
	To record interest expense on notes payable for January; $\text{€}10,000 \times 0.09 \times 30/360 = \text{€}75$.		
i.	<i>January 31</i>		
	Income Tax Expense	170	
	Income Tax Payable		170
	To accrue income taxes payable for January: $0.40 \times (\text{€}12,000 - \text{€}6,000 - \text{€}960 - \text{€}4,000 - \text{€}540 - \text{€}75) = \text{€}170$.		
j.	<i>February 1</i>		
	Wages Payable	2,600	
	Cash		2,600
	To pay employees their January wages net of withholdings.		
k.	<i>February 10</i>		
	Advances from Customers	1,500	
	Sales Revenue		1,500
	To record the delivery of merchandise to customer, resulting in revenue being recognized.		
	Cost of Goods Sold	800	
	Merchandise Inventory		800
	To record the cost of merchandise sold.		
l.	<i>February 15</i>		
	Withholding Taxes Payable	800	
	Pension and Welfare Taxes Payable	800	

(continued)

Unemployment Taxes Payable	140	
Withheld Union Dues Payable	200	
Cash		1,940
To record payment of payroll taxes and union dues.		
<hr/>		
m. February 20		
Warranty Liability	200	
Cash		200
To record the cost of warranty repairs on products sold during January.		
<hr/>		
n. March 14		
Restructuring Expense	50,000	
Restructuring Liability		50,000
To record restructuring expense.		
<hr/>		
o. June 20		
Restructuring Liability	20,000	
Cash		20,000
To record payments for closing of plants pursuant to restructuring plan.		
<hr/>		
Restructuring Liability	12,500	
Restructuring Expense		12,500
To reverse restructuring charges.		
<hr/>		

SUGGESTED SOLUTION TO PROBLEM 9.6 FOR SELF-STUDY

(Assessing the impact of a LIFO layer liquidation.)

- See Exhibit 9.15.
- $125 \times (\$15 - \$13) = \$250$.

EXHIBIT 9.15

Suggested Solution to Problem 9.6 for Self-Study, Part a

	Units	Unit Cost	Total Cost		Weighted Average
			FIFO	LIFO	
Beginning Inventory	235	See Exhibit 9.14	\$ 3,290	\$ 2,745	\$ 3,096
Purchases During August	600	\$15	9,000	9,000	9,000
Total Goods Available for Sale . . .	835		\$ 12,290	\$ 11,745	\$ 12,096
Withdrawals During August	(725)		(10,640) ^a	(10,625) ^c	(10,503) ^e
Ending Inventory	110		\$ 1,650 ^b	\$ 1,120 ^d	\$ 1,593 ^f

^a $\$3,290 + (490 \times \$15) = \$10,640$.

^b $(110 \times \$15) = \$1,650$.

^c $(600 \times \$15) + (125 \times \$13) = \$10,625$.

^d $\$1,055 + (5 \times \$13) = \$1,120$.

^e $(\$12,096/835) \times 725 = \$10,503$.

^f $(\$12,096/835) \times 110 = \$1,593$.

KEY TERMS AND CONCEPTS

Working capital	Lower-of-cost-or-market basis
Current ratio, working capital ratio	Specific identification
Liquidity	Cost-flow assumption
Operating assets, operating liabilities	Weighted average
Financial assets, financial liabilities	First-in, first-out (FIFO)
Cash	Last-in, first-out (LIFO)
Cash equivalents	Cost of goods sold percentage
Prepayments, prepaid assets	Inventory turnover ratio
Inventory	Accounts payable, trade payables
Merchandising firm	Cash cycle, earnings cycle, operating cycle
Manufacturing firm	Note payable
Direct materials, raw materials	Wages and salaries payable
Direct labor	Income taxes payable, taxes payable
Manufacturing overhead	Warranty
Product costs	Warranty liability, warranty provision
Period expenses	Allowance method for warranties
Raw materials inventory	Restructuring
Work-in-process inventory, work-in-progress inventory	Restructuring liability, restructuring provision
Finished goods inventory	LIFO inventory layer
Cost of goods sold	LIFO liquidation
Replacement cost	LIFO reserve

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

1. Review the meaning of the terms and concepts listed above in Key Terms and Concepts.
2. What are the characteristics of prepayments that qualify as assets? What is the accounting for prepayments?
3. Identify the underlying principle that guides the measurement of the acquisition cost of inventories. What is the rationale for this accounting principle?
4. Firms may treat depreciation on equipment either as a product cost or as a period expense, depending on the type of equipment. Explain.
5. Compare and contrast the Merchandise Inventory account of a merchandising firm and the Finished Goods Inventory account of a manufacturing firm.
6. “Inventory computations require cost-flow assumptions only because specific identification of items sold is costly. Specific identification is theoretically superior to any cost-flow assumption and eliminates the possibility of income manipulation available with some cost-flow assumptions.” Comment.
7. Assume no changes in physical quantities during the period. During a period of rising purchase prices, will a FIFO or a LIFO cost-flow assumption result in the higher ending inventory balance sheet carrying value? During a period of rising purchase prices, will a FIFO or a LIFO cost-flow assumption result in the lower balance sheet carrying value? Which cost-flow assumption will result in the higher cost of goods sold? Which will result in the lower cost of goods sold?
8. “Firms should obtain as much financing as possible from suppliers through accounts payable because it is a free source of funds.” Do you agree? Why or why not?
9. The Francis W. Parker School, a private lower school, has a reporting year ending June 30. It hires teachers for a 10-month period: September of one year through June of the following year. It contracts to pay teachers in 12 monthly installments over the period

September of one year through August of the next year. For the current academic year, suppose that the school will pay teachers total contractual salaries of \$3,600,000. How should the school account for this amount in the financial statements issued June 30 at the end of the academic year?

10. A noted accountant once remarked that the optimal number of faulty TV sets for Sony to sell is “not zero,” even if Sony promises to repair all faulty Sony sets that break down, for whatever reason, within two years of purchase. Why could the optimal number be “not zero”?
11. Describe the similarities and differences between the allowance method for uncollectibles (see **Chapter 8**) and the allowance method for warranties.
12. What does it mean for a firm to reverse a portion of a previously accrued charge, such as the expense creating a warranty liability or a restructuring liability? What is the effect of a reversal on the firm’s income statement, balance sheet, and statement of cash flows in the period of the reversal?

EXERCISES

13. **Accounting for prepayments.** A Belgian food distributor reported ending balances in Prepayments of €30.7 million, €25.8 million, and €42.1 million for the years ended December 31, 2012, 2011, and 2010, respectively. Assume that Prepayments pertain to insurance premiums on warehouses and merchandise. During each of the three years, the firm paid insurance premiums of €50 million. The firm follows IFRS and reports its results in millions of euros (€).
 - a. What journal entries did the food distributor make in each of the three years to recognize prepayments?
 - b. What journal entries did the firm make in 2011 and 2012 to recognize insurance on its warehouse and inventory?
14. **Accounting for prepayments.** Liquid Crystal Display Corporation (LCD), a Korean multinational firm, reported an ending balance for Prepayments of KRW345,609 million for the year ending December 31, 2012. For the year ended December 31, 2011, the ending balance in this account was KRW260,324. Suppose that at the beginning of 2012, the Prepayments balance consisted of three months of prepaid rent on factory warehouses; at the end of the three months, LCD prepaid one year of rent. LCD follows Korean generally accepted accounting principles and reports its results in million of Korean won (KRW). For purposes of this problem, assume that LCD uses either U.S. GAAP or IFRS (the choice will not matter).
 - a. What journal entry did LCD make in each of the three months, January–March of 2012, associated with its prepaid rent?
 - b. What journal entry did LCD make at the end of March 2012 to reflect its prepayment of one year of rent?
 - c. What journal entry did LCD make in each of the months April–December of 2012 associated with its prepaid rent?
15. **Identifying inventory cost inclusions.** Ringgold Winery is a large U.S.-based winery. In 2012 Ringgold spent \$2.2 million to acquire grapes (including transportation costs of \$200,000). Ringgold incurred processing costs of \$50,000 in materials (such as barrels, bottles, and corks), \$145,000 in labor, \$100,000 in machine costs, and \$250,000 in utility charges. During the two- to three-year maturing period, Ringgold incurred additional costs for storage (\$600,000), insurance (\$120,000), indirect labor (\$180,000), and property taxes (\$28,000), a product cost. Ringgold also spent \$400,000 on research and development and \$200,000 on advertising during this period. Identify the costs Ringgold should include in its Wine Inventory account, independent of when Ringgold sells the wine.
16. **Identifying inventory cost inclusions.** Trembly Department Store commenced operations on January 1, 2012. It engaged in the following transactions during January. Identify the amount that the firm should include in the valuation of merchandise inventory.
 - a. Purchases of merchandise on account during January totaled \$300,000.
 - b. The freight cost to transport merchandise to Trembly’s warehouse was \$13,800.
 - c. The salary of the purchasing manager was \$3,000.

- d. Depreciation, taxes, insurance, and utilities for the warehouse totaled \$27,300.
 - e. The salary of the warehouse manager was \$2,200.
 - f. The cost of merchandise that Trembly purchased in part a and returned to the supplier was \$18,500.
 - g. Cash discounts taken by Trembly from purchases on account in part a totaled \$4,900.
- 17. Effect of inventory valuation on the balance sheet and net income.** ResellFast purchases residential and commercial real estate for resale. ResellFast has a December 31 year-end and prepares financial statements quarterly. On February 5, 2012, ResellFast acquired an open-air mall in Miami, Florida, with space for 15 retail businesses, for \$20 million. On April 12, 2012, a storm flooded a portion of the mall, reducing the mall's fair value to \$16.5 million. On August 14, 2012, a large retailer announced plans to build a new store adjacent to the open-air mall; this announcement, combined with ResellFast's repairs, attracted several smaller retailers to inquire about acquiring space in the open-air mall. By September 30, 2012, the fair value of the open-air mall had increased to \$26 million. On November 8, 2012, ResellFast sold the mall for \$27.5 million. Compute the carrying value of the open-air mall on ResellFast's balance sheet and the related income statement effect for each quarter of 2012. ResellFast follows U.S. GAAP.
- 18. Inventory and accounts payable journal entries.** Target Corporation, a U.S.-based retailer, follows U.S. GAAP and reports its results in millions of U.S. dollars (\$). Its balance sheet for the End of Year and Beginning of Year contains the following information:

	(Millions of \$)	
	End of Year	Beginning of Year
Merchandise Inventory	\$6,780	\$6,254
Accounts Payable	6,721	6,575

Target's income statement reports Cost of Goods Sold of \$41,895 million for the year. Assume that Accounts Payable relates only to inventory.

- a. How much merchandise inventory did Target purchase during the year?
 - b. What journal entry did Target make related to part a? Assume that Target made all purchases on account.
 - c. What journal entry did Target make in the year, to record its payments to vendors?
- 19. Inventory and accounts payable journal entries.** Tesco Plc. is the U.K.'s largest grocery store chain. It applies IFRS and reports its results in millions of pounds sterling (£). For a recent year, Tesco reported at year-end and at the beginning of the year, as follows:

	(Millions of £)	
	End of Year	Beginning of Year
Merchandise Inventory	£2,420	£1,911
Trade Payables	3,936	3,317

During the year ended Tesco paid its suppliers £43,558 million. Assume that Trade Payables relates only to inventory.

- a. What journal entry did Tesco make to record the payments to suppliers during the year?
 - b. How much merchandise inventory did Tesco purchase during the year and what journal entry did it make to record those purchases?
 - c. What was Tesco's Cost of Goods Sold for the year? What journal entry did it record to reflect this cost?
- 20. Income computation for a manufacturing firm.** Fun-in-the-Sun Tanning Lotion Company manufactures suntan lotion made from organic materials. During its first year of operations, it purchased raw materials costing \$78,200, of which it used \$56,300 in manufacturing suntan lotions. It incurred manufacturing labor costs of \$36,100 and manufacturing overhead costs of \$26,800 during the year. Inventories taken at the end of the year revealed

unfinished suntan lotions costing \$12,700 and finished suntan lotions costing \$28,500. Compute the amount of cost of goods sold for the year.

- 21. Income computation for a manufacturing firm.** The following data relate to GenMet, a U.S.-based consumer goods manufacturing firm, for the fiscal year ending October 31, 2013. Reported amounts are in millions of U.S. dollars (\$).

	October 31, 2013	October 31, 2012
Raw Materials Inventory	\$101.5	\$ 73.7
Work-in-Process Inventory	119.1	100.8
Finished Goods Inventory	322.3	286.2

GenMet incurred manufacturing costs (direct material, direct labor, manufacturing overhead) during fiscal 2013 totaling \$2,752.0. Sales revenue was \$6,700.2, selling and administrative expenses were \$2,903.7, and interest expense was \$151.9. The income tax rate is 35%. Round arithmetic computations to one digit after the decimal point. Compute GenMet's net income for fiscal year 2013.

- 22. Income computation for a manufacturing firm.** The following data relate to Crystal Chemical Corporation for the year ended December 31, 2013 (amounts in millions of euros):

	December 31, 2013	December 31, 2012
Raw Materials Inventory	€ 373	€ 452
Work-in-Process Inventory	837	843
Finished Goods Inventory	2,396	2,523

The company incurred manufacturing costs (direct material, direct labor, and manufacturing overhead) during the year totaling €28,044. Sales revenue was €32,632, marketing and administrative expenses were €2,436, and interest expenses were €828. The income tax rate is 35%. Compute net income for the year.

- 23. Effect of inventory errors.** Warren Company uses a FIFO cost-flow assumption and calculates Cost of Goods Sold as Beginning Inventory + Purchases – Ending Inventory. It uses a physical count of merchandise on hand to determine the balance in Ending Inventory. On December 30, 2012, Warren Company received merchandise from a supplier and placed that merchandise in its merchandise warehouse. Warren Company included the merchandise in its December 31, 2012, physical count of inventory. Although Warren Company had not yet received the invoice for this merchandise, it knew the cost was \$1,000 from the purchase order confirmation provided by the seller. When the firm received the actual invoice on January 4, 2013, it recorded the merchandise purchase. In summary, Warren Company received merchandise in December 2012, included the merchandise in its physical count of ending inventory at the end of December 2012, but it made no journal entry in December to record the purchase of the inventory. Instead, the firm recorded the merchandise purchase in January 2013. Assume that the firm never discovered its error. Indicate the effect (overstatement (OS), understatement (US), none (NO)) on each of the following amounts (ignore income taxes):
- Inventory, 12/31/2012.
 - Inventory, 12/31/2013.
 - Cost of goods sold, 2012.
 - Cost of goods sold, 2013.
 - Net income, 2012.
 - Net income, 2013.
 - Accounts payable, 12/31/2012.
 - Accounts payable, 12/31/2013.
 - Retained earnings, 12/31/2013.
- 24. Lower of cost or market for inventory.** Cemex S.A., a Mexican cement and construction firm, reported ending inventory, net for the year ended December 31 of \$19,631 million

(all amounts reported in millions of Mexican pesos). During the year, Cemex reported that application of the lower-of-cost-or-market rule to inventories resulted in an impairment of \$131 million. Cemex's allowance account for inventory impairments had an ending balance of \$556 million.

- a. What was the gross value of Cemex's inventory at December 31?
 - b. What journal entry did Cemex make at the end of the year to record the impairment charge for inventory?
- 25. Lower of cost or market for inventory.** Ericsson, a Swedish networks and communications firm, reported a gross value of inventory of SEK25,227 on December 31. It also reported an ending balance in the allowance for impairments of SEK2,752 million. During the year, Ericsson recognized a write-down of inventory in the amount of SEK1,276 million. Assume the acquisition cost of the inventory written down is SEK3,500 million. Ericsson applies IFRS and reports its results in millions of Swedish kronor (SEK).
- a. What was the carrying value of Ericsson's inventory as of December 31?
 - b. What journal entry did Ericsson make to record the write-down (impairment) of inventory?
 - c. Suppose that in January of the next year, the market value of the impaired inventory increased to SEK2,800. What journal entry, if any, would Ericsson make?
 - d. How, if at all, would your answers to parts a–c differ if Ericsson applied U.S. GAAP?
- 26. Computations involving different cost-flow assumptions.** Sun Health Food's purchases of vitamins during its first year of operations were as follows:

	Quantity	Cost per Unit	Total Cost
January 5 Purchase	460	\$4.30	\$ 1,978
April 16 Purchase	670	4.20	2,814
August 26 Purchase	500	4.16	2,080
November 13 Purchase	870	4.10	3,567
Totals	<u>2,500</u>		<u>\$10,439</u>

The inventory on December 31 was 420 units. Compute the cost of the inventory on December 31 and the cost of goods sold for the year under each of the following cost-flow assumptions:

- a. FIFO.
 - b. Weighted average.
 - c. LIFO.
- 27. Computations involving different cost-flow assumptions.** Arnold Company's raw material purchases during January, its first month of operations, were as follows:

	Quantity	Cost per Unit	Total Cost
1/2 Purchased	1,200 pounds	\$2.20	\$ 2,640
1/8 Purchased	2,200 pounds	2.25	4,950
1/15 Purchased	2,800 pounds	2.28	6,384
1/23 Purchased	1,500 pounds	2.30	3,450
1/28 Purchased	<u>3,000 pounds</u>	2.32	<u>6,960</u>
Total Goods Available for Use	<u>10,700 pounds</u>		<u>\$24,384</u>

The inventory on January 31 was 3,500 pounds. Compute the cost of the inventory on January 31 and the cost of raw materials issued to production for January under each of the following cost-flow assumptions:

- a. FIFO.
- b. Weighted average.
- c. LIFO.

28. **Effect of LIFO on financial statements over several periods.** Harmon Corporation commenced operations on January 1, 2011. It uses a LIFO cost-flow assumption. Its purchases and sales for the first three years of operations appear next:

	Purchases		Sales	
	Units	Unit Cost	Units	Unit Price
2011.....	83,000	\$20.00	64,000	\$32.00
2012.....	92,000	25.00	101,000	40.00
2013.....	120,000	30.00	110,000	48.00

- a. Compute the amount of ending inventory for each of the three years.
- b. Compute the amount of income for each of the three years.
29. **LIFO provides opportunity for income manipulation.** EKG Company, a manufacturer of medical supplies, began the year with 10,000 units of product that cost \$8 each. During the year, it produced another 60,000 units at a cost of \$15 each. Sales for the year were expected to total 70,000 units. During November, the company needs to plan production for the remainder of the year. The company might produce no additional units beyond the 60,000 units already produced. On the other hand, the company could produce up to 100,000 additional units; the cost would be \$22 per unit regardless of the quantity produced. Assume that sales are 70,000 units for the year at an average price of \$30 per unit.
- a. What production level for the remainder of the year gives the largest cost of goods sold for the year? What is that cost of goods sold?
- b. What production level for the remainder of the year gives the smallest cost of goods sold for the year? What is that cost of goods sold?
- c. Compare the gross margins implied by the two production plans devised in the preceding parts.
30. **Conversion from LIFO to FIFO.** Cat Incorporated manufactures machinery and engines for the construction, agriculture, and forestry industries. It follows U.S. GAAP and reports its results in millions of U.S. dollars (\$). For the year ended December 31, 2013, it reported LIFO inventories of \$7,204 million, compared to \$6,351 million as of December 31, 2012. Cat's cost of goods sold for 2013 was \$32,626 million. Cat reports in the notes to its 2013 financial statements that inventories would have been \$2,617 million higher as of December 31, 2013, had it used the FIFO cost-flow assumption, and \$2,403 million higher as of December 31, 2012. Compute Cat's cost of goods sold for 2013 if the firm had used FIFO instead of LIFO.
31. **Analysis of LIFO and FIFO disclosures.** Falcon Motor Company, a U.S. automotive manufacturer, reports that it uses the LIFO cost-flow assumption for inventory. For the year ended December 31, 2013, Falcon's cost of goods sold was \$142,587 million. It reported the following information in the notes to its 2013 financial statements:

	December 31, 2013	December 31, 2012
Total Inventories Under FIFO.....	\$11,221	\$11,032
Less: LIFO Adjustment.....	(1,100)	(1,015)
Total Inventories Under LIFO.....	<u>\$10,121</u>	<u>\$10,017</u>

- a. What was the carrying value of Falcon's inventory as of December 31, 2013, and as of December 31, 2012?
- b. What would Falcon's cost of goods sold for 2013 have been had the firm used FIFO?
32. **Journal entries for payroll.** During the year ended June 30, McGee Associates' office employees earned wages of \$700,000. McGee withheld 30% of this amount for payments for various income and payroll taxes. In addition, McGee must pay 10% of gross wages for the employer's share of various taxes. McGee has promised to contribute 4% of gross wages to a profit-sharing fund, which workers will share as they retire. Employees earned vacation pay estimated to be \$14,000; estimated fringe benefits are 20% of that amount.

- a. Prepare journal entries for these wage-related items.
 - b. What is total wage and salary expense?
- 33. Accounting for uncollectible accounts and warranties.** Hurley Corporation sells household appliances (for example, refrigerators, dishwashers) to customers on account. The firm also provides warranty services on products sold. Hurley estimates that 2% of sales will ultimately become uncollectible and that warranty costs will equal 6% of sales. Actual uncollectible accounts and warranty expenditures generally occur within three years of the time of sale. Amounts in selected accounts appear next:

December 31:	2013	2012	2011
Accounts Receivable, Net of Allowance for Uncollectible Accounts of \$245 on December 31, 2013, \$405 on December 31, 2012, and \$355 on December 31, 2011	\$ 6,470	\$ 7,750	\$7,000
Estimated Warranty Liability	1,720	1,535	1,325
For the Year:	2013	2012	
Sales Revenue	\$16,000	\$18,000	

- a. Prepare an analysis that explains the change in the Allowance for Uncollectible Accounts account during 2012 and 2013.
 - b. Prepare an analysis that explains the change in the Warranty Liability account during 2012 and 2013.
- 34. Journal entries for warranty liabilities and subsequent expenditures.** Miele Company is a German family-owned appliance business. Assume that Miele provides a two-year warranty on its products and that Miele estimates current year warranty costs to be 4% of sales revenues. At the beginning of last year, Miele’s balance sheet carrying value of estimated warranty liabilities was €30,000. Miele will incur actual warranty costs over the two years following the time of sale. Assume that sales (all on account) and actual warranty expenditures (all paid in cash) were as follows:

	Sales	Actual Warranty Expenditures
Last Year	€1,200,000	€12,000
Current Year	1,500,000	50,000

- a. Prepare journal entries to recognize sales revenues, warranty costs, and warranty expenditures in for the two years. Closing entries are not required.
 - b. What is the balance in the Warranty Liability account at the end of the current year?
- 35. Journal entries for warranty liabilities and subsequent expenditures.** Kingspeed Bikes offers three-year warranties against defects on the sales of its high-end racing bikes. The firm estimates that the total cost of warranty claims over the three-year warranty period on bikes sold will equal 6% of sales revenue. Kingspeed will incur actual warranty costs over the three-year period following the time of sale. Sales (all for cash) and actual warranty costs incurred on bikes under warranty (60% in cash and 40% in parts) appear next for years 2011–2013:

	Sales	Actual Warranty Costs Incurred During Year on Racing Bikes Under Warranty
2011.	\$ 800,000	\$22,000
2012.	1,200,000	55,000
2013.	900,000	52,000

- a. Prepare journal entries for the events of 2011, 2012, and 2013. Closing entries are not required.
- b. What is the balance in the Warranty Liability account at the end of 2013?

- 36. Journal entries for restructuring liabilities and subsequent expenditures.** For the fiscal year ended September 30, Sappi Paper Limited, a South African paper company, reported an ending balance in its Restructuring Provision, the balance sheet account, of ZAR16 million (ZAR denotes the South Africa Rand currency). The beginning balance in this account was ZAR41 million. During the year, Sappi made cash expenditures of ZAR32 million to settle previously accrued costs of severance charges and plant closings. Sappi did not change any restructuring estimates during the year. Prepare journal entries related to Sappi's restructuring provision during the year.
- 37. Journal entries for restructuring liabilities and subsequent expenditures.** On December 31, 2012, Delchamps Group reported a balance in Restructuring Provisions of €50.9 million, of which €12.5 million was expected to be paid in 2013, with the remainder to be settled during 2014–2015. The balance in this account at the start of the year was €84.0 million. During 2012, assume that Delchamps accrued restructuring charges of €14.2 million, and reversed €7.3 million of previous charges.
- Prepare all journal entries Delchamps made during 2012 related to its restructuring activities.
 - How will Delchamps report its Restructuring Provision on its balance sheet for the year ended December 31, 2012?
 - What is the effect of Delchamps's 2012 restructuring activities on its income statement? How are these activities displayed on the statement of cash flows? Ignore tax effects.

PROBLEMS

- 38. Preparation of journal entries and income statement for a manufacturing firm.** Katherine's Outdoor Furniture, a manufacturer specializing in lawn, deck, and poolside furniture, showed the following amounts in its inventory accounts on January 1:

Raw Materials Inventory	\$226,800
Work-in-Process Inventory	427,900
Finished Goods Inventory	182,700

Katherine's Outdoor Furniture engaged in the following transactions during January:

- Acquired raw materials costing \$667,200 on account.
- Issued, to producing departments, raw materials costing \$689,100.
- Paid salaries and wages during January for services received during the month as follows:

Factory Workers	\$432,800
Sales Personnel	89,700
Administrative Officers	22,300

- Calculated depreciation on buildings and equipment during January as follows:

Manufacturing Facilities	\$182,900
Selling Facilities	87,400
Administrative Facilities	12,200

- Incurred and paid other operating costs in cash as follows:

Manufacturing	\$218,500
Selling	55,100
Administrative	34,700

- (6) The cost of goods manufactured and transferred to the finished goods storeroom totaled \$1,564,500.
 - (7) Sales on account during January totaled \$2,400,000.
 - (8) A physical inventory taken on January 31 revealed a finished goods inventory of \$210,600.
 - a. Present journal entries to record the transactions and events that occurred during January.
 - b. Prepare an income statement for Katherine’s Outdoor Furniture for January. Ignore income taxes.
39. **Flow of manufacturing costs through the accounts.** The following data relate to the manufacturing activities of the Lord Crompton Plc. during June:

	June 30	June 1
Raw Materials Inventory	£ 43,600	£ 46,900
Factory Supplies Inventory	7,700	7,600
Work-in-Process Inventory	115,200	110,900
Finished Goods Inventory	71,400	76,700

It incurred factory costs during the month of June as follows:

Raw Materials Purchased	£429,000
Supplies Purchased	22,300
Labor Services Received	362,100
Heat, Light, and Power	10,300
Insurance	4,200

It also experienced expirations of previous factory acquisitions and prepayments as follows:

Depreciation on Factory Equipment	£36,900
Prepaid Rent Expired	3,600

Other information included the following:

Sales	£1,350,000
Selling and Administrative Expenses	246,900
Interest Expense	47,100
Income Tax Rate	40%

- a. Calculate the cost of raw materials and factory supplies used during June.
 - b. Calculate the cost of units completed during June and transferred to the finished goods storeroom.
 - c. Calculate the cost of goods sold during June.
 - d. Calculate the amount of net income for the month of June.
40. **Flow of manufacturing costs.** Sedan Corporation, a Japanese automobile manufacturer, follows U.S. GAAP and reports its results in millions of yen (¥). On March 31, 2013 and 2012, Sedan reported the following information pertaining to its inventories:

	(Millions of Yen) March 31	
	2013	2012
Raw Materials and Supplies Inventory	¥ 374,210	¥ 362,686
Work-in-Process Inventory	239,937	236,749
Finished Goods Inventory	1,211,569	1,204,521

Sedan reported Cost of Products Sold for the year ended March 31, 2013, of ¥20,452,338. Sedan reported no write-downs of inventory to lower of cost or market during either fiscal year.

- a. What is the carrying value of Sedan's total inventory, as of March 31, 2013?
 - b. What was the cost of units completed by Sedan during 2012?
 - c. Suppose that Sedan's direct labor and overhead were ¥12,000,000 million for the year ended March 31, 2013. How much in raw materials and supplies costs did Sedan charge to Work in Process during the year ended March 31, 2013? What journal entry did it make to record this charge?
 - d. What was the cost of Sedan's raw material and supplies purchased for the year ended March 31, 2013? Assuming all purchases were made on credit, what journal entry did Sedan make to record those purchases?
- 41. Flow of manufacturing costs.** The Minevik Group is a Swedish-based, high-technology engineering firm. It follows IFRS and reports its results in millions of Swedish kronor (SEK). For the years ended December 31, 2013 and 2012, Minevik reported the following information pertaining to its inventories:

	(SEK millions) December 31	
	2013	2012
Raw Materials Inventory	SEK 6,964	SEK5,690
Work-in-Process Inventory	5,157	4,093
Finished Goods Inventory	13,180	8,955

Minevik reported Cost of Sales for 2013 of SEK57,222 million. The notes to its financial statements state that 2013 Cost of Sales includes a SEK281 million write-down of Finished Goods inventory.

- a. What is the carrying value of Minevik's total inventory as of December 31, 2013?
 - b. What journal entry did Minevik make in 2013 to reflect inventory write-downs?
 - c. What was Minevik's Cost of Sales prior to the write-down of inventory to its lower of cost or market value?
 - d. What was the cost of units completed by Minevik during 2013?
 - e. Suppose that Minevik's direct labor and overhead costs are 300% of direct material costs. That is, for every SEK1 of direct material costs, Minevik incurs an additional SEK3 in direct labor and overhead costs. How much in direct materials costs did Minevik charge to Work in Process during 2013? What journal entry did it make to record this charge?
 - f. What was the cost of Minevik's raw materials purchased in 2013?
- 42. Lower-of-cost-or-market valuation for inventory; U.S. GAAP versus IFRS.** Good Luck Brands reported a carrying value of its total inventory as of December 31, 2013, of \$2,047.6 million; the corresponding figure for December 31, 2012, was \$1,937.8. Good Luck Brands applies U.S. GAAP and reports its results in millions of U.S. dollars (\$).
- a. Suppose that on January 1, 2013, the market value of Good Luck Brands's inventory increased to \$2,300.0 million. What journal entry, if any, should Good Luck Brands record on January 1?
 - b. Suppose that on January 1, 2014, the market value of Good Luck Brands's inventory decreased to \$1,880.6 million. What journal entry, if any, should Good Luck Brands record on January 1, 2014?
 - c. Continuing the scenario in part b, suppose that the market value of the inventory previously written down increased to \$1,962.3 million on February 16, 2014. What journal entry, if any, should Good Luck Brands record on this date?
 - d. Would your answers to parts a, b, and c differ if Good Luck Brands applies IFRS?
- 43. Detailed comparison of various choices for inventory accounting.** Burton Corporation commenced retailing operations on January 1, 2011. Purchases of merchandise inventory during 2011 and 2012 appear next:

	Quantity Purchased	Unit Price	Acquisition Cost
1/10/2011.....	600	\$10	\$ 6,000
6/30/2011.....	200	12	2,400
10/20/2011.....	<u>400</u>	15	<u>6,000</u>
Total 2011.....	<u>1,200</u>		<u>\$14,400</u>

	Quantity Purchased	Unit Price	Acquisition Cost
2/18/2012.....	500	\$14	\$ 7,000
7/15/2012.....	500	12	6,000
12/15/2012.....	<u>800</u>	10	<u>8,000</u>
Total 2012.....	<u>1,800</u>		<u>\$21,000</u>

Burton Corporation sold 1,000 units during 2011 and 1,500 units during 2012.

- Calculate the cost of goods sold for 2011 using a FIFO cost-flow assumption.
 - Calculate the cost of goods sold for 2011 using a LIFO cost-flow assumption.
 - Calculate the cost of goods sold for 2011 using a weighted-average cost-flow assumption.
 - Calculate the cost of goods sold for 2012 using a FIFO cost-flow assumption.
 - Calculate the cost of goods sold for 2012 using a LIFO cost-flow assumption.
 - Calculate the cost of goods sold for 2012 using a weighted-average cost-flow assumption.
 - Will FIFO or LIFO result in reporting the larger net income for 2011? Explain.
 - Will FIFO or LIFO result in reporting the larger net income for 2012? Explain.
- 44. Effect of FIFO and LIFO on income statement and balance sheet.** Hanover Oil Products (HOP) operates a gasoline outlet. It commenced operations on January 1. It prices its gasoline at 10% above its average purchase price for gasoline. Purchases of gasoline during January, February, and March appear next:

	Gallons Purchased	Unit Price	Acquisition Cost
January 1.....	4,000	\$1.40	\$ 5,600
January 13.....	6,000	1.46	8,760
January 28.....	<u>5,000</u>	1.50	<u>7,500</u>
Total.....	<u>15,000</u>		<u>\$21,860</u>

	Gallons Purchased	Unit Price	Acquisition Cost
February 5.....	7,000	\$1.53	\$10,710
February 14.....	6,000	1.47	8,820
February 21.....	<u>10,000</u>	1.42	<u>14,200</u>
Total.....	<u>23,000</u>		<u>\$33,730</u>

	Gallons Purchased	Unit Price	Acquisition Cost
March 2.....	6,000	\$1.48	\$ 8,880
March 15.....	5,000	1.54	7,700
March 26.....	<u>4,000</u>	1.60	<u>6,400</u>
Total.....	<u>15,000</u>		<u>\$22,980</u>

Sales for each month were as follows:

January: \$20,840 (13,000 gallons)
 February: \$35,490 (22,000 gallons)
 March: \$28,648 (17,000 gallons)

- Compute the cost of goods sold for January using both a FIFO and a LIFO cost-flow assumption.
 - Repeat part a for February.
 - Repeat part a for March.
 - Why does the cost-flow assumption that provides the largest cost of goods sold amount change each month?
 - Compute the cost of goods sold percentage for each month using both a FIFO and a LIFO cost-flow assumption.
 - Which cost-flow assumption provides the most stable cost of goods sold percentage over the three months? Explain why this is the case.
 - HOP deliberately allowed its inventory to decline to 1,000 gallons at the end of March because of the high purchase cost. Assume for this part that HOP had purchased 6,000 gallons on March 26 instead of 4,000, thereby maintaining an ending inventory equal to the beginning inventory for the month of 3,000 gallons. Compute the amount of cost of goods sold for March using both a FIFO and a LIFO cost-flow assumption. Why are your answers the same as, or different from, those in part c above? Explain.
- 45. Reconstructing underlying events from ending inventory amounts.** (Adapted from CPA examination.) Burch Corporation began a merchandising business on January 1, 2010. It acquired merchandise costing \$100,000 in 2010, \$125,000 in 2011, and \$135,000 in 2012. Information about Burch Corporation's inventory as it would appear on the balance sheet under different inventory methods follows:

	Balance Sheet Inventory Amounts		
	LIFO Cost	FIFO Cost	Lower of Cost or Market
December 31			
2010	\$40,200	\$40,000	\$37,000
2011	36,400	36,000	34,000
2012	41,800	44,000	44,000

In answering each of the following questions, indicate how you deduced the answer. You may assume that in any one year, prices moved only up or down but not both.

- Did prices go up or down in 2010?
 - Did prices go up or down in 2012?
 - Which inventory method would show the highest income for 2010?
 - Which inventory method would show the highest income for 2011?
 - Which inventory method would show the highest income for 2012?
 - Which inventory method would show the lowest income for all three years considered as a single period?
 - For 2012, how much higher or lower would income be on the FIFO cost-flow assumption than on the lower-of-cost-or-market basis?
- 46. LIFO layers influence purchasing behavior and provide opportunity for income manipulation.** Wilson Company sells chemical compounds made from expensium. The company has used a LIFO inventory flow assumption for many years. The inventory of expensium on December 31, 2012, comprised 4,000 pounds from 2003 through 2012 at prices ranging from \$30 to \$52 per pound:

Year Acquired	Purchase Price	Pounds	Cost
2003.....	\$30	2,000	\$ 60,000
2008.....	46	200	9,200
2009.....	48	400	19,200
2012.....	52	<u>1,400</u>	<u>72,800</u>
Total.....		<u>4,000</u>	<u>\$161,200</u>

Expensium costs \$62 per pound during 2013, but the purchasing agent expects its price to fall back to \$52 per pound in 2014. Sales for 2013 require 7,000 pounds of expensium. Wilson Company wants to carry a stock of 4,000 pounds of inventory. The purchasing agent suggests that the firm decrease the inventory of expensium from 4,000 to 600 pounds by the end of 2013 and replenish it to the desired level of 4,000 pounds early in 2014.

The controller argues that such a policy would be foolish. If the firm allows inventories to decrease to 600 pounds, the cost of goods sold will be extraordinarily low (because Wilson will consume older LIFO layers) and income taxes will be extraordinarily high. The controller suggests that the firm plan 2013 purchases to maintain an end-of-year inventory of 4,000 pounds.

Assume that sales for 2013 do require 7,000 pounds of expensium, that the prices for 2013 and 2014 are as forecast, and that the income tax rate for Wilson Company is 40%.

- Calculate the cost of goods sold and the end-of-year LIFO inventory for 2013, assuming that the firm follows the controller's advice and that inventory at the end of 2013 is 4,000 pounds.
 - Calculate the cost of goods sold and the end-of-year LIFO inventory for 2013, assuming that the firm follows the purchasing agent's advice and that inventory at the end of 2013 is 600 pounds.
 - Assume the firm follows the advice of the controller, not the purchasing agent. Calculate the tax savings for 2013 and the extra cash costs for inventory.
 - What should Wilson Company do? Consider quality of earnings issues in your response.
 - Management of Wilson Company wants to know what discretion it has to vary income for 2013 by planning its purchases of expensium. If the firm follows the controller's policy, after-tax income for 2013 will be \$50,000. What is the range, after taxes, of income that the firm can achieve by the purposeful management of expensium purchases?
- 47. Interpreting inventory disclosures.** Refer to the information in **Problem 40** concerning Sedan Corporation's inventory for the years ended March 31, 2013 and 2012. The notes to Sedan's financial statements for the year ended March 31, 2013, state that some of Sedan's inventory is valued using the last-in, first-out (LIFO) method. Specifically, Sedan reported that for the year ended March 31, 2013, ¥283,735 million of inventory was valued using LIFO, compared to ¥357,055 for the year ended March 31, 2012. The LIFO inventory amounts exceeded their FIFO amounts by ¥13,780 million for the year ended March 31, 2013, and by ¥30,360 million for the year ended March 31, 2012.
- What would have been the carrying value of Sedan's inventory at March 31, 2013 and 2012, had the firm used FIFO to value all inventories?
 - What would have been Sedan's cost of products sold for the year ended March 31, 2013, if it had used FIFO for all of its inventories? *Note:* Convention assigns any LIFO reserve entirely to Finished Goods Inventory.
- 48. Allowance method for warranties; reconstructing transactions.** Assume that Central Appliance sells appliances, all for cash. It debits all acquisitions of appliances during a year to the Merchandise Inventory account. The company provides warranties on all its products, guaranteeing to make required repairs, within one year of the date of sale, for any of its appliances that break down. The company has many years of experience with its products and warranties.

The following table shows summary data and financial statement excerpts for Central Appliance for the end of 2012 and for some of the events during 2013. The firm made entries to the Warranty Liability account during 2013 as it made repairs, which converted the credit balance at the end of 2012 into a debit balance of \$15,000 at the end of 2013. That is, before the firm makes its entry to recognize warranty expense for the entire year, the Warranty Liability account has a *debit* balance of \$15,000. Also, the Merchandise Inventory account, to which the firm has debited all purchases of inventory, has a balance of \$820,000 before the adjusting entry for Cost of Goods Sold, so that Goods Available for Sale totaled \$820,000. Central Appliance makes its adjusting entries and closes its books only once each year, at the end of the year.

Balance Sheet Excerpts	End of 2012	
Merchandise Inventory		\$100,000
All Other Asset Accounts		<u>110,000</u>
Total Assets		<u>\$210,000</u>
Warranty Liability		\$ 6,000
All Other Liability and Shareholders' Equity Accounts		<u>204,000</u>
Total Liabilities and Shareholders' Equity		<u>\$210,000</u>

Income Statement Excerpts	2013	2012
Sales Revenue	\$1,000,000	\$800,000
Warranty Expense	?	18,000

At the end of 2013, the management of Central Appliance analyzes the appliances sold within the preceding 12 months. It classifies all appliances still covered by warranty as follows: those sold on or before June 30 (more than six months old), those sold after June 30 but on or before November 30 (more than one month but less than six months old), and those sold on or after December 1. Assume that it estimates that one-half of 1% of the appliances sold more than six months ago will require repair, 5% of the appliances sold one to six months before the end of the year will require repair, and 8% of the appliances sold within the last month will require repair. From this analysis, management estimates that \$5,000 of repairs will still have to be made in 2014 on the appliances sold in 2013. Items remaining in ending inventory on December 31, 2013, had cost \$120,000.

- a. What were the total acquisitions of merchandise inventory during 2013?
 - b. What was the cost of goods sold for 2013?
 - c. What was the dollar amount of repairs made during 2013?
 - d. What was the warranty expense for 2013?
 - e. Give journal entries for repairs made during 2013, for the warranty expense for 2013, and for cost of goods sold for 2013.
- 49. Interpreting restructuring disclosures.** The notes to the financial statements of Bayer Group, a German pharmaceutical company, report a balance of €154 million for Restructuring Provisions on December 31; for the prior year, the ending balance in this liability account was €196 million. During the current year, Bayer reports Utilizations (that is, expenditures) of €134 million, and Reversals of €31 million. Other effects (such as exchange rate differences and changes in the scope of consolidation) reduced the balance in this account by €5 million during the current year.
- a. What journal entry did Bayer make in the current year to record Utilizations and Reversals?
 - b. What journal entry did Bayer make in the current year to record new additions to the Restructuring Provision account?

Long-Lived Tangible and Intangible Assets

1. Understand the concepts distinguishing expenditures on long-lived assets that increase the carrying value of the assets from expenditures that firms treat as expenses.
2. Understand the concepts underlying the measurement of acquisition cost of long-lived assets.
3. Understand the distinction between finite-lived and indefinite-lived assets and the implications for depreciation or amortization.
4. Develop the skills to compute depreciation and amortization based on initial estimates and to adjust depreciation and amortization for changes in those estimates.
5. Develop the skills to record the disposal of long-lived assets at various selling prices.
6. Develop the skills to record an impairment loss on long-lived assets.

LEARNING OBJECTIVES

Chapter 3 introduced the distinction between *current* assets and *noncurrent* assets. Chapter 9 described the accounting for certain current assets (assets a firm expects to consume in the next 12 months). Noncurrent assets, also called long-lived assets, are assets firms expect to consume over periods extending past the next 12 months. Both current and noncurrent assets include **operational assets** used in the firm's operations and **financial assets**, typically held for investment purposes.¹ This chapter focuses on long-lived operational assets, including **tangible assets**, such as land, buildings, and equipment, and **intangible assets**, such as patents, brand names, and trademarks. Both U.S. GAAP and IFRS provide guidance in the following areas for these types of assets:

1. Determining which expenditures with potential long-term benefits firms should recognize as long-lived assets on the balance sheet and which they should recognize as expenses on the income statement.
2. Determining whether to depreciate or amortize the cost of a long-lived asset and, if so, the length of time and pattern of depreciation or amortization.
3. Incorporating changes in estimates used to calculate depreciation or amortization.
4. Accounting for disposals of long-lived assets.
5. Recognizing changes in the fair values of long-lived assets.

Long-lived assets have characteristics that present special accounting challenges, including the following:

- Long-lived assets have long useful lives. Accounting requires that firms allocate the benefit derived from long-lived assets appropriately to each accounting period.

¹Chapters 13 and 14 discuss the accounting for financial assets.

- The useful lives and fair values of these assets may change as technology changes, as firms introduce new products, as government regulations change, and for other similar reasons. Accounting must be responsive to these changes.
- Intangible long-lived assets have no physical substance. Accounting, therefore, may not be able to rely on the same sorts of evidence supporting recognition and measurement that it relies on for tangible assets.

For many firms, investments in long-lived assets represent significant balance sheet items as well as significant uses of cash. For example, Great Deal's balance sheet for the year ended February 17, 2013 (**Exhibit 1.1**), includes \$4,070 million of long-lived tangible assets and \$2,890 million of long-lived intangible assets (the sum of the amounts reported for goodwill, trade names, and customer relationships). The statement of cash flows for the same period (**Exhibit 1.3**) shows that Great Deal used \$615 million cash to acquire long-lived assets. Thames's balance sheet for the year ended December 31, 2013 (**Exhibit 1.5**), and its statement of cash flows for the same period (**Exhibit 1.7**) show that the carrying value of Thames's long-lived tangible (intangible) assets is €1,338.3 million (€3,912.2 million, the sum of goodwill and other intangibles), and its expenditures to acquire long-lived assets are €418.9 million.

Chapter 7 discussed the fixed asset turnover ratio, the ratio of sales to average fixed assets, as one measure of operating efficiency. Fixed assets typically refer to long-lived tangible assets.² The higher is this ratio, the more sales the firm is able to generate from each dollar invested in long-lived tangible assets. Management's ability to use long-lived assets effectively will affect this ratio and, therefore, the firm's performance. To improve performance, management might acquire long-lived assets with a greater ability to produce products and services with high gross margins (the difference between sales revenue and cost of sales), or dispose of unproductive or low performing long-lived assets.

To understand how the firm is using its long-lived assets, users of financial statements need to understand both the accounting standards applicable to long-lived assets and the judgments and estimates that firms make to apply those standards.

TREATMENT OF EXPENDITURES AS ASSETS VERSUS AS EXPENSES

Firms treat expenditures with potential long-term benefits either as an asset on the balance sheet or as an expense on the income statement. Recall from **Chapter 4** that an expenditure qualifies as an asset if it meets the definition of an asset, and satisfies the criteria for asset recognition. These conditions mean that a firm classifies expenditures as assets when it (1) has acquired rights to the future use of an economic resource as a result of a past transaction or event; and (2) can reliably measure the expected benefits at the time of initial recognition. Expenditures that do not meet these two conditions are expenses in the period incurred.

The exchange of cash for a resource with future service potential typically satisfies the first condition (the asset definition). Satisfying the second criterion, the measurability condition, can be more difficult because of the extended time that elapses before all the expected benefits materialize. Satisfying the second condition is more challenging for intangible assets than for tangible assets because of the difficulty of observing the realization of benefits. The following examples illustrate the application of the criteria for long-lived asset recognition.

Example 1 Great Deal pays cash to acquire land and a building. The land and building provide Great Deal with future benefits. The exchange between an independent buyer and seller establishes the cost of the expected benefits at the time of acquisition. The land and building therefore are assets on Great Deal's balance sheet.

Example 2 Great Deal self-constructs new stores using both its employees and outside contractors. The new stores, when completed, will provide Great Deal with future benefits. This example differs from **Example 1** in that Great Deal (1) incurs part of the cost internally, and (2) makes expenditures to construct the stores instead of acquiring a completed asset. The store buildings in process provide evidence of the likelihood of future benefits. During the construction process the accumulated construction costs measure the cost of those expected benefits.

²Fixed assets are sometimes interpreted more broadly to include both long-lived tangible and intangible assets.

All expenditures during the construction process are part of the cost of the self-constructed asset. The self-constructed asset (called construction in progress until the store is completed) is an asset on Great Deal's balance sheet.

Example 3 Merck acquires a patent from its creator for \$120 million. This patent gives Merck an exclusive right to develop and market the patented chemical compound for a specified period. The transaction between Merck and the seller fixes both Merck's right to use the patent and the cost of the expected benefits. The patent is an asset on Merck's balance sheet.

Example 4 Merck spends \$4.8 billion during the current year on research to identify, develop, and test new drugs. This example differs from **Example 3** in that Merck (1) incurs the costs internally and (2) does not acquire a completed asset. Merck would not engage in research if it did not expect future benefits. U.S. GAAP requires firms to expense research and development (R&D) costs in the period incurred, based on the reasoning that the costs do not satisfy the second criterion for asset recognition because the firm cannot measure the expected future benefits with sufficient reliability.³ The difficulty is identifying the portion of each year's expenditure that leads to future benefits and the portion that does not. Thus, Merck recognizes the \$4.8 billion as an expense.

IFRS requires a different treatment for R&D expenditures. IFRS treats *research* costs (the R part of R&D) as expenses, the same as U.S. GAAP, and treats *development* costs (the D part of R&D) as assets.⁴ IFRS defines the transition from research to development as having occurred when three conditions are met: (1) the project reaches technical feasibility; (2) the firm intends, and has the ability, to develop the technology for ultimate use or sale; and (3) the firm can reliably measure the development asset. When the conditions are met, the project moves from the research phase to the development phase. The firm treats development costs incurred after this transition as assets.

Example 5 IBM incurs costs internally to develop new computer software products. U.S. GAAP treats expenditures associated with internally developed software similar to the IFRS treatment of expenditures on R&D.⁵ Specifically, IBM must expense costs incurred prior to establishing technical feasibility, and recognize as assets the costs incurred after establishing technical feasibility.

To illustrate the application of asset recognition criteria when a firm purchases intangible assets, assume that in the year ended February 27, 2013, Great Deal paid \$100 million to purchase the following assets of CarPax, Inc., as part of a business combination. The amounts shown are the fair values of certain assets; other assets acquired and liabilities assumed are not shown.

Property and Equipment	\$ 47
Identifiable Intangible Assets:	
Customer Lists	8
Trade Names	10
In-Process Research and Development Projects	15
Goodwill	20
Total	<u>\$100</u>

Great Deal used appraisals and other means to establish the fair value of the identifiable assets acquired, including intangibles that CarPax developed internally and that therefore did not appear as assets on CarPax's balance sheet. An identifiable asset must either (1) be separable (that is, capable of being separated from the acquired entity and sold, transferred, licensed, rented, or exchanged), or (2) arise from contractual or other legal rights.⁶

³FASB, *Statement of Financial Accounting Standards No. 2*, "Accounting for Research and Development Costs," 1974 (**Codification Topic 730**).

⁴IASB, *International Accounting Standard 38*, "Intangible Assets," 1998.

⁵FASB, *Statement of Financial Accounting Standards No. 86*, "Accounting for the Costs of Computer Software to Be Sold, Leased or Otherwise Marketed," 1985 (**Codification Topic 350**).

⁶With a few exceptions, the accounting for separately identifiable tangible and intangible assets is similar, whether Great Deal purchased the specified assets as a group from CarPax or bought the entire firm (a business combination). **Chapter 14** considers the accounting for purchases of entire firms. FASB, *Statement of Financial Accounting Standards No. 141 (revised)*, 2007 (**Codification Topic 805**); IASB, *International Financial Reporting Standard 3*, "Business Combinations," 2007.

Example 6 Great Deal will recognize as assets the fair value of the tangible assets (\$47 million) and the fair value of the customer lists (\$8 million) and trade names (\$10 million) acquired from CarPax. Great Deal recognizes these items as assets even if CarPax developed them internally, and, as required by U.S. GAAP, CarPax did not recognize them as assets.

Example 7 Great Deal will recognize an asset (\$15 million) for the fair value of **in-process research and development (IPR&D)**. This asset is associated with costs incurred to develop R&D projects that have not reached the stage of technological feasibility. Firms recognize externally acquired IPR&D as an asset measured initially at fair value when the IPR&D is acquired in a business combination even though the firm that developed the IPR&D expensed the costs as they were incurred.⁷

Example 8 In addition to the fair values of identifiable tangible and intangible assets, Great Deal will also recognize as an asset \$20 million of goodwill. In a business combination, the purchase price measures the fair value of the acquired *enterprise*, which reflects all identifiable and *unidentifiable* net assets (recall that net assets = assets less liabilities). **Goodwill** reflects the fair value of assets that Great Deal cannot separately identify. Great Deal recognizes goodwill as an asset because it is part of the fair value of the acquired firm. In the accounting for a business combination, goodwill is measured initially as the difference between the purchase price and the fair value of all separately identifiable net assets.

Figure 10.1 summarizes the accounting treatment of expenditures on resources with potential long-term benefits. We make the following generalizations:

1. Firms recognize expenditures to acquire or self-construct tangible assets as assets because the physical nature of tangible assets provides evidence of probable future benefits. The cost to acquire or build the tangible asset is the best evidence of its fair value.
2. Firms treat expenditures to create internally developed intangible assets as expenses when incurred because there is no external market validation of the existence of an asset nor of its fair value. Exceptions occur for software development costs incurred after the point of technological feasibility (U.S. GAAP) and for development costs generally after the point of technological feasibility (IFRS).

FIGURE 10.1 Treatment of Expenditures with Potential Long-Term Benefits

		Nature of Resource	
		Tangible	Intangible
Acquired Internally		Self-constructed Buildings and Equipment (asset)	Research and Development (expense under U.S. GAAP; research is an expense and development is an asset under IFRS) Advertising (expense) Employee Training (expense) Software Development Costs: Pre-technological Feasibility (expense) Post-technological Feasibility (asset)
		Land, Buildings, and Equipment (asset)	Proved Technologies (asset) In-Process Technologies (asset) Patents, Trademarks, Customer Lists, and Other Identifiable Resources (asset) Trained Labor Force and Other Unidentifiable Resources (part of goodwill) Goodwill (asset)

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⁷FASB, *Statement of Financial Accounting Standards No. 141 (revised 2007)*, “Business Combinations,” 2007 (Codification Topic 805); IASB, *International Financial Reporting Standard 3*, “Business Combinations,” 2007.

3. Firms recognize expenditures to acquire intangible assets from third parties as assets. The market transaction validates the existence of an intangible asset and provides its fair value.
4. In a business combination, the excess of the purchase price over the fair value of the identifiable tangible and intangible assets (net of any liabilities) is goodwill. Goodwill is an asset.

Inconsistencies between the treatment of tangible items and intangible items and between costs incurred internally and externally to obtain intangible assets permeate U.S. GAAP and IFRS. The user of the financial statements should recognize such inconsistencies when comparing firms. For example, accounting rules will typically result in the recognition of more assets on the balance sheet of a manufacturing firm with significant tangible assets than on the balance sheet of a technology or service firm that engages in extensive research and development activities and which therefore has significant unrecognized intangible assets. Accounting rules will typically also result in the recognition of more assets on the balance sheet of a firm that purchases intangible assets than on the balance sheet of a firm that develops those assets itself.

MEASUREMENT OF ACQUISITION COST

Firms initially record (that is, measure) long-lived assets, whether tangible or intangible, at acquisition cost, presumed to equal the asset's fair value on the date of acquisition. Acquisition cost includes all costs incurred to prepare a long-lived asset for rendering services. The acquisition cost of equipment, for example, includes the invoice price (less any discounts), transportation costs, installation charges, and any other costs incurred before the equipment is ready for use. Also consider the following more complex example.

Example 9 Refer to **Example 1**. Great Deal incurs the following costs in searching for and acquiring the land and building:

1. Purchase price of land with an existing building, \$1,000,000.
2. Fees paid to attorney in handling purchase contracts, \$10,000.
3. Taxes paid to local real estate taxing authorities, \$2,000.
4. Management salaries earned during the search for the site and the negotiation of its purchase, \$8,000.
5. Operating expenditures for company automobiles used during the search, \$375.
6. Depreciation charges for company automobiles used during the search, \$440.
7. Fees paid to consulting engineer for a report on the structural soundness of the building, its fair value, and the estimated cost of making needed repairs, \$15,000.
8. Uninsured costs to repair automobiles damaged in a multi-vehicle accident during the search, \$3,000.
9. During the search, management paid insufficient attention to a potential new customer. The profits lost were \$20,000.

The first six cost items relate to the search for, and acquisition of, the land and building. Great Deal will accumulate these items in a temporary Land and Building account. Some firms would treat items 5 and 6 as expenses of the period because they are immaterial, but strict application of accounting theory would capitalize these costs as an asset. After completing the acquisition of the land and building, Great Deal should allocate the accumulated costs of \$1,020,815 ($= \$1,000,000 + \$10,000 + \$2,000 + \$8,000 + \$375 + \440) between the land and the building based on their relative fair values. For example, if the fair value of the building is \$250,000, Great Deal will allocate 25% ($= \$250,000/\$1,000,000$) of \$1,020,815 to the building and 75% to the land. Great Deal will recognize depreciation on the building but not on the land. Item 7 relates to the building only, so the cost of the engineer's services is part of the cost of the building. Some accountants would treat item 8, repair costs for the accident, as an asset on the basis that it was incurred in the process of searching for the land and building. Others would treat this cost as an expense on the basis that it was not a necessary cost to acquire the land and building. Item 9, forgone profits, is not a cost incurred in an arm's-length transaction with outsiders. U.S. GAAP and IFRS do not recognize this *opportunity cost*.

Example 10 Refer to **Example 3**. Merck's acquisition cost for the patent includes \$120 million paid to its creator, \$800,000 in legal fees to evaluate Merck's legal rights under the patent, and \$1,800 to register the patent. Merck's acquisition cost is therefore \$120,801,800 (= \$120,000,000 + \$800,000 + \$1,800).

Noncash Consideration A firm sometimes acquires assets by exchanging an asset other than cash or by issuing its own shares or debt instruments. In these cases, acquisition cost is either the fair value of the consideration given or the fair value of the asset received, depending on which is more reliably measurable.

Self-Constructed Asset When a firm, such as Great Deal in **Example 2**, constructs its own buildings or equipment, it recognizes the labor, material, and overhead costs incurred as an asset. U.S. GAAP and IFRS require firms to include **interest costs during construction** in the cost of a self-constructed long-lived asset, based on the reasoning that firms must incur financing costs in self-constructing an asset just as they must incur labor and material costs.⁸

Firms base the amount of interest costs capitalized on the amount borrowed to finance the construction of the asset. The amount represents the interest cost incurred during periods of construction that the firm could have avoided by not constructing the asset. If the costs of construction exceed the amount of new borrowing, the firm uses the weighted-average rate it pays for its other borrowings to measure the amount capitalized. The total amount capitalized cannot exceed total interest costs for the period. Interest capitalization ends when construction ends.

Including (capitalizing) interest costs as part of the cost of a self-constructed asset reduces interest expense and thereby increases net income during the construction period but has no effect on the cash paid for interest charges. The self-constructed asset will have higher depreciation charges because the amount of interest capitalized increases the initial recognized cost of the self-constructed asset. The higher depreciation charges reduce net income in future periods. Capitalizing interest does not affect either total expenses or total cash flows over the life of the self-constructed asset.

Example 11 Refer to **Example 2**. Assume the following long-term debt structure for Great Deal:

Construction Loan at 5% on Building Under Construction	\$1,000,000
Other Borrowings at 6% Average Rate	<u>3,600,000</u>
Total Long-Term Debt	<u>\$4,600,000</u>

The account Building Under Construction has an average balance during the year of \$3,000,000. Great Deal bases the amount of interest capitalized on the new construction-related borrowing, \$1,000,000, and enough of the other borrowing, \$2,000,000, to bring the total to \$3,000,000. Great Deal computes capitalized interest as follows:

\$1,000,000 × 0.05	\$ 50,000
\$2,000,000 × 0.06	<u>120,000</u>
\$3,000,000	<u>\$170,000</u>

The entries to record interest and to capitalize the required amounts are as follows:

Interest Expense	266,000	
Interest Payable		266,000
To record all interest as expense: \$266,000 [= (0.05 × \$1,000,000) + (0.06 × \$3,600,000)] = \$50,000 + \$216,000.		

⁸FASB, *Statement of Financial Accounting Standards No. 34*, "Capitalization of Interest Costs," 1979 (**Codification Topic 835**); IASB, *International Accounting Standard 23 (revised 2007)*, "Borrowing Costs."

Building Under Construction	170,000	
Interest Expense		170,000
To capitalize the portion of interest related to the self-constructed building. The amount capitalized reduces interest expense and increases the recorded cost of the building. There is no effect on cash interest paid.		

The firm might combine the preceding two entries into one as follows:

Interest Expense	96,000	
Building Under Construction	170,000	
Interest Payable		266,000
To record interest cost for the year as either an expense or capitalized into the cost of the self-constructed building.		

The firm must disclose both total interest costs for the year, \$266,000, and the amount capitalized, \$170,000. In this example, interest expense on the income statement is \$96,000.

▶ PROBLEM 10.1 FOR SELF-STUDY

Calculating the acquisition cost of fixed assets. Jensen Company purchased land with a building as the site for a new plant it planned to construct. The company received bids from several independent contractors for demolition of the old building and construction of the new one. It rejected all bids and undertook demolition and construction using company labor, facilities, and equipment.

Jensen Company debited or credited amounts for all transactions relating to these properties to a single account, Construction in Process. Descriptions of various items in the Construction in Process account appear below. At the completion of construction, Jensen Company will remove all amounts in the Construction in Process account and close that account. It will reclassify the amounts into the following accounts:

1. Land account.
2. Building account.
3. Revenue, gain, expense, or loss account.
4. Some balance sheet account other than Land or Building.

Reclassify the effects of the following transactions into one or more of these four account categories. If you use 4 (some other balance sheet account), indicate the nature of the account.

- a. Cost of land, including old building.
- b. Legal fees paid to bring about purchase of land and to transfer its title.
- c. Invoice cost of materials and supplies used in construction of the new building.
- d. Direct labor and materials costs incurred in demolishing the old building.
- e. Direct costs of excavating raw land to prepare it for the foundation of the new building.
- f. Discounts earned for prompt payment of item c.
- g. Interest for the year on notes issued to finance construction.
- h. Amounts equivalent to interest on Jensen Company's own funds that it used in construction but that it would have invested in marketable securities if it had used an independent contractor; it debited the amount to Construction in Process and credited Interest Revenue so that the cost of the real estate would be comparable to the cost if it had purchased the building from an independent contractor.

(continued)

- i. Depreciation during the construction period on trucks used both in construction and in other company operations.
- j. Proceeds of sale of materials salvaged from the old buildings; the firm debited these to Cash and credited Construction in Process.
- k. Cost of building permits.
- l. Salaries of certain corporate engineering executives; these represent costs for both Salary Expense and Construction in Process. The portion debited to Construction in Process is based on an estimate of the time spent during the year on planning and construction activities for the new building.
- m. Payments for property taxes on the plant site (its former owner owed these taxes, but Jensen Company agreed to pay them).
- n. Payments for property taxes on plant site during construction period.
- o. Insurance premiums to cover workers engaged in demolition and construction activities; the insurance policy requires the company to pay the first \$5,000 of damages from any accident.
- p. Cost of injury claims for \$2,000 paid by the company because the amount was less than the deductible amount in the policy.
- q. Costs of new machinery to be installed in the new building.
- r. Installation costs for the machinery in item q.
- s. Profit on construction of the new building (computed as the difference between the lowest independent contractor's bid and the actual construction cost); the firm debited this to Construction in Process and credited Construction Revenue.

TREATMENT OF ACQUISITION COST OVER THE LIFE OF A LONG-LIVED ASSET

The accounting for the acquisition cost of a long-lived asset over the time that a firm uses the asset follows these principles:

- A portion of the cost of a long-lived asset with a **finite life** is recognized as an expense each period that the firm consumes the asset's services. An asset's life pertains to its **service life** or **useful life**, the period during which management intends to use the asset. An asset's useful life is finite when management expects to use the asset over a defined period, or when the useful life is limited by contract or by a law, for example, a patent. Management estimates the asset's service life. Examples of finite-lived assets include buildings, equipment, patents, copyrights, landing rights, and customer lists. As explained later, the balance sheet carrying value of the asset decreases over time as the firm recognizes this periodic expense.
- The cost of a long-lived asset with an **indefinite life** is not recognized as an expense each period. The asset remains on the balance sheet at its acquisition cost.⁹ Indefinite-lived assets have service lives that are not necessarily limited by legal, regulatory, contractual, or economic factors. Examples of indefinite-lived assets include trade names, trademarks, certain renewable licenses, and goodwill. Certain tangible assets, including land and works of art, are also treated as having an indefinite life because their service lives are potentially long and indeterminate.
- **Depreciation (amortization)** refers to the periodic charge to income of the acquisition cost of a tangible long-lived asset (intangible asset) with a finite service life.

⁹The carrying value of the asset would, however, be reduced if an impairment occurs.

Example 12 Refer to **Examples 2** and **11**. Great Deal consumes the services of the building over time. It depreciates the acquisition cost minus estimated salvage value of the building over the building's useful life. Salvage value is the estimated value of the building at the end of its useful life. Firms compare the proceeds generated when the building is sold at the end of its useful life with the building's carrying value (its salvage value) to compute a gain or loss on the sale.

Example 13 Refer to **Examples 3** and **10** where Merck acquires a patent from its creator. Although a patent has a legal life of up to 20 years, management's expectations of technological change may lead to a shorter economic life. Merck should amortize the acquisition cost of the patent over its expected useful life, equal to the shorter of the economic life and the legal life.

FUNDAMENTAL CONCEPTS OF DEPRECIATION AND AMORTIZATION

We next describe the concepts underlying depreciation and amortization and illustrate several depreciation and amortization methods.

Depreciation and Amortization: A Process of Cost Allocation The acquisition cost of a long-lived asset represents a payment in advance for services a firm will consume in the future, similar to prepaid rent. As the firm uses the asset in each accounting period, it treats a portion of the cost less salvage value of the asset as the cost of the service received. Accounting refers to this periodic cost as **depreciation expense** (if the asset is tangible) and **amortization expense** (if the asset is intangible). The cost of a long-lived asset is a **joint cost** of the accounting periods during which the asset provides services. There is usually no single correct way to allocate a joint cost. Firms select a depreciation or amortization method for a long-lived asset that allocates the acquisition cost minus salvage value to each period of expected useful life in a systematic, predetermined manner.

Depreciation and Amortization: Not a Measure of the Decline in Economic Value Depreciation and amortization involve cost allocation, not valuation. In ordinary conversation, *depreciation* and *amortization* may refer to a decline in value. Over the service life of a long-lived asset, the asset's value usually declines from acquisition until the firm retires the asset from service. The periodic depreciation or amortization charge does not measure that decline in value, nor is it meant to. Depreciation and amortization represent a systematic allocation of the asset's cost, adjusted for salvage value. If, in a given period, an asset increases in value, the firm still records depreciation and amortization during that period. In such a time period, there are two offsetting processes: (1) a *holding gain* on the asset for the increase in value and (2) an allocation of the asset's acquisition cost to the period in the form of depreciation or amortization expense. A holding gain refers to an increase in the fair value of the asset.¹⁰

MEASUREMENT OF DEPRECIATION AND AMORTIZATION

Calculating depreciation or amortization of long-lived assets requires management to

1. Measure the depreciable or amortizable basis of the asset.
2. Estimate its service (useful) life.
3. Decide the pattern of depreciation or amortization over the asset's service life.

This section discusses each of these three items.

Depreciable or Amortizable Basis of Long-Lived Assets: Acquisition Cost Less Salvage Value Firms base depreciation and amortization charges on the acquisition cost less the estimated salvage value of long-lived assets. **Salvage value** or **residual value** is the estimated amount a firm expects to receive when it disposes of the asset at the end of its service life. Salvage value is not part of the depreciable or amortizable basis of an asset because firms expect to recover this amount through the proceeds from the sale.

¹⁰U.S. GAAP precludes recognition of holding gains on long-lived tangible and intangible assets. IFRS permits recognition of these holding gains under certain circumstances. We discuss this treatment later in the chapter.

For buildings, common practice uses a zero salvage value on the assumption that the costs a firm will incur in tearing down the building will approximate the sales value of the scrap materials recovered. Other tangible assets may have substantial salvage values. For example, a car-rental firm will replace its automobiles at a time when other owners can use the cars for several years more. The car-rental firm expects to recover a substantial part of acquisition cost from selling used cars. Intangible assets related to a contractual right, such as landing rights at an airport, generally expire at a specific time and therefore have zero residual value.

Some assets are not readily salable at the end of their useful lives, and retiring them may impose substantial costs, for example, the cost of dismantling a nuclear power plant at the end of its service life. Firms must estimate the fair value of the dismantling costs and include that amount in the initial measurement of the asset. The firm must also recognize a liability, an *asset retirement obligation*, of equal amount. The firm computes depreciation based on the cost of the assets, including the fair value of the dismantling obligation, because the firm must recover this cost through depreciation during the asset's useful life.¹¹

Estimating Service (Useful) Life In addition to regulatory, contractual, and legal factors, both **physical and functional factors** affect service lives. Physical factors include ordinary wear and tear from use, chemical action such as rust, and the effects of weather. An important functional factor for both tangible and intangible assets is obsolescence. Changes in production processes, for example, might reduce the unit cost of production to the point where a firm finds continued operation of old equipment uneconomical, even though the equipment remains physically usable. Computers may work as well as ever, but firms replace them because new, smaller computers occupy less space and compute faster. Although display cases and storefronts may not have worn out, retail stores replace them to make the store look better. Technology-based intangibles can become obsolete overnight.

Estimating service lives presents the most difficult task in the depreciation and amortization calculation. Because obsolescence typically results from external forces, its effect on the service life is uncertain. As a result, firms must review their estimates of service lives each year. A change in this estimate will change the depreciation and amortization amounts going forward. We discuss changes in estimates later in this chapter.

Pattern of Depreciation and Amortization An asset's acquisition cost, salvage value, and service life determine the total of depreciation or amortization charges and the time over which to charge those costs. The firm must also select the pattern for allocating those charges to the specific years of the service life. U.S. GAAP and IFRS provide firms considerable flexibility in choosing depreciation methods. The most common methods for depreciating tangible assets are as follows:

1. Straight line over time.
2. Straight line with respect to usage.
3. Accelerated over time (with higher depreciation in the early years of the service life).

Amortization of intangible assets is usually straight line over time.

The next section describes and illustrates the depreciation and amortization patterns.

Straight-Line (Time) Method The **straight-line (time) method** is the most common method for financial reporting. This method divides the acquisition cost of an asset (including the cost to dismantle and retire) less its estimated salvage value by the estimated service life to calculate depreciation or amortization expense as follows:

$$\text{Annual Depreciation or Amortization} = \frac{\text{Cost Less Estimated Salvage Value}}{\text{Estimated Life in Years}}$$

For example, if a machine costs \$5,000, with an estimated salvage value of \$200 and an expected service life of five years, annual depreciation expense is \$960 [= (\$5,000 – \$200)/5]. If a patent acquired for \$30,000 has an expected service life of five years and zero salvage value, the annual amortization expense is \$6,000 (= \$30,000/5).

¹¹FASB, *Statement of Financial Accounting Standards No. 143, Accounting for Asset Retirement Obligations*, 2001 (**Codification Topic 410**); IASB, *International Accounting Standard 16, "Property, Plant and Equipment"*, 1998.

When a firm acquires a long-lived asset during an accounting period, it calculates depreciation and amortization for the portion of the period during which it uses the asset. For example, if the firm acquired the above machine with three months remaining in the fiscal year, depreciation expense would be \$240 [= \$960 × (3 months/12 months)].

Straight-Line (Use) Method For assets whose use varies over time, the straight-line (time) method of depreciation may result in depreciation patterns unrelated to usage patterns. For example, manufacturing plants often have seasonal variations in operations, so they use certain machines 24 hours a day at one time of the year and 8 hours or less a day at another time of the year. Trucks do not receive the same amount of use in each year of their service lives. A **straight-line (use) method** is appropriate for such assets. For example, a firm could calculate depreciation of a truck based on the ratio of miles driven during a period to total expected driving miles over the truck's service life. The depreciation cost per unit (mile) of use is as follows:

$$\text{Depreciation or Amortization Cost per Unit} = \frac{\text{Cost Less Estimated Salvage Value}}{\text{Estimated Units of Use}}$$

Assume that a truck costs \$54,000, has an estimated salvage value of \$4,000, and will provide 200,000 miles of use before retirement. The depreciation per mile is \$0.25 [= (\$54,000 – \$4,000)/200,000]. If the truck operates 24,000 miles in a given year, the depreciation charge is \$6,000 (= 24,000 × \$0.25).

Accelerated Depreciation The service capacity of some depreciable assets declines with age or use. Cutting tools lose some of their precision; printing presses require more frequent shutdowns for repairs; rent receipts from an old office building fall below those from a new one. Some assets provide more and better services in the early years of their lives and require increasing amounts of maintenance as they grow older. These cases justify accelerated depreciation methods, which recognize larger depreciation charges in early years and smaller depreciation charges in later years.

Two common accelerated depreciation methods are the **declining-balance method** and the **sum-of-the-years'-digits method**. The declining balance method multiplies the carrying value (that is, acquisition cost minus **accumulated depreciation**)¹² of the asset by a depreciation rate. A *double-declining balance* method sets the depreciation rate at double the straight-line rate. Because the straight-line rate is 1/n, double that rate is 2/n, where n is the number of periods in the asset's service life. A firm will never fully depreciate an asset using the declining-balance method; firms switch to the straight-line method before the end of an asset's useful life.

The sum-of-the-years'-digits method begins by summing the digits of an asset's useful life. The sum for a five-year asset is 15 (= 5 + 4 + 3 + 2 + 1). The depreciation rate for the first year of useful life is 5/15, for the second year is 4/15, and so forth. The depreciation base is the same as for the straight-line method, acquisition cost minus salvage value. Multiplying the depreciation base by the depreciation rate yields the amount of depreciation for each year.

To illustrate the double-declining balance method and the sum-of-the-years'-digits method, consider the previous example: a machine costs \$5,000, with an estimated salvage value of \$200 and a service life of five years. The annual depreciation expense using the double-declining balance method (assuming the firm switches to the straight-line [time] method at the start of Year 4) is as follows:

Year	Carrying Value		Double-Declining Depreciation Rate		Annual Depreciation Expense
Year 1	\$5,000	×	0.4 = 2*(1/5)	=	\$2,000
Year 2	\$3,000 (= \$5,000 – \$2,000)	×	0.4 = 2*(1/5)	=	1,200
Year 3	\$1,800 (= \$3,000 – \$1,200)	×	0.4 = 2*(1/5)	=	720
Year 4	\$1,080	×	0.5	=	540
Year 5	\$540				540

¹²Under the double-declining-balance method, the salvage value is not considered. The carrying value of the asset is never allowed to drop below its salvage value.

The annual depreciation expense using the sum-of-the-years'-digits method is

Year	Acquisition Cost Less Salvage Value		Sum of Years Ratio		Annual Depreciation Expense
Year 1	\$4,800 (=\$5,000 – \$200)	×	5/15	=	\$1,600
Year 2	\$4,800	×	4/15	=	1,280
Year 3	\$4,800	×	3/15	=	960
Year 4	\$4,800	×	2/15	=	640
Year 5	\$4,800	×	1/15	=	320

For both accelerated methods, depreciation expense is highest in the first year of the asset's life and declines each year thereafter.

► PROBLEM 10.2 FOR SELF-STUDY

Calculating periodic depreciation. Markam Corporation acquires a machine costing \$20,000 on January 1, 2013. The firm expects:

- To use the machine for five years.
- To operate it for 24,000 hours during that time.
- To recoup an estimated salvage value of \$2,000 at the end of five years.

Calculate the depreciation charge for each of the five years using the following:

- a. The straight-line (time) method.
- b. The straight-line (use) method. The expected operating times are 5,000 hours each year for four years and 4,000 hours in the fifth year.
- c. Double-declining balance method (assuming switch to straight-line [time] method at start of 2015.)
- d. Sum-of-the-years'-digits method.

FACTORS IN CHOOSING A DEPRECIATION AND AMORTIZATION METHOD

Depreciation and amortization affect both net income reported in the financial statements and taxable income on tax returns. In most jurisdictions, taxing authorities specify allowable depreciation methods for tax reporting. When permitted to do so by the taxing authority, firms often use different depreciation methods for financial and tax reporting. When this happens, the difference between depreciation expense in the financial statements and the depreciation deduction on the tax return leads to an issue in accounting for income taxes.¹³

Tax Reporting If permitted a choice of depreciation methods for tax reporting, a firm should try to maximize the present value of the reductions in tax payments from claiming depreciation. If tax rates do not change over time and the firm is sufficiently profitable to benefit from tax deductions, earlier deductions have greater value than later ones because taxes saved now have greater value than taxes saved later. When taxing authorities permit a choice among alternative depreciation methods, a firm should choose the alternative that allows it to pay the least amount of tax, as late as possible, within the law.

Financial Reporting The financial reporting treatment of depreciation and amortization is intended to provide a reasonable pattern of cost allocation. The cost of a long-lived asset

¹³Chapter 12 discusses the accounting for income taxes.

jointly benefits all the periods of use, and there is no single correct way to allocate such joint costs. As a consequence, authoritative guidance requires that financial statements report depreciation charges based on reasonable estimates. In practice, the straight-line (time) method is the most common.

ACCOUNTING FOR PERIODIC DEPRECIATION AND AMORTIZATION

Recording periodic depreciation and amortization results in a debit to either an expense account or a product cost account. Depreciation of factory buildings and equipment used in manufacturing operations becomes part of the cost of work-in-process and finished goods inventories. That is, using the language introduced in **Chapter 9**, these depreciation charges are product costs. The amortization of a patent on a semiconductor that a firm uses to make its product is likewise a product cost that a firm would record as a debit to the Work-in-Process Inventory account.¹⁴ Firms classify the amortization of a customer list as either amortization expense or selling expense, depending on whether the firm classifies expenses by their nature or by their function. Firms classify the depreciation of office equipment in the corporate headquarters as either depreciation expense or administrative expense. The amortization of the customer list and depreciation of the office equipment do not relate to product manufacturing and are, therefore, period expenses.

The recording of depreciation of tangible assets and amortization of intangible assets could, in principle, result in a credit directly to the asset account, such as Buildings or Equipment (a tangible asset) or Patent (an intangible asset). U.S. GAAP and IFRS, however, require firms to disclose both the cost (the gross carrying amount) and the accumulated depreciation or accumulated amortization on long-lived tangible and intangible assets.¹⁵ Accumulated depreciation and accumulated amortization are examples of contra accounts; these accounts accumulate subtractions from their partner accounts. Disclosing both cost and accumulated depreciation or amortization permits the analyst to analyze the amount of the asset's cost charged to income through depreciation or amortization and the remaining acquisition cost. If the firm credited the asset account directly, an analysis of the accounts would reveal only the net effect of the two, that is, the net book value or balance sheet carrying amount.

To illustrate, the entry to record periodic depreciation of \$1,500 on manufacturing facilities (a product cost) is as follows:

Work-in-Process Inventory	1,500	
Accumulated Depreciation		1,500

The entry to record periodic depreciation of \$1,500 on office facilities (a period expense) is as follows:

Depreciation Expense	1,500	
Accumulated Depreciation		1,500

The balance in Accumulated Depreciation represents the total charges in all accounting periods up through the balance sheet date. The balance in this account is subtracted from its partner asset account, for example, **Property, Plant, and Equipment, Gross**, where *gross* refers to the acquisition cost of the assets. The difference between the gross amount of an asset and the balance in the asset's partner Accumulated Depreciation account is the asset's *net carrying value* or *net book value*. If a firm reports an amount for **Property, Plant, and Equipment, Net** on its balance sheet, that amount is the difference between the gross cost of property, plant, and equipment and the balance in accumulated depreciation. That is:

¹⁴The Work-in-Process Inventory account is an asset. Product costs, such as depreciation on manufacturing facilities, accumulate in the Work-in-Process Inventory account until the firm completes the goods and transfers them to Finished Goods Inventory.

¹⁵FASB, *Accounting Standards Codification* (ASC) Topic 350-30-50; Topic 360-10-50; IASB, *International Accounting Standard 16*, "Property, Plant and Equipment," 1998; *International Accounting Standard 38*, Intangible Assets, 1998.

Property, Plant and Equipment, Gross
 Less: Accumulated Depreciation
 = Property, Plant and Equipment, Net

IMPACT OF NEW INFORMATION ABOUT LONG-LIVED ASSETS

This chapter has described the acquisition and depreciation or amortization of long-lived assets based on transactions and knowledge at the time a firm acquired the asset. New information often comes to light over the life of tangible or intangible assets that affects the accounting for these assets. This section discusses the accounting for changes in expected service lives or salvage values, and for expenditures to maintain or improve the assets.

CHANGES IN SERVICE LIVES OR SALVAGE VALUES

Each period a firm must assess whether its estimates of service life and salvage value require changing in light of new information. If a change in estimates would have a material impact, the firm must change the depreciation or amortization schedule prospectively (that is, going forward). The firm does not adjust previously recorded amounts. The firm spreads the remaining carrying value less the new estimate of salvage value over the new estimate of the remaining service life of the asset.¹⁶ The reasoning for this reporting requirement rests on the nature and role of estimates in accounting. Management's estimates of service lives and salvage values, uncollectible accounts, warranty costs, and similar items use the available information at the time of the estimate. Changes in estimates occur regularly, as the available information changes. Many changes in estimates do not materially affect the financial statements. Requiring the restatement of previously issued financial statements for changes in estimates would take a lot of time, might confuse users, and could suggest that the original estimates were erroneous (as opposed to being based on information that was reasonable at the time and has now changed).

To understand the **treatment of changes in periodic depreciation and amortization**, assume the following facts, illustrated in **Figure 10.2**. A firm

- purchases an office machine for \$9,200,
- estimates that it will use the machine for 15 years, and
- estimates a salvage value of \$200.

The depreciation charge recorded for each of the first five years under the straight-line method is \$600 [= (\$9,200 – \$200)/15]. On December 31 of the sixth year, before closing its books, the firm assesses its estimates of useful life and salvage value. In light of new information, the firm estimates that

- the machine will have a total useful life of 10 years, not 15 years, and
- the new salvage value is \$50 not \$200.

The decreases in the service life and salvage value will change future depreciation charges. The amount of the changes will ensure that the correct total accumulates in the Accumulated Depreciation account by the end of the revised service life. The correct total is \$9,150 (= \$9,200 original acquisition cost – \$50 revised salvage value). The firm does not adjust amounts previously recorded. In the example, the acquisition cost yet to be depreciated before the change in the sixth year is \$6,200 [= \$9,200 – (5 years × \$600 per year)]. The new estimate of the remaining life is five years (the year just ended plus the next four). This change in estimate, and the change in the salvage value (from \$200 to \$50), changes the amount recorded for annual depreciation in the current and future years from \$600 to \$1,230 [= (\$6,200 – \$50)/5 years]. The depreciation entry on December 31 of the sixth year and each year thereafter is as follows:

¹⁶FASB, *Statement of Financial Accounting Standards No. 154*, “Accounting Changes and Error Corrections,” 2005, par. 19 (**Codification Topic 250**); IASB, *International Accounting Standard 16*, “Property, Plant, and Equipment,” 1998.

Depreciation Expense	1,230	
Accumulated Depreciation		1,230
To record depreciation for the sixth year based on revised estimates.		

Figure 10.2 illustrates the revised depreciation path.

PROBLEM 10.3 FOR SELF-STUDY

Adjustments for changes in estimates. Central States Electric Company constructs a nuclear power plant at a cost of \$200 million. It estimates the service life of the plant to be 50 years and the cost to dismantle and retire the asset from service to be \$20 million. These “decommissioning” costs include the costs to dismantle the plant and dispose of the radioactive materials. The firm computes and charges straight-line depreciation once per year, at year-end.

During the company’s 11th year of operating the plant, Congress enacts new regulations governing nuclear waste disposal. The estimated decommissioning costs increase from \$20 million to \$24 million. During the 31st year of operation, the firm revises the estimated service life of the plant to 60 years in total.

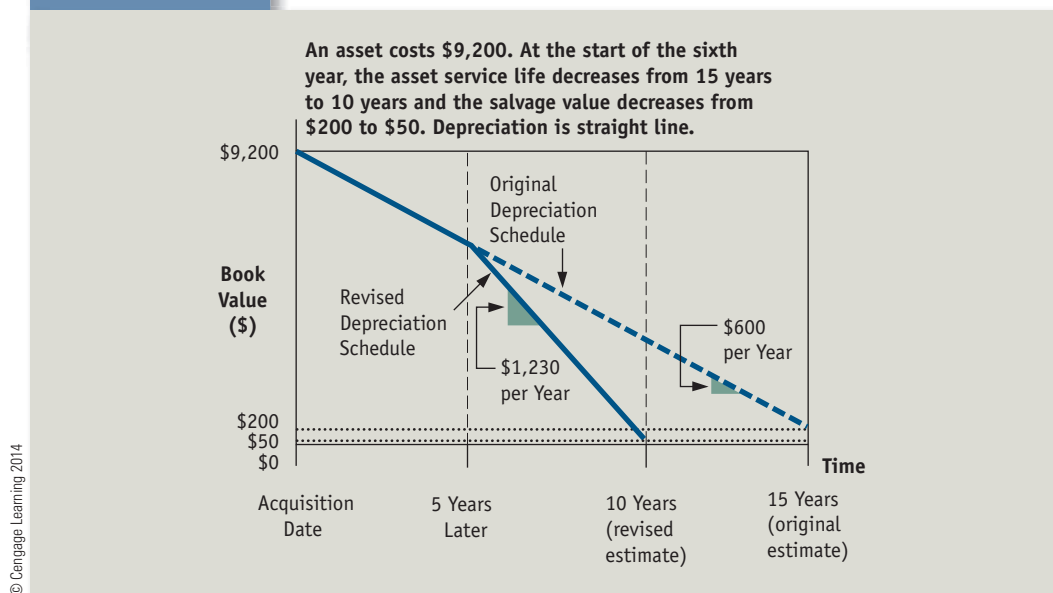
- What is the depreciation charge for the first year?
- What is the depreciation charge for the 11th year?
- What is the depreciation charge for the 31st year?

ADDITIONAL EXPENDITURES TO MAINTAIN OR IMPROVE LONG-LIVED ASSETS

Firms often incur costs to maintain, repair, and improve their tangible assets. U.S. GAAP and IFRS require firms to treat

- Expenditures for maintenance and repairs as expenses of the period.
- Expenditures for improvements as assets. Firms subsequently depreciate or amortize these expenditures because they are included as part of the cost of the asset.

FIGURE 10.2 Revised Depreciation Schedule



Maintenance and Repairs To keep its tangible assets in normal operating condition a firm incurs routine **maintenance** costs such as for cleaning and adjusting, and **repairs** costs, to restore an asset's service potential after breakdowns or other damage to its initially expected level. These expenditures do not extend the asset's estimated service life or increase its productive capacity. Therefore, U.S. GAAP and IFRS treat such expenditures as expenses of the period when the firm makes the expenditure.

Improvements Expenditures for **improvements** increase an asset's performance by, for example, increasing the asset's service life, reducing operating costs, or increasing the rate of output. Expenditures that increase service potential meet the definition and recognition criteria for an asset under both U.S. GAAP and IFRS. When the firm makes the expenditure, it capitalizes the cost of the improvement by debiting the existing asset account (or a new asset account). Subsequent depreciation charges will increase because of the increased investment in depreciable assets.

Example 14 Assume Thames suffers fire damage to a building and spends €200,000 on repairs and improvements. It judges that €160,000 of the expenditure qualifies as a repair of fire damage, and €40,000 represents improvements. It would make the following journal entry:

Building	40,000	
Loss from Fire	160,000	
Cash		200,000
To record the loss from fire damage and the subsequent expenditure.		

The following two entries are equivalent and may be easier to understand:

Loss from Fire	160,000	
Building		160,000
To record the loss from fire damage.		
Building	200,000	
Cash		200,000
To record the expenditures to improve the building.		

Distinguishing Maintenance and Repairs from Improvements Some expenditures may both repair (a period expense) and improve (an asset). Consider expenditures to replace a damaged roof. If architects design the new roof to be stronger and to last longer than the old one, part of the expenditure represents repair and part represents improvement. Firms must make judgments and allocate costs between maintenance and repairs and improvements using professional judgment and all available information.

► PROBLEM 10.4 FOR SELF-STUDY

Distinguishing repairs from improvements. Purdy Company acquired two used trucks from Foster Company. Although the trucks were not identical, they both cost \$15,000. Purdy knew when it negotiated the purchase price that the first truck required engine repairs, estimated to cost \$4,000. The repairs were made the week after acquisition and cost \$4,200. Purdy Company thought the second truck was in normal operating condition when it negotiated the purchase price but discovered, after taking possession of the truck, that it required new bearings. The firm made this repair, costing \$4,200, during the week after acquisition.

- What costs should Purdy Company record in the accounts for the two trucks?
- If the amounts recorded in part **a** are different, distinguish between the two repairs.

DISPOSAL OF ASSETS

This section considers how disposal of a long-lived asset through sale, abandonment, or trade-in affects asset measurement and net income.

Sale of Asset The firm records the consideration received from an asset's sale (usually cash), eliminates all debits and credits in the accounts related to the asset sold, and recognizes a gain or loss. Because sales of long-lived assets are usually peripheral to a firm's principal business activities, the firm records the gain or loss net instead of gross. That is, the firm does not record the amount received as revenue and the carrying value of the asset sold as an expense. Rather, the firm nets the two amounts and reports only the gain or loss.

Before recording the sale, the firm recognizes depreciation and amortization for the current year up to the date of the sale. When a firm disposes of an asset, it removes the cost of the asset and the related amount of accumulated depreciation (or accumulated amortization) from the balance sheet. As part of this entry, the firm records the amount received from the sale, a debit, and the amount of net carrying value removed from the books, a net credit (that is, a credit to the asset account and a smaller debit to the accumulated depreciation or accumulated amortization account). Typically, the amount of the debit for cash proceeds differs from the net credit to remove the asset from the accounts. The difference between the proceeds received and the net carrying value is a gain (if positive) or a loss (if negative).

To illustrate, assume Great Deal has office equipment that originally cost \$5,000, with a service life of four years and salvage value of \$200. Great Deal has depreciated this asset on a straight-line basis at \$1,200 [= $(\$5,000 - \$200)/4$] per year. The firm has recorded depreciation for two years and sells the equipment at midyear in the third year. The firm records the depreciation from the start of Year 3 to the date of sale: \$600 [= $1/2 \times (\$5,000 - \$200)/4$].

Depreciation Expense	600	
Accumulated Depreciation		600
To record depreciation charges up to the date of sale.		

The carrying value of the asset is now its original cost less two and a half years of straight-line depreciation of \$1,200 per year, or \$2,000 [= $\$5,000 - (2\frac{1}{2} \times \$1,200) = \$5,000 - \$3,000$]. The entry to record the sale of the asset depends on the sales proceeds.

1. If the firm sells the equipment for \$2,000, the entry to record the sale is as follows:

Cash	2,000	
Accumulated Depreciation	3,000	
Equipment		5,000

In this case, there is no gain or loss on the sale because the proceeds equal the carrying value of the asset at the time of sale.

2. If the firm sells the equipment for \$2,300 cash, the entry to record the sale is as follows:

Cash	2,300	
Accumulated Depreciation	3,000	
Equipment		5,000
Gain on Sale of Equipment		300

Great Deal recognizes a gain because the proceeds exceed the carrying value of the office equipment at the time of sale. The gain appears in net income and, after closing entries, increases Retained Earnings.

3. If the firm sells the equipment for \$1,500 cash, the entry to record the sale is as follows:

Cash	1,500	
Accumulated Depreciation	3,000	
Loss on Sale of Equipment	500	
Equipment		5,000

Great Deal recognizes a loss because the proceeds are less than the carrying value of the office equipment at the time of sale. The firm includes the loss in net income, reducing Retained Earnings.

Abandonment of Asset Firms will sometimes abandon assets if there is no market for them, for example, an automobile severely damaged in an accident. The firm eliminates the carrying value of the asset and recognizes a loss equal to the carrying value. For example, if Great Deal decides to abandon a damaged delivery truck, with an original purchase price of \$120,000 and accumulated depreciation of \$67,000 at the time of abandonment, the entry to record the abandonment is as follows:

Accumulated Depreciation	67,000	
Loss on Abandonment of Equipment	53,000	
Equipment		120,000

Trading in an Asset A firm may dispose of an asset by trading it in on another asset, with little or no cash payment. Authoritative guidance refers to these as nonmonetary exchanges because they involve little or no monetary assets.¹⁷ U.S. GAAP and IFRS require that firms record **trade-in transactions** at the fair value of the asset surrendered in the trade-in, unless the fair value of the asset received is a better estimate of the fair value of the arrangement.¹⁸ To illustrate, suppose Great Deal owns a van that originally cost \$275,000 and has \$25,000 of accumulated depreciation. The fair value of the van is \$250,000. Great Deal exchanges the van for a similar van with fair value \$260,000. Assuming that the fair value of the van Great Deal obtains is the best evidence of the fair value of the exchange, the entry to record the transaction is as follows:

Equipment (new van)	260,000	
Accumulated Depreciation (old van)	25,000	
Equipment (old van)		275,000
Gain on exchange		10,000

To record the trade-in of a van with a carrying value of \$250,000 and a fair value of \$250,000 for a van with fair value \$260,000 when the fair value of the acquired asset is the best evidence of the fair value of the exchange.

CHANGES IN THE FAIR VALUES OF LONG-LIVED ASSETS

A firm acquires assets for their future benefits. The world changes, and those benefits can increase or decrease. Changes in future benefits give rise to changes in the fair values of the assets that generate those benefits. As future benefits increase, fair value increases. As future benefits decline, fair value declines. Authoritative guidance specifies the recognition of these

¹⁷If the exchange involves a considerable cash payment, the arrangement does not qualify as a trade-in transaction for accounting purposes.

¹⁸Trade-in transactions that lack **commercial substance** are treated differently. A trade-in transaction lacks commercial substance if the firm's future cash flows are not expected to change significantly as a result of replacing the old asset with the new one. Firms record trade-ins that lack commercial substance at the carrying value of the exchanged asset. See FASB, *Statement of Financial Accounting Standards No. 153*, "Exchanges of Nonmonetary Assets," 2004. (**Codification Topic 845**); IASB, *International Accounting Standard 16*, "Property, Plant, and Equipment," revised 1998.

changes in fair value in the financial statements. This section discusses the accounting for increases and decreases in fair values of long-lived assets.

INCREASES IN FAIR VALUES OF LONG-LIVED ASSETS

U.S. GAAP does not permit firms to increase the balance sheet carrying values of tangible and intangible long-lived assets when the fair values of these assets increase. This means that a firm can recognize an increase in the fair value of an asset only if it realizes the value increase, for example, by selling the asset. Since the proceeds of the sale would equal the fair value of the asset, the firm would recognize a gain on the transaction. As described in the previous section, that gain would increase the firm's income in the period of the sale, regardless of when the fair value increase occurred.

In contrast, IFRS permits upward **asset revaluations** under certain conditions.¹⁹ An upward revaluation means that the firm recognizes an unrealized increase in the fair value of the asset. For long-lived intangible assets, the conditions that must be met are so restrictive that upward revaluations of intangibles are rare.²⁰ For long-lived tangible assets, the conditions are less restrictive,²¹ but upward revaluations remain uncommon. If the conditions were met (for either tangible assets or intangible assets), the firm would credit the increase in a revalued asset's balance sheet carrying value to other comprehensive income, not net income.

DECREASES IN FAIR VALUES OF LONG-LIVED ASSETS (ASSET IMPAIRMENTS)

Although U.S. GAAP and IFRS differ in the recognition of unrealized increases in fair values, both require firms to recognize decreases in fair values as an **impairment loss**. U.S. GAAP and IFRS distinguish three categories of long-lived assets for purposes of measuring and recognizing impairment losses:

Category 1. Long-lived assets with definite services lives and land. Category 1 includes property, plant, equipment, patents, franchise rights, and similar assets, as well as land. With the exception of land, category 1 assets provide benefits over finite periods and are subject to depreciation or amortization.

Category 2. Intangible assets with indefinite service lives, other than goodwill. Category 2 includes brand names, trademarks, and renewable licenses or other legal rights that provide benefits over an *indefinite* period of time, and are not subject to amortization.

Category 3. Goodwill. Category 3 includes one asset, purchased goodwill arising in a transaction in which one firm buys another.

Although both U.S. GAAP and IFRS distinguish the same three categories of long-lived assets for impairment analysis, the procedures for assessing an asset for impairment and measuring the impairment loss differ. For both sets of reporting standards, management begins the assessment of long-lived assets for impairment at each reporting date by determining if impairment indicators are present. Impairment indicators include, for example, a decline in the market value of an asset significantly beyond what would be expected because of use or the passage of time; significant adverse changes in the entity's technological, market, economic, or legal environment; significant increases in expected return on investment. Management then follows the procedures specified by U.S. GAAP or IFRS to test the asset for impairment and, if an impairment exists, to measure the amount of the impairment loss. We separately describe U.S. GAAP and IFRS procedures for each category of asset in the **Appendix** to this chapter.²²

The form of the journal entry for recording an impairment loss is similar under U.S. GAAP and IFRS. In the case of a long-lived tangible asset, the accounting involves first removing the asset's acquisition cost and the related accumulated depreciation from the accounts and then

¹⁹IASB, *International Accounting Standard 16*, "Property, Plant and Equipment," 1998 and *International Accounting Standard 38*, Intangible Assets, 1998.

²⁰The conditions are that the firm (1) must base the revaluation on the price of the intangible asset in an active market and (2) must perform the revaluation regularly and at the same time for all assets in a class of intangible assets.

²¹The firm need not base the fair value on prices of assets from an active market. It must, however, keep the revaluations up to date and the amounts must be reliably measured.

²²FASB, *Statement of Financial Accounting Standards No. 144*, "Accounting for Impairment of Long-Lived Assets," 2001 (**Codification Topic 360**) and *Statement of Financial Accounting Standards No. 142*, "Goodwill and other Intangible Assets," 2001 (**Codification Topic 350**); IASB, *International Accounting Standard 36*, "Impairment of Assets," revised 2004.

establishing a new asset valuation. As explained in the **Appendix**, the calculation of the impairment loss and the new asset valuation differs under U.S. GAAP versus under IFRS. To illustrate the form of the journal entry, assume an impairment loss of \$5 million on a long-lived tangible asset with acquisition cost of \$17 million and accumulated depreciation of \$4 million. The asset's new valuation is \$8 million. The form of a journal entry to record this impairment loss would be as follows:²³

Accumulated Depreciation	4.0	
Asset (New Valuation)	8.0	
Loss on Impairment	5.0	
Asset (Acquisition Cost)		17.0

Under both U.S. GAAP and IFRS, the loss reduces income, unless the firm had previously revalued the assets upward under IFRS. In that case, the loss is a revaluation decrease (a debit to other comprehensive income) up to the amount of the revaluation, with any excess loss recognized in net income.

FINANCIAL STATEMENT PRESENTATION OF LONG-LIVED ASSETS

BALANCE SHEET

The balance sheet separates noncurrent assets from current assets. Tangible long-lived assets typically appear among the noncurrent assets under the title Property, Plant, and Equipment. Intangible assets may appear as a separate line item or may be included with Other Assets. Firms generally display tangible long-lived assets' acquisition cost and accumulated depreciation in one of three ways:

1. All information is displayed on the balance sheet. Great Deal uses this presentation (see **Exhibit 1.1**; amounts are in millions of U.S. dollars for the year ended February 27, 2013):

Property and Equipment:	
Land and Buildings	\$ 757
Leasehold Improvements	2,154
Fixtures and Equipment	4,447
Property Under Capital Lease	95
	<u>\$7,453</u>
Less Accumulated Depreciation	<u>3,383</u>
Net Property and Equipment	<u>\$4,070</u>

2. Acquisition cost is omitted from the balance sheet. If Great Deal had used this presentation style, its balance sheet would display the net book value, as follows:

Property and Equipment, Less Accumulated Depreciation of \$3,383	\$4,070
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3. The balance sheet displays net book value and discloses acquisition cost and accumulated depreciation in the notes. Thames uses this presentation (see **Exhibit 1.5**; amounts are in millions of euros for the year ended December 31, 2013):

²³Our reading of financial reports suggests that firms commonly use an alternative accounting procedure that debits an impairment loss and credits accumulated depreciation. Both this approach and the one illustrated in the text reduce the asset's balance sheet carrying value to the new valuation amount; the difference is in the treatment of the acquisition cost of the asset. If the asset is not depreciated or amortized, including indefinite-lived intangibles, land, and goodwill, some firms recognize a loss on impairment (debit) and a reduction in the asset's balance sheet carrying value (credit).

Tangible Assets, Net	€1,338.3
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Thames references Note 12, which displays the following information (amounts in millions of euros):

	Gross	Depreciation	Net
Lands	€ 54.2	€ —	€ 54.2
Buildings	1,039.3	(531.7)	507.6
Plant and Equipment	2,029.7	(1,518.7)	511.0
Other	710.6	(445.1)	265.5
Tangible Assets	<u>€3,833.8</u>	<u>€(2,495.5)</u>	<u>€1,338.3</u>

Firms typically disclose the amounts for various classes of long-lived tangible and intangible assets separately in notes to the financial statements. Some firms use the third balance sheet presentation for intangible assets.

INCOME STATEMENT

Depreciation and amortization expenses appear in the income statement as a separate line item, or are included in selling and administrative expenses, or (if they are product costs) are included as part of cost of goods sold expense.²⁴ For example, Great Deal's income statement (**Exhibit 1.2**) includes depreciation expense for its distribution network as part of cost of goods sold and includes depreciation expense associated with retail operations and corporate assets as part of selling, general, and administrative expenses.

Gains and losses on disposals of property, plant, and equipment and intangible assets appear on the income statement, sometimes included in "Other income and expense." For example, gains and losses on Great Deal's asset sales are included in "Investment income and other" in its income statement (**Exhibit 1.2**). In contrast, Thames includes a separate line in its income statement (**Exhibit 1.6**) for "Gain (loss) on disposal of assets and other."

Finally, impairment losses sometimes appear on a separate line in the income statement and sometimes are included in selling and administrative expenses. Both Great Deal and Thames have separate income statement items for impairments. Great Deal reports "Goodwill and trade name impairment" while Thames reports "Impairment on noncurrent operating assets."

SUMMARY

This chapter started by listing six areas in which U.S. GAAP and IFRS provide guidance for the accounting for long-lived assets. We repeat those six areas here and summarize U.S. GAAP and IFRS guidance in each area.

1. Firms capitalize an expenditure as an asset if it meets the definition of an asset and meets the asset recognition criteria; otherwise, the expenditure is an expense of the period. These criteria are readily applicable to tangible assets (such as buildings and equipment) because of their physical attributes. They are harder to apply to intangibles (such as expenditures for research and development, brand names, and software development costs) because of the non-physical nature of these items.
2. Firms depreciate or amortize the cost of long-lived assets with finite useful lives, for example, buildings, equipment, and patents. Firms do not depreciate or amortize the cost of long-lived assets with indefinite lives, for example, land and goodwill. Regardless of whether assets have a finite life or an indefinite life, firms must test all long-lived assets for impairment.

²⁴Depreciation and amortization expense are included in cost of goods sold when they are product costs. They are included elsewhere in the income statement when they are period expenses.

3. Firms depreciate or amortize the cost of assets (less salvage value, if applicable) over the assets' expected service lives. Most firms depreciate or amortize an equal amount each year using the straight-line method for financial reporting.
4. Both U.S. GAAP and IFRS require firms to reconsider estimates of salvage value and service life in light of new information. If there is a change in estimate, firms depreciate or amortize the remaining carrying value at the time of the change in estimate over the revised remaining useful life.
5. When a firm sells an asset, the firm records the proceeds of the sale, eliminates the carrying value of the asset, and records a gain or loss for the difference.
6. The treatment of changes in fair values of long-lived assets under U.S. GAAP is asymmetric. Firms cannot increase balance sheet carrying values of long-lived assets if the fair values of those assets increase but must test assets for impairments (losses) in value and recognize impairment losses. IFRS also requires impairment testing and the recognition of impairment losses, but the technical details of the impairment tests are different. IFRS also permits upward revaluations of assets, under certain conditions, to recognize both unrealized fair value increases and recoveries of impairment losses.

Both U.S. GAAP and IFRS require firms to exercise significant judgment in accounting for long-lived assets. For example, firms must estimate service lives and salvage values of finite-lived assets and choose depreciation and amortization methods for those assets. Both impairment testing and the remeasurement of assets to fair values also require substantial judgment and estimation.

APPENDIX 10.1: LONG-LIVED ASSET IMPAIRMENT PROCEDURES IN U.S. GAAP AND IFRS

Category 1: Asset Impairment of Long-Lived Assets with Definite Service Lives and Land U.S. GAAP requires a three-step process for measuring and recording impairments for land and long-lived assets with definite service lives.

Step 1. Compare the sum of the undiscounted cash flows from the asset with its balance sheet carrying value. An impairment loss occurs if the carrying value of the asset exceeds the sum of the undiscounted cash flows.

Step 2. The amount of the impairment loss is the excess of the carrying value of the asset over its fair value.

Step 3. At the time of the impairment loss, the firm reduces the carrying value of the asset to its current fair value. The recognized impairment loss reduces net income. U.S. GAAP does not permit reversals of impairment losses.

In requiring the use of undiscounted cash flows to test for an asset impairment in **Step 1**, the FASB reasoned that a loss has not occurred if the firm can recover in future cash flows an amount at least equal to the asset's carrying value. Under U.S. GAAP, firms do not recognize impairment losses if the *fair value* of an asset declines below carrying value, but only if the *undiscounted cash flows* from that asset decline below carrying value.

In contrast to U.S. GAAP, the IFRS test for an impairment loss for Category 1 assets compares the asset's carrying value with its **recoverable amount**, defined as the higher of (1) fair value less cost to sell and (2) value in use, defined as the present value of future cash flows of the asset in its current use by the firm. The impairment loss is the excess of the carrying value over the asset's recoverable amount. IFRS requirements differ from U.S. GAAP in three ways:

1. Under IFRS, firms do not compare the asset carrying value to the sum of the undiscounted cash flows to determine if an impairment loss has occurred. An impairment loss occurs whenever the carrying value exceeds the recoverable amount.
2. The impairment loss under IFRS is the carrying value less the recoverable amount (the higher of fair value less cost to sell and value in use).
3. A firm that applies IFRS will reverse all or part of an impairment loss if evidence exists that the loss has decreased or no longer exists.

We illustrate the application of this guidance with examples.

Basic Impairment Example Great Deal owns an office building that cost \$20 million, with accumulated depreciation of \$5 million. The balance sheet carrying value (net book value) of the building is \$15 (= \$20 – \$5) million. Great Deal originally expected to collect annual rentals of \$1.67 million for 30 more years before selling the building for \$8 million. Because of the opening of a new shopping center, Great Deal now expects the building to provide rentals for only 15 more years before Great Deal will sell it. Great Deal uses a discount rate of 8% per year in discounting expected rentals from the building.

Example 15 Great Deal now expects to receive annual rentals of \$1.35 million per year for 15 years and to sell the building for \$5.0 million after 15 years. The present value of the payments is \$13.1 million when discounted at 8% per year; this amount is the value in use under IFRS. The building's fair value is \$12.5 million today. Estimated costs to sell are \$500,000.

Under U.S. GAAP, no impairment loss has occurred because the expected undiscounted future cash flows of \$25.25 [= (\$1.35 × 15.0) + \$5.00] million exceed the carrying value of \$15 million. Although Great Deal has suffered an economic loss (because the fair value of the building of \$12.5 million is less than the carrying value of \$15.0 million), it will not recognize an impairment loss. Applying IFRS, Great Deal would compare the asset's carrying value of \$15.0 million to the higher of the fair value less cost to sell of \$12.0 million (= \$12.5 million less \$500,000) and the value in use of \$13.1 million. The impairment loss would be \$1.9 million (= \$15.0 million – \$13.1 million).

Example 16 Now assume that Great Deal expects to receive annual rentals of \$600,000 per year for 15 years and to sell the building for \$3.0 million after 15 years. The present value of these amounts is \$6.1 million when discounted at 8% per year; this is the value in use under IFRS. The building's fair value is \$5.5 million today, and costs to sell are \$300,000.

Under U.S. GAAP, Great Deal has an impairment loss because the carrying value of \$15.0 million exceeds the expected undiscounted future cash flows of \$12.0 [= (\$0.6 × 15) + \$3.0] million. Great Deal recognizes an impairment loss of \$9.5 million, equal to the excess of the carrying value of the building of \$15 million over its fair value of \$5.5 million. Under IFRS, Great Deal compares the carrying value of \$15.0 million to the recoverable amount of \$6.1 million (that is, the higher of the value in use of \$6.1 million and the fair value less cost to sell of \$5.2 million; \$5.2 million = \$5.5 million less \$300,000). Under IFRS, Great Deal recognizes an impairment loss of \$8.9 million (= \$15.0 million – \$6.1 million).

The journal entry for recording an impairment loss is similar under U.S. GAAP and IFRS, illustrated using **Example 16**. The accounting involves first removing the building's acquisition cost and the accumulated depreciation from the accounts and then establishing a new asset cost: fair value under U.S. GAAP and recoverable amount under IFRS. The journal entry applying U.S. GAAP to recognize the impairment loss (with amounts in millions) would be as follows:

Accumulated Depreciation	5.0	
Building (New Valuation)	5.5	
Loss on Impairment	9.5	
Building (Acquisition Cost)		20.0

Applying IFRS would record the impaired asset at a larger amount (its recoverable amount of \$6.1 million) and recognize a smaller impairment loss (\$8.9 million). Under both U.S. GAAP and IFRS, the loss reduces income, unless the firm had previously revalued the assets upward under IFRS. In that case, the loss is a revaluation decrease (a debit to other comprehensive income) up to the amount of the revaluation, with any excess loss recognized in net income.

Category 2: Asset Impairments of Intangible Assets with Indefinite Service Lives, Other Than Goodwill Because Category 2 assets have an indefinite life, firms cannot apply the undiscounted cash flow test for asset impairment (the indefinite life precludes estimation of total future cash flows). U.S. GAAP requires firms to recognize an

impairment loss on a non-amortized intangible asset other than goodwill whenever the carrying value of the asset exceeds its fair value.²⁵ The IFRS treatment for these assets parallels that for amortized or depreciated assets (Category 1 assets) except that firms must perform the impairment test annually, regardless of the presence of impairment indicators. The measurement of the loss and the new balance sheet carrying value are the same as for Category 1 assets.

Example 17 Great Deal's balance sheet for the year ended February 27, 2013 (**Exhibit 1.1**) shows a trade name with carrying value of \$159 million. The trade name has an indefinite life and therefore Great Deal does not amortize it. Negative publicity regarding the product carrying the trade name has reduced its fair value to \$128 million. Great Deal compares the carrying value of the trade name of \$159 million with its fair value of \$128 million and recognizes a \$31 million impairment loss. The entry (with amounts in millions) is as follows:

Loss on Impairment	31	
Trade Name (or Accumulated Amortization)		31

SUMMARY OF ACCOUNTING FOR CATEGORY 1 AND CATEGORY 2 IMPAIRMENTS

Accounting for the impairment of long-lived assets is complex because U.S. GAAP requirements differ for various assets and requirements differ between U.S. GAAP and IFRS. **Exhibit 10.1** summarizes these requirements for Category 1 and Category 2 assets.

► PROBLEM 10.5 FOR SELF-STUDY

Measuring impairment losses. Real Estate Financing Corporation (REFC) acquired the assets of Key West Financing Corporation (KWFC) on June 1, 2011, for \$250 million. On the acquisition date, KWFC's assets consisted of loans receivable with a fair value of \$120 million and real estate leased to businesses and individuals with a fair value of \$60 million. The remainder of the purchase price of \$70 (= \$250 - \$120 - \$60) million represents goodwill. On October 15, 2013, a hurricane hit Key West and severely damaged many homes and businesses. Information related to the assets of KWFC on October 15, 2013, is as follows (amounts in millions):

	Carrying Value	Undiscounted Cash Flows	Fair Value
Loans Receivable	\$140	\$160	\$125
Real Estate	80	65	50
Goodwill	70		
Total	<u>\$290</u>		

Assume that the fair value of KWFC on October 15, 2013, after the hurricane is \$310 million. Compute the amount of any asset impairment losses on Category 1 and Category 2 assets under U.S. GAAP.

Category 3: Asset Impairment for Goodwill Recall from **Example 8** that goodwill arises in a business combination when the purchase price exceeds the fair value of the net identifiable assets. Firms do not amortize goodwill under either U.S. GAAP or IFRS. Both U.S. GAAP and IFRS require firms to test goodwill for impairment losses annually, or whenever

²⁵The FASB has issued guidance that permits an approach that is similar to the qualitative assessment described later in this **Appendix** for goodwill to be applied to impairment assessments of indefinite-lived intangibles other than goodwill. FASB, *Accounting Standards Update No. 2012-02, Intangibles—Goodwill and Other (Topic 350), "Testing Indefinite-Lived Intangible Assets for Impairment,"* 2012.

EXHIBIT 10.1**Summary of Accounting for Impairments of Long-Lived Assets Except Goodwill**

	U.S. GAAP	IFRS
Long-lived assets with definite service lives and land	An asset impairment occurs when the carrying value of the asset exceeds its undiscounted future cash flows. The amount of the impairment loss is the excess of the carrying value over the fair value of the asset. Fair value is the amount a firm would receive if it sold the asset in an arm's-length transaction on the measurement date.	An asset impairment occurs and is measured by the excess of the carrying value of the asset over its recoverable amount. The recoverable amount is the larger of the fair value less cost to sell and the present value of the cash flows the firm expects the asset to generate in its current use.
Intangibles with indefinite service lives, except goodwill	An asset impairment occurs and is measured by the excess of the carrying value over the fair value of the asset.	The requirements are the same as for long-lived assets subject to depreciation or amortization.

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there is an indication of impairment, such as change in the regulatory environment or the loss of key personnel.

Goodwill is evaluated for impairment as part of a **reporting unit** (U.S. GAAP) or a **cash-generating unit** (IFRS). These units are identifiable groups of assets that generate identifiable cash flows.²⁶ Firms use these identifiable groups of assets to measure the fair value (U.S. GAAP) or the recoverable amount (IFRS) of goodwill.

Under U.S. GAAP, firms must first determine if there are impairment losses on other non-current assets before they examine goodwill. Firms then follow one of two procedures for assessing whether goodwill is impaired.²⁷ The first procedure is quantitative; firms compare the fair value of a reporting unit to the carrying value of the reporting unit's assets (including goodwill) less liabilities. If the carrying value is less than the fair value, an impairment loss on goodwill may have occurred, and the firm proceeds to a second step. In this second step, the firm allocates the fair value of the reporting unit to identifiable assets and liabilities of the reporting unit based on their current fair values, allocates any excess fair value to goodwill, and compares this allocated amount of goodwill with the balance sheet carrying value of goodwill. These allocations do not change the reported amounts of assets and liabilities; the only purpose of the allocations is to assess goodwill impairment. If the allocated goodwill amount is less than the carrying value of goodwill, the firm recognizes an impairment loss equal to the difference.

The second procedure is qualitative; firms assess qualitative factors, for example, adverse changes in industry or economy conditions or adverse changes in input costs, to determine whether it is more likely than not that the fair value of a reporting unit is less than its balance sheet carrying amount. If the firm determines that it is *not* more likely than not that the fair value of a reporting unit is less than its balance sheet carrying amount the test is complete; otherwise, the firm must revert to the quantitative procedure just described. Beginning with 2012, firms that apply U.S. GAAP can choose between these two options; the qualitative assessment option is not permitted by IFRS. As this book goes to press, the FASB has proposed permitting the qualitative assessment described here for goodwill to be applied as well to Category 2 asset impairment tests, that is, impairment assessments of indefinite-lived intangibles other than goodwill.

²⁶ *SFAS No. 142* defines a reporting unit as a segment or a component of a segment that is a business with separate financial information that management regularly reviews. *IAS 36* defines a cash-generating unit as the smallest identifiable group of assets that generates cash inflows that are largely independent of the cash inflows from other assets or groups of assets.

²⁷ FASB, *Statement of Financial Accounting Standards No. 142*, "Goodwill and Other Intangible Assets," 2001 (Codification Topic 350); *Accounting Standards Update No. 2011-08*, "Intangibles—Goodwill and Other (Topic 350), Testing Goodwill for Impairment," 2011.

The following example illustrates the application of the quantitative procedure.

Example 18 Refer to **Example 8**, involving Great Deals' acquisition of CarPax for \$100 million, as follows:

Property and Equipment	\$ 47
Identifiable Intangible Assets:	
Customer Lists	8
Trade Names.	10
In-Process Research and Development Projects	15
Goodwill.	<u>20</u>
Total	<u>\$100</u>

Assume that CarPax qualifies as a reporting unit under U.S. GAAP, and that market pressure from competitors forced drastic price reductions for CarPax products and services; these reductions reduced the fair value of CarPax to \$80 million.

- Great Deal first applies the U.S. GAAP requirements for identifying and measuring an impairment loss on long-lived tangible assets, the property and equipment, with fair value at acquisition of \$47 million. Great Deal estimates that the undiscounted cash flows related to property and equipment total \$50 million, the carrying value is \$47 million, and the current fair value is \$47 million. The property and equipment is not impaired because the undiscounted cash flows of \$50 million exceed the carrying value of \$47 million.
- Great Deal next applies the U.S. GAAP requirement for identifying and measuring an impairment loss on intangible assets other than goodwill, customer lists, trade names, and IPR&D. Great Deal estimates that the fair value of these intangibles is now \$25 million, less than the carrying value of \$33 million, and recognizes an \$8 million impairment loss. This loss reduces the carrying value of CarPax to \$92 million (= \$47 million for property and equipment + \$25 million for intangibles + \$20 million for goodwill).
- Finally, Great Deal applies the U.S. GAAP requirements for identifying and measuring an impairment loss on goodwill. Great Deal identifies the fair value of CarPax's long-lived tangible assets (\$47 million) and intangibles (\$25 million). The sum of these, \$72 million, is the fair value of CarPax exclusive of goodwill. The difference between \$72 million and the \$80 million fair value of CarPax yields an implied fair value of goodwill of \$8 million. The balance sheet carrying value of goodwill of \$20 million exceeds this implied fair value by \$12 million (= \$20 – \$8 million). Great Deal recognizes a \$12 million goodwill impairment.

The journal entry to record impairment losses is as follows:

Loss on Impairments	20	
Intangible Assets.		8
Goodwill.		12

The loss appears on the income statement. Recording this loss reduces the carrying value of CarPax to \$80 (= \$46 + \$25 + \$8) million, its current fair value.

The impairment test under IFRS is applied at the level of a *cash-generating unit*, defined as the smallest identifiable group of assets that generates cash flows that are largely independent of the cash flows of other assets. If the recoverable amount of the unit is less than the balance sheet carrying value, the firm recognizes an impairment loss. The credit to offset the debit for the impairment loss is allocated first to goodwill and second to other assets, prorated based on their carrying amounts. In each instance, the asset (whether goodwill or a separately identifiable asset) is written down to its recoverable amount or zero, whichever is larger. Although the amounts will be different, because both the impairment test and the subsequent balance sheet carrying value will be different, the journal entries for recognizing goodwill impairments under IFRS are similar to those shown previously for Great Deal. Unlike U.S. GAAP, however, IFRS

requires that firms assess, every reporting period, whether there has been a recovery of a goodwill impairment loss. Firms must recognize a recovery if one has occurred.

Example 19 Refer to **Example 18**. Assume that Great Deal applies IFRS and views CarPax as a cash-generating unit. Assume the following carrying values and recoverable amounts²⁸ for CarPax for purposes of measuring impairment losses (amounts in millions):

	Carrying Value	Recoverable Amount
Property and Equipment	\$ 47	\$47
Intangible Assets	33	25
Goodwill	20	8
Total for Cash Generating Unit	<u>\$100</u>	<u>\$80</u>

Great Deal recognizes an impairment loss of \$20 million because the carrying value of the cash-generating unit (\$100 million) exceeds its recoverable amount of \$80 million. Great Deal first reduces the carrying value of goodwill by \$12 million to its recoverable amount, then allocates the remaining impairment loss of \$8 million to the property and equipment and intangibles based on their relative carrying values. Because the carrying amount of property and equipment equals its recoverable amount, no impairment loss is recognized (because the allocation of the excess impairment loss cannot decrease an asset below its recoverable amount). Therefore, the excess impairment of \$8 million reduces the carrying value of the intangible assets, from \$33 million to \$25 million. The journal entry is the same as that shown in **Example 18**.

The following chart summarizes the U.S. GAAP and IFRS requirements for goodwill impairments.

	U.S. GAAP	IFRS
Goodwill	<p>Starting in 2012, firms may choose between two approaches.</p> <p><i>Quantitative approach:</i> First, compare the carrying value of a <i>reporting unit</i> that has goodwill to the fair value of that reporting unit. If the carrying value of the reporting unit exceeds its fair value, continue to the next step; otherwise, stop. Second, compare the carrying value of the <i>goodwill</i> with its fair value. To measure the fair value of goodwill, determine the fair value of the reporting unit to which the goodwill applies. Allocate this total fair value to identifiable assets and liabilities on the balance sheet based on their fair values. The remaining fair value of the reporting unit is the fair value of goodwill. A firm allocates the total fair value of the reporting unit only for the purpose of measuring the fair value of goodwill. If the carrying value of the goodwill exceeds its fair value from this second step, recognize a goodwill impairment loss.</p> <p><i>Qualitative approach:</i> Use available qualitative information to assess whether it is more likely than not that the fair value of a reporting unit is less than its carrying amount. If an entity determines that it is more likely than not that the fair value of a reporting unit exceeds its carrying value, the entity applies the quantitative approach.</p>	<p>A goodwill impairment loss occurs when the carrying value of the net assets of a <i>cash-generating unit</i> with goodwill exceeds the recoverable amount for that unit. First, reduce the carrying value of goodwill by the amount of the impairment loss but not below its recoverable amount. Second, reduce all other assets pro rata based on their carrying values but not below their recoverable amounts for any remaining impairment loss.</p>

²⁸To simplify the example, we assume the recoverable amounts under IFRS in **Example 19** equal the fair values under U.S. GAAP in **Example 18**. These amounts usually differ.

PROBLEM 10.6 FOR SELF-STUDY

Refer to the information provided for **Problem 10.5** for Self-Study. Assume that the market value of KWFC on October 15, 2013, after the hurricane is \$220 million. Compute the amount of any asset impairment losses for Category 1 assets, Category 2 assets, and goodwill under U.S. GAAP.

SOLUTIONS TO SELF-STUDY PROBLEMS**SUGGESTED SOLUTION TO PROBLEM 10.1 FOR SELF-STUDY**

(Jensen Company; calculating the acquisition cost of fixed assets.)

1. a, b, d, j, m, o, p.
2. c, e, f, g, i, k, l, n, o, p.
3. h, i, l, p.
4. i, q, r.

COMMENTS AND EXPLANATIONS

- d. Removing the old building makes the land ready to accept the new one. These costs apply to the land, not to the new building.
- f. The reduction in the cost of materials and supplies will reduce the cost of the building. The actual accounting entries depend on the method used to record the potential discount. This book does not discuss these issues.
- h. Explicit interest is capitalized but not opportunity-cost interest or interest imputed on one's own funds. The adjusting entry credits Construction in Process and debits Interest Revenue. The debit reduces income, removing the revenue that the company had recognized.
- i. Computation of the amounts to be allocated requires an estimate. Once the firm estimates amounts, it debits them to Building or to Depreciation Expense and Work-in-Process Inventory, as appropriate, for the regular company operations.
- j. Credit to Land account, reducing its cost.
- l. Allocate to Building and to expense, based on an estimate of how time was spent. Given the description, most of these costs are probably for the building.
- m. Include as part of the cost of the land.
- n. Capitalize as part of the Building account for the same reasons that a firm capitalizes interest during construction.
- o. Allocate the costs for insuring workers to the same accounts as the wages for those workers.
- p. Probably as an expense or a loss for the period. An alternative and justifiable treatment is to include this as part of the cost of the building, paralleling the treatment of explicit insurance cost. If, however, the company was irrational in acquiring insurance policies with deductible clauses, this item would be an expense or loss. Accounting usually assumes that most management teams make rational decisions most of the time.
- q. Debit to Machinery and Equipment account, an asset account separate from Building.
- r. Treat the same as the preceding item; installation costs are part of the cost of the asset.
- s. Recognizing revenue is incorrect. Credit the Construction in Process account and debit the Construction Revenue account.

SUGGESTED SOLUTION TO PROBLEM 10.2 FOR SELF-STUDY

(Markam Corporation; calculating periodic depreciation.)

a. Straight-Line (Time) Method:

 Years 2013 to 2017: $(\$20,000 - \$2,000)/5 = \$3,600$ each year

 Total: $\$3,600 \times 5 = \$18,000$

b. Straight-Line (Use) Method:

 Years 2013 to 2016: $5,000 \times \$0.75^a = \$3,750$ per year

 Year 2017: $4,000 \times \$0.75^a = \$3,000$

 Total $[(\$3,750 \times 4) + \$3,000] = \$18,000$
 $^a(\$20,000 - \$2,000)/24,000 = \$0.75$ per hour

c. Double-Declining Balance Method (assuming the firm switches to the straight-line [time] method at the start of 2015):

Year	Carrying Value		Double-Declining Depreciation Rate		Annual Depreciation Expense
2013	\$20,000	×	$0.4 = 2 \times (1/5)$	=	\$8,000
2014	\$12,000 (= \$20,000 - \$8,000)	×	$0.4 = 2 \times (1/5)$	=	4,800
2015	\$7,200 (= \$12,000 - \$4,800)	×	0.33	=	1,733 ^a
2016	\$5,467	×	0.33	=	1,733
2017	\$3,734	×	0.33	=	1,733
End 2017	\$2,000 (= salvage value)				

^aDepreciation expense in years 2015–2017 is calculated using the straight-line (time) method, using the carrying value of the asset at the end of year 2014 and its expected salvage value of \$2,000. Annual depreciation expense = \$1,733 (= $[\$7,200 - \$2,000] / 3$ years remaining).

d. Sum-of-the-Years'-Digits Method:

Year	Acquisition Cost Less Salvage Value		Sum of Years Ratio		Annual Depreciation Expense
2013	\$18,000 (= \$20,000 - \$2,000)	×	5/15	=	\$6,000
2014	\$18,000	×	4/15	=	4,800
2015	\$18,000	×	3/15	=	3,600
2016	\$18,000	×	2/15	=	2,400
2017	\$18,000	×	1/15	=	1,200

SUGGESTED SOLUTION TO PROBLEM 10.3 FOR SELF-STUDY

(Central States Electric Company; adjustments for changes in estimates.) (All dollar amounts in millions of U.S. dollars.)

- a. \$4.4 per year = $(\$200 + \$20)/50$ years
- b. \$4.5 per year = $[\$200 + \$20 + \$4 - (\$4.4 \text{ per year} \times 10 \text{ years})]/40$ years remaining life
= $(\$224 - \$44)/40 = \$180/40$
- c. \$3.0 per year = $[\$180 - (\$4.5 \times 20 \text{ years})]/30$ years remaining life
= $(\$180 - \$90)/30 = \$90/30$

SUGGESTED SOLUTION TO PROBLEM 10.4 FOR SELF-STUDY

(Purdy Company; distinguishing repairs from improvements.)

- a. Record the first truck at \$19,200. Record the second truck at \$15,000; debit \$4,200 to expense or loss.
- b. When Purdy Company acquired the first truck, it knew it would have to make the “repair,” which is an improvement. The purchase price was lower because of the known cost to be incurred. At the time of acquisition, the firm anticipated the cost as required to produce the expected service potential of the asset. The fact that the cost was \$4,200, rather than “about \$4,000,” does not seem to violate Purdy Company’s expectations at the time it acquired the truck. If the repair had cost significantly more than \$4,000—say, \$7,000—then the excess could be a loss or an expense.

Purdy Company believed that the second truck was operable when it agreed on the purchase price. Purdy Company incurred the cost of the repair to achieve the level of service potential it thought it had acquired. There are no more future benefits after the repair than it had anticipated at the time of acquisition. Therefore, the \$4,200 is an expense or a loss.

SUGGESTED SOLUTION TO PROBLEM 10.5 FOR SELF-STUDY

(Real Estate Financing Corporation; measuring impairment losses on Category 1 and Category 2 assets.)

The undiscounted cash flows related to the loans receivable of \$160 million exceed their carrying value of \$140 million, so no impairment loss arises for the receivables. For real estate, the carrying value of \$80 million exceeds their undiscounted cash flows of \$65 million, so Real Estate Financing Corporation recognizes an impairment loss of \$30 (= \$50 – \$80) million. The carrying value of the firm after recognizing the impairment loss is \$260 million (= \$140 million for loans receivable + \$50 million for real estate + \$70 million for goodwill).

SUGGESTED SOLUTION TO PROBLEM 10.6 FOR SELF-STUDY

(Real Estate Financing Corporation; measuring impairment losses on Category 1 and Category 2 assets and on goodwill).

The answers for the loans receivable and the real estate in **Problem 10.5** for Self-Study apply here as well. In this case, however, the carrying value of the firm of \$260 million exceeds the fair value of \$220 million, so an impairment loss of goodwill arises. To measure the impairment loss, the accountant attributes \$125 million of the fair value of \$220 million to loans receivable, \$50 million to real estate, and \$45 million to goodwill. Comparing the fair value of goodwill of \$45 million to the carrying value of goodwill of \$70 million yields an impairment loss of \$25 million.

KEY TERMS AND CONCEPTS

Operational or operating assets
Financial assets
Tangible assets

Intangible assets
In-process research and development
(IPR&D)

Goodwill	Property, Plant, and Equipment, Gross
Interest costs during construction	Property, Plant, and Equipment, Net
Finite life	Treatment of changes in periodic depreciation and amortization
Service life, useful life	Maintenance
Indefinite life	Repairs
Depreciation, depreciation expense	Improvements
Amortization, amortization expense	Trade-in transaction
Joint cost	Commercial substance
Salvage value, residual value	Asset revaluations
Physical and functional factors	Impairment loss
Straight-line (time and use) methods	Recoverable amount
Declining-balance methods	Reporting unit
Sum-of-the-years'-digits method	Cash generating unit
Accumulated depreciation	

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

1. Review the meaning of the terms and concepts listed in Key Terms and Concepts.
2. A firm that makes expenditures to self-construct a building treats the expenditures as an asset. When that same firm makes research and development expenditures to create a new patented technology, it must treat the expenditures as an expense. When that same firm makes expenditures to create computer software for eventual sale to customers, it might treat some of those expenditures as an asset and some as an expense. Explain U.S. GAAP's rationale for the different treatment of these expenditures.
3. If Merck, a pharmaceutical firm, makes expenditures to research new drugs, it must treat the expenditures as an expense. If it acquires a patent for a new drug from its creator, it must treat the expenditure as an asset. If it acquires another firm with in-process R&D, it must treat the portion of the purchased price allocated to the in-process R&D as an asset. Explain U.S. GAAP's rationale for the different treatment of these expenditures.
4. What is the effect of capitalizing interest costs associated with self-constructed assets on reported income summed over all the periods of the life of a given self-constructed asset, from building through use until eventual retirement? Contrast with a policy of expensing interest as incurred.
5. Contrast the terms *finite life* and *indefinite life* as they apply to depreciation of tangible long-lived assets and amortization of intangible assets.
6. When Thames acquires another firm, it allocates a portion of the purchase price to brand names, some of which it amortizes and some of which it does not amortize. How does Thames likely justify this different treatment of brand names?
7. An airline has depreciated its new aircraft in the past over 25 years. New fuel usage and safety standards indicate that a shorter useful life is now appropriate for all of its existing aircraft. Depending on the circumstances, the airline might (a) spread the undepreciated cost of the aircraft over the remaining life of the aircraft, or (b) recognize an asset impairment loss immediately and then spread the carrying value over the remaining life of the aircraft. Under what circumstances might each of these two treatments be appropriate?
8. A firm expects to use a delivery truck for five years. At the end of three years, the transmission wears out and requires replacement at a cost of \$4,000. The firm argues that it should capitalize the expenditure because without it the useful life is zero and with it the useful life will be another three years. Comment on the firm's reasoning relative to U.S. GAAP and IFRS.
9. Relate the concept of return of capital to the criterion under U.S. GAAP for deciding whether an impairment loss on long-lived assets other than non-amortized intangibles has occurred.
10. Why does the cash recoverability criterion apply to impairment losses on amortized intangibles but not on non-amortized intangibles under U.S. GAAP?

11. The use of *undiscounted*, instead of *discounted*, cash flows for identifying asset impairment losses under U.S. GAAP seems to lack a conceptual basis. Explain why discounted cash flows are preferred to undiscounted cash flows in this scenario.
12. Suppose that competition among acquiring firms to make a corporate acquisition results in a valuation error, such that the acquiring firm overpays for the acquired firm. The acquiring firm will allocate the excess purchase price to goodwill, along with amounts attributable to unidentifiable intangible benefits. Because U.S. GAAP and IFRS do not require firms to amortize goodwill, the excess purchase price will not affect net income. Do you agree? Why or why not?

EXERCISES

13. **Calculating acquisition costs of long-lived assets.** Outback Steakhouse opened a new restaurant on the site of an existing building. It paid the owner \$260,000 for the land and building, of which it attributes \$52,000 to the land and \$208,000 to the building. Outback incurred legal costs of \$12,600 to conduct a title search and prepare the necessary legal documents for the purchase. It then paid \$35,900 to renovate the building to make it suitable for Outback's use. Property and liability insurance on the land and building for the first year was \$12,000, of which \$4,000 applied to the period during renovation and \$8,000 applied to the period after opening. Property taxes on the land and building for the first year totaled \$15,000, of which \$5,000 applied to the period during renovation and \$10,000 applied to the period after opening. Calculate the amounts that Outback Steakhouse should include in the Land account and in the Building account.
14. **Classifying expenditure as asset or expense.** For each of the following expenditures or acquisitions, indicate the type of account debited. Classify the account as (1) asset other than product cost, (2) product cost (Work-in-Process Inventory), or (3) expense. If the account debited is an asset account, specify whether it is current or noncurrent.
 - a. \$150 for repairs of office machines.
 - b. \$1,500 for emergency repairs to an office machine.
 - c. \$250 for maintenance of delivery trucks.
 - d. \$5,000 for a machine acquired in return for a three-year note.
 - e. \$4,200 for research and development staff salaries.
 - f. \$3,100 for newspaper ads.
 - g. \$6,400 for wages of factory workers engaged in production.
 - h. \$3,500 for wages of factory workers engaged in installing equipment the firm has purchased.
 - i. \$2,500 for salaries of the office workforce.
 - j. \$1,000 for legal fees incurred in acquiring an ore deposit.
 - k. \$1,200 for a one-year insurance policy beginning next month.
 - l. \$1,800 for U.S. Treasury notes, to be sold to pay the next installment due on income taxes.
 - m. \$4,000 for royalty payment for the right to use a patent used in manufacturing.
 - n. \$10,000 for purchase of a trademark.
 - o. \$100 filing fee for copyright registration application.
 - p. \$1,850 to purchase computer software used in record keeping.
 - q. \$8,600 to purchase from its creator initial research on a possible drug to treat hypertension.
15. **Cost of self-constructed assets.** Bolton Company purchased a plot of land for \$90,000 as a factory site. A small office building sits on the plot, conservatively appraised at \$20,000. The company plans to use the office building after making some modifications and renovations (item (4) below). The company had plans drawn for a factory and received bids for its construction. It rejected all bids and decided to construct the factory itself. Management believes that plant asset accounts should include the following additional items:

(1) Materials and Supplies for Factory Building	\$200,000
(2) Excavation of Land	12,000
(3) Labor on Construction of Factory Building.	140,000
(4) Cost of Remodeling Old Building into Office Building	13,000
(5) Interest Paid on Cash Borrowed by Bolton to Construct Factory ^a	6,000
(6) Interest Foregone on Bolton's Own Cash Used	9,000
(7) Cash Discounts on Materials Purchased for Factory Building.	7,000
(8) Supervision by Management on Factory Building	10,000
(9) Workers' Compensation Insurance Premiums on Labor in (3)	8,000
(10) Payment of Claims for Injuries During Construction of Factory Building Not Covered by Insurance.	3,000
(11) Clerical and Other Expenses on Construction of Factory Building.	8,000
(12) Paving of Streets and Sidewalks.	5,000
(13) Architect's Plans and Specifications of Factory Building	4,000
(14) Legal Costs of Conveying Land	2,000
(15) Legal Costs of Injury Claim During Construction of Factory Building	1,000
(16) Income Credited to Retained Earnings Account (the difference between the foregone cost and the lowest contractor's bid)	11,000

^aThis interest is the entire amount of interest paid during the construction period.

Show in detail the items Bolton should include in the following accounts: Land, Factory Building, Office Building, and Site Improvements. Explain the reason for excluding any of these items from the four accounts.

16. Cost of self-developed product. Duck Vehicle Manufacturing Company incurs various costs in developing a new, amphibious vehicle for use in providing tours on land and water. Indicate the accounting treatment for each of the following expenditures. Duck Vehicle applies U.S. GAAP.

(1) Salaries of Company Engineers to Design the New Vehicle	\$325,000
(2) Cost of Prototype of New Vehicle Built by External Contractor	278,200
(3) Cost of Supplies and Salaries of Personnel to Test Prototype	68,900
(4) Fees Paid to Environmental Protection Agency to Test Emissions of New Vehicle	15,200
(5) Legal Fees Incurred to Register and Establish a Patent on the New Vehicle.	12,500
(6) Cost of Castings, or Molds, for Metal Parts of New Vehicle	46,000
(7) Cost of Local Permits to Commence Manufacturing the New Vehicle.	5,000
(8) Cost of Manufacturing the First Vehicle for a Customer	167,600

17. Calculating interest capitalized during construction. Bulls Eye Stores constructed new stores during the current year. The average balance in the Construction-in-Process account excluding the current year's capitalized interest costs was \$3,400,000. Bulls Eye Stores engaged in borrowing directly related to these stores in the amount of \$2,000,000, which carries an interest rate of 6%. Bulls Eye Stores has other borrowing outstanding totaling \$8,000,000 at an average interest rate of 7%. Compute the amount of interest capitalized in the Construction-in-Process account during the current year.

18. Amount of interest capitalized during construction. Nexor, a steel manufacturer, self-constructs a new manufacturing facility in Vermont. At the start of 2013, the Construction-in-Process account had a balance of \$30 million. Construction activity occurred uniformly throughout the year. At the end of 2013, the balance was \$60 million before capitalization of interest for the year. The outstanding borrowings of the company during the year were as follows:

New Construction Loans at 8% per Year.	\$ 25,000,000
Old Bond Issues Averaging 6% Rate	<u>100,000,000</u>
Total Interest-Bearing Debt.	<u><u>\$125,000,000</u></u>

- a. Compute the amount of interest capitalized in the Construction-in-Process account for 2013.
 - b. Present journal entries for interest for 2013.
 - c. On December 31, 2014, Nexor completed the manufacturing facility and put it to work. Average Construction-in-Process for 2014 was \$110 million. The debt listed above remained outstanding throughout the construction project, and the firm did not issue any additional interest-bearing debt during this time. Present journal entries for 2014 related to interest expense and interest capitalization.
- 19. Calculations for various depreciation methods.** In 2013, Carlton, Inc., acquires a machine for \$88,800. It expects the machine to last six years and to operate for 30,000 hours during that time. Estimated salvage value is \$4,800 at the end of the machine's useful life. Calculate the depreciation charge for each of the first three years using each of the following methods:
- a. The straight-line (time) method.
 - b. The straight-line (use) method, with the following operating times: first year, 4,500 hours; second year, 5,000 hours; third year, 5,500 hours.
- 20. Calculations for various depreciation methods.** On January 1, 2013, Luck Delivery Company acquired a new truck for \$30,000. It estimated the truck to have a useful life of five years and no salvage value. The company closes its books annually on December 31. Indicate the amount of the depreciation charge for each year of the asset's life under the following methods:
- a. The straight-line (time) method.
 - b. The double-declining-balance method, with a switch to straight-line in 2016.
 - c. The sum-of-the-years'-digits method.
 - d. The truck belongs to a category of property for tax purposes requiring the following proportions of the asset's cost to be depreciated each year: 0.20, 0.32, 0.192, 0.115, 0.115, 0.058. The tax law allows firms to ignore salvage value in calculating depreciation.
- 21. Change in depreciable life and salvage value.** Thom Corporation acquired a computer on January 1, 2011, for \$10,000,000. The computer had an estimated useful life of six years and \$1,000,000 estimated salvage value. The firm uses the straight-line depreciation method. On January 1, 2013, Thom Corporation discovers that new technologies make it likely that the computer will last only four years in total and that the estimated salvage value will be only \$600,000. Compute the amount of depreciation expense for 2013 for this change in depreciable life and salvage value. Assume that the change does not represent an impairment loss.
- 22. Journal entries for revising estimate of service life.** Give the journal entries for the following selected transactions of Florida Manufacturing Corporation. The company uses the straight-line method of calculating depreciation and reports on a December 31 year-end.
- a. The firm purchases a cutting machine on November 1, 2013, for \$180,000. It estimates that the machine will have a useful life of 12 years and a salvage value of \$7,200 at the end of that time. Give the journal entry for the depreciation at December 31, 2013.
 - b. Record the depreciation for the year ending December 31, 2014.
 - c. In August 2019 the firm estimates that the machine will probably have a total useful life of 14 years and a \$3,840 salvage value. Record the depreciation for the year ending December 31, 2019.
 - d. The firm sells the machine for \$40,000 on March 31, 2024. Record the entries of that date, assuming that the firm records depreciation as indicated in part c.
- 23. Distinguishing repairs versus improvements.** Disney World experienced damage from a tornado at Space Mountain, one of its most popular attractions. It paid \$30,200 to replace steel reinforcements to the structure damaged by the tornado, \$86,100 for a new roof torn off by the tornado, \$26,900 for a new air conditioning system that was housed on the roof, and \$12,600 to replace carpeting damaged by water. Disney World estimates that higher quality steel used as replacements added 20% more structural support in terms of weight-bearing capacity. The new air conditioning system provides 25% more cooling power than

the unit previously installed in the attraction. Compute the amount of these expenses that Disney World should treat as a repair and the amount it should treat as an improvement.

- 24. Computing the amount of an impairment loss on tangible long-lived assets.** Wildwood Properties owns an apartment building that has a carrying value of \$15,000,000 on January 1, 2013. The highway department has decided to construct a new highway near the building, which substantially decreases its attractiveness to tenants. Wildwood Properties estimates that it will now collect rentals from the building of \$1,400,000 a year for the next six years and that it will sell the building at the end of that time for \$4,000,000. Wildwood Properties will use the present value of expected cash flows to measure the fair value of the building under U.S. GAAP and the recoverable amount under IFRS. An appropriate interest rate to discount cash flows is 10%. Assume that all cash flows occur at the end of the year. Compute the amount of any impairment loss that Wildwood Properties should recognize under U.S. GAAP and under IFRS.
- 25. Computing the amount of impairment loss.** Tillis Corporation acquired the assets of Kieran Corporation (Kieran) on January 1, 2011, for \$2,400,000. On this date the fair values of the assets of Kieran were as follows: land, \$400,000; building, \$600,000; equipment, \$900,000. On June 15, 2013, a competitor introduced a new product that will likely significantly affect future sales of Kieran's products. It will also affect the value of Kieran's property, plant, and equipment because of their specialized nature in producing Kieran's existing products. The following information relates to the property, plant, and equipment of Kieran on June 15, 2013:

	Carrying Value	Undiscounted Cash Flows	Fair Value
Land	\$ 550,000	\$575,000	\$550,000
Building	580,000	600,000	580,000
Equipment	1,200,000	950,000	800,000

The fair value of Kieran as an entity on June 15, 2008, is \$2,200,000.

Compute the amount of impairment loss recognized on each of Kieran's property, plant, and equipment and on goodwill on June 15, 2013, under U.S. GAAP.

- 26. Computing the gain or loss on sale of equipment.** Fedup Express acquired a delivery truck on January 1, 2009, for \$48,000. It estimated that the truck would have a six-year useful life and \$6,000 salvage value. Fedup Express uses the straight-line depreciation method. On July 1, 2013, Fedup Express sells the truck for \$14,000. Give the journal entries that Fedup Express makes on July 1, 2013, to recognize depreciation for 2013 and the sale of the truck.
- 27. Working backward to derive proceeds from disposition of plant assets.** The balance sheets of Wilcox Corporation at the beginning and end of the year contained the following data:

	Beginning of Year	End of Year
Property, Plant, and Equipment (at cost)	\$400,000	\$550,000
Accumulated Depreciation	180,000	160,000
Net Carrying Value.	<u>\$220,000</u>	<u>\$390,000</u>

During the year, Wilcox Corporation sold machinery and equipment at a gain of \$4,000. It purchased new machinery and equipment at a cost of \$230,000. Depreciation charges on machinery and equipment for the year amounted to \$50,000. Calculate the proceeds Wilcox Corporation received from the sale of the machinery and equipment.

- 28. Journal entries to correct accounting errors.** Give correcting entries for the following situations. In each case, the firm uses the straight-line method of depreciation and closes its books annually on December 31.
- a. A firm purchased a computer for \$3,000 on January 1, 2011. It depreciated the computer at a rate of 25% of acquisition cost per year. On June 30, 2013, it sold the computer for \$800 and acquired a new computer for \$4,000. The bookkeeper made the following entry to record the transaction:

Equipment	3,200	
Cash		3,200

- b. A firm purchased a used truck for \$7,000. Its cost, when new, was \$12,000. The bookkeeper made the following entry to record the purchase:

Truck	12,000	
Accumulated Depreciation		5,000
Cash		7,000

- c. A firm purchased a testing mechanism on April 1, 2011, for \$1,200. It depreciated the testing mechanism at a 10% annual rate. A burglar stole the testing mechanism on June 30, 2013. The firm had not insured against this theft. The bookkeeper made the following entry:

Theft Loss.	1,200	
Testing Machine.		1,200

PROBLEMS

- 29. Recording transactions involving tangible and intangible assets.** Present journal entries for each of the following transactions of Moon Macrosystems:
- Acquired computers costing \$400,000 and computer software costing \$40,000 on January 1, 2011. Moon expects the computers to have a service life of 10 years and \$40,000 salvage value. It expects the computer software to have a service life of four years and zero salvage value.
 - Paid \$20,000 to install the computers in the office. Paid \$10,000 to install and test the computer software.
 - Recorded depreciation and amortization using the straight-line method for 2011 and 2012. Moon records a full year of depreciation in the year of acquisition. Treat depreciation and amortization as a period expense.
 - On January 1, 2013, new software offered on the market made the software acquired in part a completely obsolete. Give any required journal entry.
 - On January 2, 2013, Moon revised the depreciable life of the computers to a total of 14 years and the salvage value to \$56,000. Give the entry to record depreciation for 2013.
 - On December 31, 2014, Moon sold the computers for \$260,000. Give the required journal entries for 2014.
- 30. Effect on net income of changes in estimates for depreciable assets.** Cloud Airlines has \$3 billion of assets, including airplanes costing \$2.5 billion with net carrying value of \$1.6 billion. It earns net income equal to approximately 6% of total assets. Cloud Airlines depreciates its airplanes for financial reporting purposes on a straight-line basis over 10-year lives to a salvage value equal to 10% of acquisition cost. Cloud announces a change in depreciation policy; it will use 14-year lives and salvage values equal to 12% of acquisition cost. The airplanes are all four years old. Assume an income tax rate of 35%.
Calculate the approximate impact on net income of the change in depreciation policy. Compute both dollar and percentage effects.
- 31. Recognizing and measuring impairment losses.** Give the journal entry to recognize an impairment loss, if appropriate, in each of the following cases under U.S. GAAP. If a loss does not qualify as an impairment loss, explain the reason, and indicate the appropriate accounting.
- Commercial Realty Corporation leases office space to tenants in Boston. One of its office buildings originally cost \$80 million and has accumulated depreciation of \$20

million. The city of Boston has announced its intention to construct an exit ramp from a nearby expressway on one side of the office building. Rental rates in the building will likely decrease as a result. The expected future undiscounted cash flows from rentals and from disposal of the building decreased from \$120 million before the announcement to \$50 million afterward. The fair value of the building decreased from \$85 million before the announcement to \$32 million afterward.

- b. Refer to part a. Assume that the undiscounted cash flows totaled \$70 million and that the fair value totaled \$44 million after the announcement.
 - c. Medical Services Corporation plans, and then builds, its own office building and clinic. It originally anticipated that the building would cost \$15 million. The physicians in charge of overseeing construction had medical practices so busy that they did not closely track costs, which ultimately reached \$25 million. The expected future cash flows from using the building total \$22 million, and the fair value of the building totals \$16 million.
 - d. Medco Pharmaceuticals acquired New Start Biotechnology two years ago for \$40 million. Medco allocated \$25 million to a patent held by New Start and \$15 million to goodwill. By the end of the current period, Medco has amortized the carrying value of the patent to \$20 million. A competitor recently received approval for a biotechnology drug that will reduce the fair value of the patent that Medco acquired from New Start. The expected future undiscounted cash flows from sales of the patented drug total \$18 million, and the fair value of the patent is \$12 million. The fair value of the former New Start Biotechnology operation owned by Medco is now \$25 million.
 - e. Chicken Franchisees, Inc., acquires franchise rights in the Atlanta area for Chicken Delight Restaurants, a national restaurant chain. The franchise rights originally cost \$15 million; since acquisition, Chicken Franchisees has amortized the book value to \$10 million. Chicken Delight Restaurants recently received negative publicity because the chickens it delivered to its franchisees contained potentially harmful pesticides. As a result, business has declined. Chicken Franchisees estimates that the future undiscounted cash flows associated with the Chicken Delight name total \$6 million and that the franchise rights have fair value of \$3 million.
- 32. Expensing versus capitalizing research and development costs.** Pfizer, a pharmaceutical company, plans to spend \$90 million on research and development (R&D) at the beginning of each of the next several years to develop new drugs. As a result of the R&D expenditure for a given year, it expects pretax income (not counting R&D expense) to increase by \$36 million a year for three years, including the year of the expenditure itself. Pfizer has other pretax income of \$30 million per year. The controller of Pfizer is curious about the effect on the financial statements of following one of two accounting policies with respect to R&D expenditures:
- (1) Expensing the R&D costs in the year of expenditure (the policy required in the United States).
 - (2) Capitalizing the R&D costs and amortizing them over three years, including the year of the expenditure itself.
- Assume that the company does spend \$90 million at the beginning of each of four years and that the planned increase in income occurs. Ignore income tax effects.
- a. Prepare a four-year condensed summary of income before income taxes, assuming that Pfizer follows policy (1) and expenses R&D costs as incurred.
 - b. Prepare a four-year condensed summary of income before income taxes, assuming that Pfizer follows policy (2) and capitalizes R&D costs, then amortizes them over three years. Also compute the amount of Deferred R&D Costs (asset) appearing on the balance sheet at the end of each of the four years.
 - c. In what sense is policy (1) a conservative policy?
 - d. Ascertain the effect on income before income taxes and on the balance sheet if Pfizer continues to spend \$90 million each year and the pretax income effects continue as in the first four years.
- 33. Interpreting disclosures regarding long-lived assets.** Exhibit 10.2 presents a partial balance sheet for Comerica Mills, Inc., a consumer foods processing company, for its fiscal years ending May 28, 2012, and May 27, 2013.

EXHIBIT 10.2**Partial Balance Sheet for Comerica Mills, Inc.**
(all dollar amounts in millions)
(Problem 10.33)

	May 27, 2012	May 28, 2013
Current Assets	\$ 3,054	\$ 3,041
Land	61	54
Buildings	1,518	1,430
Equipment	4,016	3,859
Capitalized Software	225	211
Construction in Progress	276	252
Total Land, Buildings, and Equipment	6,096	5,806
Less Accumulated Depreciation	(3,082)	(2,809)
Total Land, Buildings, and Equipment—Net	3,014	2,997
Intangibles Subject to Amortization:		
Patents and Trademarks—Net	12	12
Intangibles Not Subject to Amortization:		
Brands	3,682	3,595
Goodwill	6,835	6,652
Total Intangibles	10,529	10,259
Other Assets	1,587	1,778
Total Assets	<u>\$18,184</u>	<u>\$18,075</u>

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- a. Comerica Mills is not in the business of developing computer software. Why then does computer software appear as an asset on its balance sheet?
 - b. Is it likely that Comerica Mills recognizes depreciation on its computer software? Explain.
 - c. Comerica Mills computes depreciation on its depreciable assets using the straight-line method and recognized depreciation of \$421 million during fiscal 2013. Compute the average total life and the average age of depreciable assets for fiscal 2013.
 - d. Did Comerica Mills likely dispose of any depreciable assets during fiscal 2013? Explain.
 - e. Does Comerica Mills appear to be a firm that primarily grows by internal expansion or by acquiring other consumer foods companies? Explain.
 - f. Is it likely that Comerica Mills made a corporate acquisition during fiscal 2013? Explain.
 - g. What is Comerica Mills's likely rationale for treating patents and trademarks as intangibles subject to amortization?
 - h. What is Comerica Mills's likely rationale for treating brand names as an intangible not subject to amortization?
 - i. The income statement of Comerica Mills (not shown) reports Interest Expense—Net. Based on the information in **Exhibit 10.2**, what item has Comerica Mills likely netted against interest expense?
- 34. Interpreting disclosures regarding long-lived assets.** **Exhibit 10.3** presents a partial balance sheet for Hargon, Inc., a creator and manufacturer of biotechnology pharmaceutical products, for December 31, 2012 and 2013.
- a. Does Hargon likely recognize depreciation on the amount in the Construction-in-Progress account each year? Explain.
 - b. Hargon depreciates its assets using the straight-line method and recognized \$593 million of depreciation during 2013. Compute the average total life and average age of Amgen's depreciable assets for 2013.
 - c. Did Hargon appear to dispose of any depreciable assets during 2013? Explain.
 - d. Describe the likely reasons that Hargon treats Developed Product Technology, Core Technology, Trade Name, and Acquired Technology Rights as intangibles subject to amortization. Consider each of these four items separately.

EXHIBIT 10.3

**Partial Balance Sheet for Hargon, Inc.
(all dollar amounts in millions)
(Problem 10.34)**

	December 31, 2013	December 31, 2012
Current Assets	<u>\$11,712</u>	<u>\$ 9,235</u>
Land	398	294
Buildings and Improvements	2,776	2,485
Equipment	4,243	3,584
Construction in Progress	<u>1,271</u>	<u>958</u>
Total Land, Buildings, and Equipment	8,688	7,321
Less Accumulated Depreciation	<u>(2,767)</u>	<u>(2,283)</u>
Total Land, Buildings, and Equipment—Net	<u>5,921</u>	<u>5,038</u>
Intangibles Subject to Amortization:		
Developed Product Technology	2,877	3,077
Core Technology	1,348	1,348
Trade Name	190	190
Acquired Technology Rights	350	—
Other Intangible Assets	<u>454</u>	<u>335</u>
Total Intangibles Subject to Amortization	5,219	4,950
Less Accumulated Amortization	<u>(1,472)</u>	<u>(1,208)</u>
Total Intangibles Subject to Amortization—Net	<u>3,747</u>	<u>3,742</u>
Goodwill	<u>11,302</u>	<u>10,495</u>
Other Assets	<u>1,106</u>	<u>787</u>
Total Assets	<u>\$33,788</u>	<u>\$29,297</u>

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- e. Hargon uses the straight-line amortization method and recognized \$370 million of amortization for 2013. Compute the average total life and average age of Hargon’s intangibles subject to amortization for 2013.
 - f. Describe the likely reasons why Developed Product Technology decreased from \$3,077 million to \$2,877 million during 2013, whereas the amounts for Core Technology and Trade Name remained the same.
 - g. Given the nature of Hargon’s business, suggest the likely items that comprise Goodwill on the balance sheet.
 - h. The income statement of Hargon (not reported) shows Interest Expense—Net. Based on the information in **Exhibit 10.3**, what item has Hargon likely netted against interest expense?
- 35. Interpreting disclosures regarding long-lived assets.** **Exhibit 10.4** presents a partial balance sheet for HP3, a creator and manufacturer of computer hardware and software and related services, for its fiscal years ending October 31, 2012 and 2013.
- a. HP3 uses the straight-line method to depreciate its buildings, leasehold improvements, machinery, and equipment. It recognized depreciation expense of \$1,922 million during fiscal 2013. Compute the average total life and average age of its depreciable assets during fiscal 2013.
 - b. Did HP3 appear to abandon or dispose of any depreciable assets during fiscal 2013? Explain.
 - c. What is the likely rationale for treating Customer Contracts, Core Technology, Patents, and Product Trademarks as intangibles subject to amortization? Consider each of these four items separately.
 - d. HP3 uses the straight-line amortization method for intangibles subject to amortization and recognized \$783 million of amortization during fiscal 2013. Compute the average total life and average age of intangibles subject to amortization for fiscal 2013.

EXHIBIT 10.4**Partial Balance Sheet for HP3
(all dollar amounts in millions)
(Problem 10.35)**

	October 31, 2013	October 31, 2012
Current Assets	<u>\$47,402</u>	<u>\$48,264</u>
Land	464	534
Buildings and Leasehold Improvements	6,044	5,771
Machinery and Equipment.	<u>9,903</u>	<u>8,719</u>
Total Land, Buildings, and Equipment.	16,411	15,024
Less Accumulated Depreciation	<u>(8,613)</u>	<u>(8,161)</u>
Total Land, Buildings, and Equipment—Net.	<u>7,798</u>	<u>6,863</u>
Intangibles Subject to Amortization:		
Customer Contracts, Customer Lists, and Distribution Agreements.	3,239	2,586
Developed and Core Technology and Patents	2,768	1,923
Product Trademarks	<u>115</u>	<u>103</u>
Total Intangibles Subject to Amortization.	6,122	4,612
Less Accumulated Amortization.	<u>(3,465)</u>	<u>(2,682)</u>
Intangibles Subject to Amortization—Net.	2,657	1,930
Intangibles Not Subject to Amortization:		
Casio Brand Name	1,422	1,422
Goodwill	<u>21,773</u>	<u>16,853</u>
Total Intangibles.	<u>25,852</u>	<u>20,205</u>
Other Assets.	<u>7,647</u>	<u>6,649</u>
Total Assets	<u>\$88,699</u>	<u>\$81,981</u>

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- e. HP3 acquired Casio Computer Company seven years ago. Why does HP3 treat the Casio brand name as an intangible not subject to amortization?
- f. Did HP3 appear to make a corporate acquisition during fiscal 2013? Explain.

Notes, Bonds, and Leases

LEARNING OBJECTIVES

1. Develop the skills to compute the issue price, carrying value, and fair value of notes and bonds payable by discounting the future contractual cash flows to present value at the appropriate discount rate.
2. Understand the effective interest method, and apply it to debt premium and discount amortization.
3. Understand the application of the fair value option to financial liabilities.
4. Develop an ability to distinguish between capital (the U.S. GAAP term) or finance (the IFRS term) leases and operating leases based on accounting criteria, and understand the financial statement effects of the distinction.
5. Develop the skills to account for capital or finance leases and operating leases.

Chapter 9 indicated that firms typically finance current operating assets, such as accounts receivable and inventories, with short-term borrowing or trade credit (delayed payments to suppliers). Firms use the cash received from customers within the next several months to repay short-term lenders and suppliers. Firms typically finance long-term assets, particularly property, plant, and equipment, with long-term borrowing or funds provided directly or indirectly by shareholders. This chapter discusses the accounting for long-term borrowing arrangements (that is, those requiring repayment later than one year from the date of the balance sheet).

The more long-term debt in a firm's capital structure, the greater the risk the firm will experience difficulty making the required payments when due and, therefore, the greater the risk of default or bankruptcy. Financial analysts use several financial statement ratios to assess risk related to long-term borrowing. For example, the long-term debt ratio relates the amount of long-term debt to the amount of total financing.

$$\text{Long-Term Debt Ratio} = \frac{\text{Long-Term Debt}}{\text{Liabilities} + \text{Shareholders' Equity}}$$

The debt-equity ratio relates long-term debt to shareholders' equity,¹ indicating the relative mix of long-term financing obtained from lenders versus owners.

$$\text{Debt-Equity Ratio} = \frac{\text{Long-Term Debt}}{\text{Shareholders' Equity}}$$

¹In classic usage, the word *equity* refers to any item on the right-hand side of the balance sheet—any source of funding for a firm. Modern business usage has come to restrict the word *equity* to mean only shareholders' equity, both contributed capital and retained earnings. Still, current usage is sufficiently diverse that you should understand the meaning others have in mind when they use the term *equity*.

EXHIBIT 11.1**Debt Ratios for Four Firms**

Firm	Long-Term Debt Ratio	Debt-Equity Ratio	Property, Plant, and Equipment/Total Assets
SA Electric	43.4%	193.5%	81.5%
Boise Cascade	44.9	59.1	54.1
WPP Group	8.3	24.1	2.8
Intel	3.8	5.0	36.4

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Exhibit 11.1 presents these two debt ratios, as well as the ratio of property, plant, and equipment to total assets, for four firms in different industries. We use these ratios to assess the relations among a firm's industry economic characteristics; its use of property, plant, and equipment; and its use of long-term debt financing.

SA Electric SA Electric is a regulated provider of electric services (an electric utility) in South Africa. Property, plant, and equipment dominate SA Electric's assets. It relies more on long-term debt than shareholders' equity to finance these assets (as a debt-equity ratio exceeding 100% indicates). SA Electric's regulated status practically eliminates the risk of default or bankruptcy, so it faces a relatively low borrowing cost. Its production and transmission facilities also serve as collateral for the debt, meaning that lenders can sell the facilities and use the cash proceeds to repay the debt in the event SA Electric does not do so.

Boise Cascade Boise Cascade, a United States-based company, processes wood pulp into paper products in fixed-asset intensive facilities. It has the second largest ratio of property, plant, and equipment to total assets and the second largest debt-equity ratio of the four firms. Boise Cascade carries higher levels of risk than an electric utility. First, because Boise Cascade is not regulated, market forces and not regulation set the prices for its products. Second, Boise Cascade's sales are more sensitive to changes in the level of business activity than those of an electric utility. Third, Boise Cascade has fewer assets to serve as collateral for borrowing. The higher risk of Boise Cascade raises its borrowing costs and decreases its reliance on debt financing.

WPP Group WPP Group is a United Kingdom-based communication services firm whose employees provide advertising, market research, public relations, and other services worldwide. Other than relatively small amounts of equipment, it owns virtually no property, plant, and equipment (it leases most of its office space). Of the four firms considered in this example, it exhibits the lowest fixed-asset intensity and the second lowest debt-equity ratio. WPP Group creates value from employees' services, not from operating assets, so there is neither the need nor the ability to borrow long-term using property, plant, and equipment as collateral.

Intel Intel is a United States-based designer and manufacturer of semiconductors. It manufactures semiconductors in fixed-asset intensive plants. The moderate fraction of its total assets that are property, plant, and equipment results from depreciating its technology-intensive manufacturing facilities over periods as short as four years. Intel has the smallest long-term debt and debt-equity ratios of the four firms in this example. There are at least two reasons for this relatively low reliance on debt financing. First, Intel is exceptionally profitable and therefore generates funds from operations. Second, Intel incurs substantial technology risk from product obsolescence, with product life cycles of less than two years. Heavy reliance on debt financing would add financing risk and thereby increase borrowing costs.

These examples illustrate the importance of understanding a firm's industry and its economic characteristics when analyzing long-term debt and assessing risk. This chapter discusses the recognition and measurement of long-term debt. Which obligations of a firm do U.S. GAAP and IFRS recognize as long-term debt? How do U.S. GAAP and IFRS measure the amount that firms report as debt on the balance sheet? With a few exceptions, the accounting for debt under U.S. GAAP and IFRS is similar. We consider notes, bonds, and leases in this chapter. The next section discusses notes and bonds. A later section discusses leases.

OVERVIEW OF LONG-TERM DEBT MARKETS

This section describes debt markets to enhance understanding of the accounting for long-term debt discussed in later sections. Debt markets have a unique vocabulary, so be prepared to encounter new terms.

SOURCES OF LONG-TERM DEBT FINANCING

Firms that wish to use cash for long-term purposes, such as acquiring buildings and equipment or financing a business acquisition, will do one of two things:

1. Borrow from commercial banks, insurance companies, or other financial institutions.
2. Issue debt instruments such as bonds in the capital markets.

Lending agreements with commercial banks and other financial institutions often require firms to pledge assets as collateral. For example, a firm borrowing to finance the acquisition of equipment would likely pledge the equipment as collateral. If the firm fails to maintain specified levels of financial health while the loan is outstanding or does not make debt service payments on the loan when due, the lender has the right to seize the collateral and sell it to satisfy the amounts due. Common terminology refers to the financial contract underlying bank loans as a **note**, so that these loans sometimes appear on the balance sheet under the title **Notes Payable**. Notes of business firms generally have maturity dates less than approximately 10 years and arise from borrowing from a single lender. Borrowing from a single lender avoids some of the reporting requirements of public issues of debt. No public market for the debt exists in this case, so the borrower could have difficulty disengaging from the borrowing arrangement prior to maturity, unless the lending agreement provides for prepayment under specified conditions.

Many firms issue **bonds** in public debt markets to obtain long-term cash. A bond is a financial contract, similar in concept to lending agreements with banks or insurance companies, in which the borrower and the lender agree to certain conditions about repayment of the bonds, operating policies, other borrowing activities while the bonds are outstanding, and other matters. **Bond indenture** refers to this financial contract. Bonds appear on the balance sheet under the title **Bonds Payable**. In contrast to notes, bonds typically carry maturity dates longer than approximately 10 years and involve many lenders instead of a single lender. Firms classify the portion of bonds due within the next year as a current liability and the remaining portion as a noncurrent liability. Firms must also disclose a list of their long-term debt obligations in notes to the financial statements.

VARIETY OF BOND PROVISIONS

Bond issues vary with respect to their specific provisions. For example, particular collateral might back up bonds (a secured borrowing), or firms might issue bonds based only on their credit worthiness as an entity (**unsecured borrowing**). Unsecured borrowing might carry **senior rights** or **subordinated rights** in the event of bankruptcy. Senior unsecured debt holders have a higher priority for payment in the event of bankruptcy than subordinated (junior) unsecured lenders.

Bonds also vary in terms of their payment provisions. The typical **debenture bond** pays interest periodically, usually every six months, during the life of the bond and repays the principal amount borrowed at maturity. A **serial bond** requires periodic payments of interest plus a portion of the principal throughout the life of the bond. A **zero coupon bond** provides for no periodic payments of interest while the bond is outstanding; the bond requires payment of all principal and interest at maturity. A later section defines *principal* and *interest* more precisely.

Convertible bonds permit the holder to exchange the bonds for shares of the firm's common stock under specified conditions. This conversion option has value because the holder can benefit from increases in the market value of the firm's common stock after issuance of the bonds. If holders do not convert the bonds into common stock prior to maturity, the issuing firm repays the debt at maturity, the same as for nonconvertible bonds. We discuss convertible bonds more fully in **Chapter 15**.

Some bonds are **callable**, which means the issuing firm has the right to repurchase the bonds prior to maturity at a specified price. An issuing firm might exercise this call provision if interest rates decline after the initial issuance of the bonds. The firm can borrow at the lower interest rate and use the proceeds to finance the repurchase of the bonds initially issued.

Investors in bonds sometimes hold a **put option**, meaning they can force the issuing company to repay the bonds prior to maturity under specified conditions. Investors might exercise this put option if interest rates increase, and investors can reinvest the cash proceeds in debt securities with a higher yield.

Bonds can carry either **fixed interest rates** or **variable interest rates**. Bonds with fixed interest rates pay interest at that fixed rate throughout the life of the bond. Bonds with variable interest rates pay interest at rates that change during the life of the bond. The bond indenture specifies the formula for the periodic calculation of the variable interest rate.

Industry economic characteristics, the financial health of a firm, and the particular provisions of a bond issue combine to determine the risk of investing in the bond, which in turn affects the interest rate investors demand and therefore the bond's price both at the issue date and later. The next section discusses the measurement of financial instruments in general. Subsequent sections discuss the measurement of notes, bonds, and leases. To understand the calculations illustrated in the remainder of this chapter, you will need to understand compound interest and its use in computing the **present value of future cash flows**. The **Appendix** at the back of the book discusses compound interest.

MEASUREMENT OF FINANCIAL INSTRUMENTS: GENERAL PRINCIPLES

We use the term **financial instrument** to refer to a financial arrangement in which a firm contracts to receive or make specified payments in the future in return for cash or other resources paid or received currently. Notes, bonds, and leases are financial instruments. Derivatives, discussed in **Chapter 13**, are also financial instruments. A characteristic of these examples of financial instruments is that they take the form of contracts that specify the means of calculating the amounts that firms will receive or pay at specified times in the future.

The accounting measurement of notes and bonds payable follows two general principles:

1. The amount borrowed initially and the market value of a note or bond at any date subsequent to the initial borrowing equals the present value of the future, or remaining, cash flows discounted at an appropriate interest rate (discussed next).
2. The **internal rate of return**, sometimes called **yield to maturity**, is the discount rate that equates the future cash flows to the fair value of the instrument value at any date. Common terminology also refers to this rate as the **market interest rate**. When a financial instrument does not specify the internal rate of return, the investor can solve for this rate, called the **implicit interest rate**, following procedures described in the **Appendix**. On the issue date of initial issuance, the fair value will equal the initial issue proceeds—the amount borrowed. To understand the accounting for notes and bonds, we need two additional definitions:
 - **Historical Market Interest Rate:** The discount rate prevailing at the date of the initial borrowing. Discounting the contractual cash flows at this rate equates the present value of future cash flows to the amount initially borrowed—the fair value on the initial issue date.
 - **Current Market Interest Rate:** The discount rate at any date subsequent to the date of the initial borrowing. Discounting the contractual cash flows at this rate equates the present value of remaining cash flows to the fair value at the subsequent measurement date.

Later sections of this chapter indicate that U.S. GAAP and IFRS permit firms to account for notes and bonds under one of two approaches:

1. **Amortized Cost** Use the historical market interest rate to compute the carrying value of notes and bonds while these obligations are outstanding and disclose in the notes to the financial statements the fair values of these financial instruments based on the current market interest rate. This approach dominates current financial reporting, so this chapter focuses on it.
2. **Fair Value** Measure notes and bonds at fair value each period, in effect using the current market interest rate instead of the historical market interest rate to discount the remaining cash flows. The FASB and the IASB refer to this approach as the **fair value option**.² A later section of this chapter describes the fair value option.

²FASB, *Statement of Financial Accounting Standards No. 159*, “The Fair Value Option for Financial Assets and Financial Liabilities,” 2007 (**Codification Topic 825**); IASB, *International Accounting Standard 39*, “Financial Instruments: Recognition and Measurement,” 1999, revised 2003.

ACCOUNTING FOR NOTES

Firms typically borrow from banks, insurance companies, and other financial institutions by signing a note, which specifies the terms of the borrowing arrangement.

Example 1 Newsom Company borrows \$125,000 from its bank to purchase land on January 1, 2014. The firm pledges the land as collateral for the loan. Interest accrues on the unpaid balance of the loan at 12% compounded semiannually (that is, 6% each six months). The borrower pay \$17,000 on June 30 and December 31 of each year for four and one-half years, and pay \$16,782—the exact amount to discharge the loan—at the end of five years.³

Initial Valuation The initial valuation of this loan is the \$125,000 amount borrowed. This amount equals the present value of the future cash payments discounted at the yield required by the lender, which we assume is also 12% compounded semiannually.

When the stated interest rate for a loan (6% compounded semiannually in this example) equals the yield required by the lender (also 6% compounded semiannually), then the amount borrowed equals the principal amount of the loan (also called the face value in the case of bonds). The significance of this concept will become more apparent when we consider how to measure the carrying value of bonds.

The entries to record the loan and the purchase of land on the books of Newsom Company are as follows:

January 1, 2014

Cash	125,000	
Note Payable		125,000
To record \$125,000 cash received from bank in exchange for a note payable over five years with interest of 12% compounded semiannually requiring payments of \$17,000 at the end of each six months and a final payment of \$16,782.		

January 1, 2014

Land	125,000	
Cash		125,000
To record the purchase of land for \$125,000 cash.		

Measurement Subsequent to the Date of the Initial Loan During the first six months, interest of \$7,500 ($= 0.06 \times \$125,000$) accrues on the loan. The firm then makes the required cash payment of \$17,000. The entry to record interest expense, the loan payment, and the reduction in the amount of the Note Payable is as follows:

June 30, 2014

Interest Expense	7,500	
Note Payable	9,500	
Cash		17,000
To record interest expense, cash payment, and reduction in Note Payable for first six months.		

Thus, the carrying value of the loan changes during this first six months as follows:

Balance in Note Payable on January 1, 2014	\$125,000
Plus Interest for First Six Months: $0.06 \times \$125,000$	7,500
Less Cash Payment on June 30, 2014	<u>(17,000)</u>
Balance in Note Payable on June 30, 2014	<u>\$115,500</u>

³Example 9 in the Appendix shows the derivation of the \$17,000 payment.

The carrying value of the loan on June 30, 2014, equals the present value of the *remaining* cash flows discounted at 12% compounded semiannually.

These calculations illustrate a second important concept: *The amount reported on the balance sheet throughout the life of a loan (that is, its carrying value) equals the present value of the remaining cash flows discounted at the historical market interest rate (12% compounded semiannually in this example). The current market interest rate usually differs from the historical market interest rate during the life of the loan. A firm that does not account for long-term notes and bonds using the fair value option (discussed later), uses the historical market interest rate to account for the loan while it is outstanding.*

Amortization Schedule Exhibit 11.2 presents an **amortization schedule** for this loan. It shows interest expense and cash payments each six months and the resulting reduction in the carrying value of the loan during the ten periods. The interest expense equals the required yield (6% each six months) times the unpaid balance of the loan at the beginning of each six-month period. Common terminology refers to the calculations illustrated in **Exhibit 11.2** for amortizing a financial instrument to its maturity value over time as the **effective interest method**. The effective interest method has the following features:

1. The note, bond, or other financial instrument will appear on the balance sheet both initially and at each subsequent date at the present value of the remaining cash flows discounted at the historical market interest rate (that is, its initial yield to maturity).
2. The amount of interest expense each period equals the historical market interest rate times the carrying value of the financial instrument at the beginning of each period.

EXHIBIT 11.2

**Amortization Schedule for \$125,000 Loan,
Repaid in Nine Semiannual Installments of \$17,000
and a Final Payment of \$16,781.
Interest Rate Is 12% Compounded Semiannually
(6% compounded each six months)⁴**

Period (1)	Balance at Beginning of Period (2)	Interest Expense for Period (3)	Cash Payment (4)	Portion of Payment Reducing Principal (5)	Balance at End of Period (6)
0					\$125,000
1	\$125,000	\$7,500	\$17,000	\$ 9,500	115,500
2	115,500	6,930	17,000	10,070	105,430
3	105,430	6,326	17,000	10,674	94,756
4	94,756	5,685	17,000	11,315	83,441
5	83,441	5,006	17,000	11,994	71,448
6	71,448	4,287	17,000	12,713	58,734
7	58,734	3,524	17,000	13,476	45,259
8	45,259	2,716	17,000	14,284	30,974
9	30,974	1,858	17,000	15,142	15,832
10	15,832	950	16,782	15,832	0

Note: In preparing this table, we rounded numbers to the nearest dollar, but the underlying computations, in Excel®, used several significant digits after the decimal point.

Column (2) = Column (6) from previous period.

Column (3) = $0.06 \times$ Column (2), except for period 10, where it is the amount such that
Column (3) = Column (4) – Column (5).

Column (4) is given.

Column (5) = Column (4) – Column (3).

Column (6) = Column (2) – Column (5).

⁴The illustrations in this chapter use present value factors using the five significant digits in the tables.

In this example, the carrying value of the note changes each period, increasing to reflect the nearer in time of all remaining cash flows and decreasing for the payment of interest and principal.

► PROBLEM 11.1 FOR SELF-STUDY

Implicit interest rate and amortization schedule for interest-bearing note. Vera Company receives cash of \$97,375.69 in return for a three-year \$100,000 note, promising to pay \$6,000 at the end of one year, \$6,000 at the end of two years, and \$106,000 at the end of three years.

- Demonstrate that the required yield, or implicit interest rate, on this loan is 7% compounded annually.
- Prepare an amortization schedule for this loan similar to that in **Exhibit 11.2**.

ACCOUNTING FOR BONDS

Firms typically issue bonds to large numbers of debt investors in public debt markets to obtain cash for long-term purposes. As previously explained, the provisions of bond issues vary, depending on the firm's cash needs over time and the preferences of investors in the bonds. Investment bankers often advise corporate borrowers who issue bonds in public debt markets.

CASH FLOW PATTERNS FOR BONDS

Bonds vary with respect to the pattern of cash payments made by the borrower to debt investors. Three common types of bonds are coupon bonds, serial bonds, and zero coupon bonds.

Example 2 Ford Motor Company issues \$250 million of 8%, semiannual, 20-year coupon bonds. The bond indenture requires Ford to make coupon payments of \$10 million ($= 0.08 \times \$250 \text{ million} \times 6/12$) every six months for 20 years and to repay the \$250 million principal at the end of 20 years. Common terminology refers to the \$250 million as the **principal** or **face value** of the bond and the 8% rate as the **coupon interest rate**. In this case the \$250 million is also the **maturity value** of the bonds. The term *face value* refers to the principal amount printed on the face of the bond certificate. The principal or face value is the base for computing the amount of each semiannual coupon payment.⁵ At one time the bond certificate would have coupons attached, with each coupon equal to 4% times the principal amount and each dated, with dates six months apart. Investors would clip the predated coupons from the bond certificate each six months and deposit them in their bank accounts, just as they would deposit a check they had received. Although checks or electronic funds transfers have replaced coupons, the term *coupon* remains in use. Thus, the 8% coupon rate multiplied times the \$250 million principal equals the annual cash payment of \$20 million, which Ford pays in two semiannual installments of \$10 million each.

Example 3 Chrysler Corporation issues \$180 million of 15-year serial bonds. The bond indenture requires Chrysler to pay \$10,409,418 every six months for 15 years. Each periodic payment includes interest plus repayment of a portion of the principal. The principal or face

⁵Many refer to the periodic payments as *interest payments*. The term causes confusion because, as you will soon see, the amount of interest expense for a period almost never equals the amount of cash paid to lenders for that same period, whereas common terminology sometimes uses the word *interest* to refer to the expenditure (the coupon payment) and sometimes to refer to the expense—interest expense. We try always to use the word *interest* only when we mean the amount of the expense, not the expenditure, when that amount differs. The periodic payment will always include some amount to pay interest to the lender, but not necessarily all interest accrued since the last payment. If the payment exceeds all interest, then the payment will discharge some of the principal amount. Both payment of interest and payment of principal reduce the debt, so one all-purpose term used for the payment is *debt service payments*.

value of this bond is \$180 million. This bond does not specify a stated interest rate, but each payment includes implicit interest. We discuss serial bonds more fully later in this chapter.

Example 4 General Motors Corporation issues \$300 million of 10-year zero coupon bonds. These bonds do not require periodic interest payments. Instead the \$300 million maturity value includes both principal and interest. Although these bonds do not state an interest rate, there is an implicit interest rate embedded in the maturity value. We consider zero coupon bonds in greater depth later in this chapter.

REVIEW OF BOND TERMINOLOGY

Let's take a moment to review:

1. The bond contract specifies the basis for computing the future cash flows for that bond issue. Identifying those cash flows is the starting point to account for the bond both initially and at each subsequent measurement date.
2. Terminology with respect to bonds includes the following:
 - a. *Face Value*: The amount printed on the face of the bond certificate that serves as the basis for computing periodic coupon payments on coupon bonds.⁶ The face value equals the maturity value on coupon bonds and on zero coupon bonds but not on serial bonds.
 - b. *Principal*: The same as face value on coupon bonds and serial bonds but not on zero coupon bonds.
 - c. *Maturity Value*: The amount paid by the issuer at the maturity date of bonds. The maturity value equals the face value on coupon bonds and on zero coupon bonds.
 - d. *Fair Value (sometimes called market value)*: The amount at which bonds sell in the market either at date of issue or at any subsequent date while the bonds are outstanding.
 - e. *Coupon Rate*: The rate stated in the bond contract that when multiplied times the face value or principal amount of coupon bonds equals the required periodic cash payment. The stated coupon rate is always an annual rate. The issuer might make payments in more than one installment during the year, typically semiannually. For example, if the coupon rate is 6% payable semiannually, the issuer pays interest of 3% every six months. The frequency of payment affects the yield on the bond and the amortization calculations. The coupon rate need not equal the historical market interest rate, a possibility we discuss more fully later in the chapter.
 - f. *Historical Market Interest Rate or Initial Yield to Maturity*: The interest rate that discounts all future cash flows such that their present value equals the initial issue price of the bond.
 - g. *Current Market Interest Rate*: The interest rate that discounts all future cash flows such that their present value equals the fair value of the bond.

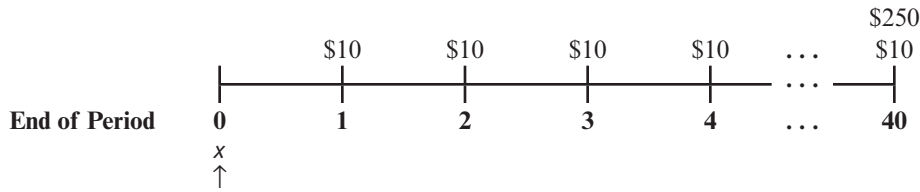
INITIAL MEASUREMENT OF BONDS

The initial issue price of a bond depends on two factors:

1. The promised cash payments indicated in the bond contract as discussed in the preceding section.
2. The yield to maturity required by investors to induce them to purchase the bonds, which the next section discusses and illustrates.

Example 2 (continued) The bonds in **Example 2** require Ford to pay \$10 million at the end of every six months and to repay the \$250 million principal at the end of 20 years. The time line (see **Appendix** for description of time lines) for this semiannual coupon bond covers 40 six-month periods as depicted in the following graph (amounts in millions):

⁶Common terminology also refers to the face value of bonds as *par value*. To reduce ambiguity, we use face value in reference to bonds and par value in reference to common and preferred shares in this book.

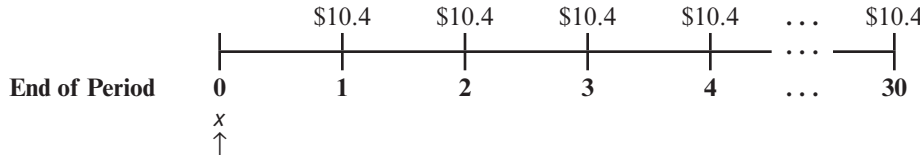


Assume that the market requires a yield to maturity for the bonds of Ford of 8% compounded semiannually. Thus, the initial issue price for these bonds is \$250 million, computed as follows (calculations based on factors from **Appendix Table 4** for annuity and **Appendix Table 2** for single amount and then rounded to the nearest thousand dollars):

Present Value of an Annuity of \$10 million for 40 Periods at 4% per Period: \$10 million × 19.79277	\$197,927,700
Present Value of \$250 million for 40 Periods at 4% per Period: \$250 million × 0.20829	52,072,500
Initial Issue Price (rounded to \$250 million in the text)	<u>\$250,000,200</u>

Note the concept described earlier in **Example 1**: When the coupon rate equals the historical market interest rate or initial yield to maturity, then the initial issue price equals the face value of the bonds.

Example 3 (continued) Now consider the valuation of the serial bonds of Chrysler. Chrysler must pay \$10,409,418 at the end of every six months for 15 years. The time line is as follows (amounts in millions):

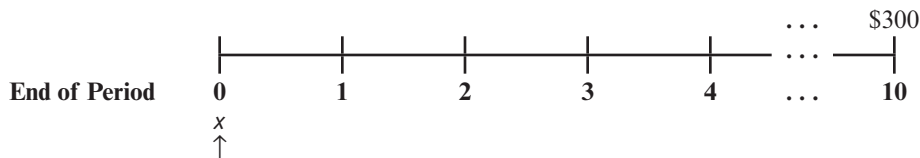


Assume that the market requires a yield to maturity of 8% compounded semiannually. The computation of the initial issue price is as follows:

Present Value of an Annuity (Appendix Table 4) of \$10,409,418 for 30 Periods at 4% per Period: \$10,409,418 × 17.29203, approximately	<u>\$180,000,000</u>
--	----------------------

An initial issue price equal to the face value of the bonds means that the implicit interest rate equals the yield to maturity.

Example 4 (continued) The bonds of General Motors require a payment of \$300 million at the end of 10 years. The time line is as follows (amounts in millions):



Assume that, like Ford and Chrysler, the market requires the bonds of General Motors to yield 8% compounded semiannually. The computation of the initial issue price is as follows:

Present Value of \$300 million for 20 Periods (Appendix Table 4) at 4% per Period: \$300 million × 0.45639	<u>\$136,917,000</u>
--	----------------------

The face value and maturity value of the bonds exceed the issue price. The difference between the face value and the present value of \$163,083,000 (= \$300,000,000 – \$136,917,000)

represents interest on the \$136,917,000 amount borrowed. To see this, note that the future value of \$136,917,000 for 20 periods at 4% is approximately \$300,000,000 ($= \$136,917,000 \times 2.19112$). Bond investors pay General Motors \$136,917,000 today for the right to receive \$300,000,000 ten years from today. This calculation demonstrates that investors in zero coupon bonds earn interest on the amounts invested, but they receive it all at maturity. The interest rate on zero coupon bonds is an implicit interest rate, because it is implied by the difference between the face amount paid at maturity and the initial issue price.

► PROBLEM 11.2 FOR SELF-STUDY

Amortization Schedule for Zero Coupon Bonds

- Prepare an amortization schedule such as that in **Exhibit 11.2** for the zero coupon bond issue in **Example 4**.
- Why does the amount of the zero coupon bond increase to \$300 million over the 10-year period?

Issue Price Differs from Face Value The coupon rate on a bond need not equal the yield to maturity that debt investors require on the date of a new bond issue. Preparing a new bond issue for the market requires months of effort. Market interest rates will likely change between the time the issuing firm specifies the coupon rate in the bond contract (even if that is the day before the actual issue) and in other documents and the day when the firm issues the bond. The difference in rates is usually small (except for zero coupon bonds), but the accounting for the bond must address the differences. When the coupon rate differs from the market-required yield to maturity, the issue price will differ from the face value of the bonds. The following generalizations apply:

- When the market-required yield to maturity exceeds the coupon rate, the bonds initially sell for less than face value, or a **discount to face value**.
- When the market-required yield to maturity is less than the coupon rate, the bonds initially sell for more than face value, or a **premium to face value**.

For example, assume that the market-required yield to maturity of the bonds of Ford is 10% compounded semiannually. The initial issue price is as follows:

Present Value of an Annuity of \$10 million for 40 Periods at 5% per Period: $\$10 \text{ million} \times 17.15909$	\$171,590,900
Present Value of \$250 million for 40 Periods at 5% per Period: $\$250 \times 0.14205$	35,512,500
Initial Issue Price	<u>\$207,103,400</u>

If lenders paid the \$250 million face value for Ford's bonds, they would realize a yield to maturity of 8%. Lenders who require a yield of 10% would not pay \$250 million because the value of the promised payments discounted at 10% is only \$207,103,400. The lack of investor demand for the bonds priced at their face value results in a decline in the market price to \$207,103,400, at which price the bonds provide the required yield to maturity of 10% compounded semiannually. The difference between the \$207,103,400 initial issue price and the \$250,000,000 maturity value represents additional interest that Ford pays at maturity. Thus, total interest expense on this bond equals \$442,897,600 [$= (\$10 \text{ million} \times 40) + (\$250,000,000 - \$207,103,400)$]. The cash flows promised to investors do not change; the bond contract specifies them. The only factor that changes is the required yield to maturity and therefore the initial issue price.

This example shows that when the yield that investors require (10% in this example) exceeds the stated coupon rate (8%), the bonds sell at a discount to face value. The difference between the proceeds and the face value compensates investors for the difference in interest rates. A zero coupon bond, such as that for General Motors in **Example 4**, is an extreme example of a bond issued at a discount. The coupon rate is zero, so the difference between the required yield and the coupon rate equals the required yield.

Let's examine the opposite case when the coupon rate exceeds the yield that investors require. Assume now that bond investors require a return of 6% compounded semiannually on Ford's bonds. The computation of the initial issue price is as follows:

Present Value of an Annuity of \$10 million for 40 Periods at 3% per Period: $\$10 \text{ million} \times 23.11477$	\$231,147,700
Present Value of \$250 million for 40 Periods at 3% per Period: $\$250 \times 0.30656$	<u>76,640,000</u>
Initial Issue Price	<u><u>\$307,787,700</u></u>

If investors paid \$250 million for this bond issue, they would realize a yield to maturity of 8% compounded semiannually. If investors require a yield of 6% compounded semiannually, competition among investors to purchase the bonds would force the market price of the bonds up to \$307,787,700. At this point, the yield to maturity will equal the 6% compounded semiannually required by the market. The difference between the \$307,787,700 cash proceeds at issuance and the \$250,000,000 paid at maturity represents a reduction in interest expense. Thus, total interest expense over the life of the bonds equals \$342,213,000 [= $(\$10 \text{ million} \times 40) - (\$307,787,700 - \$250,000,000)$]. As before, the contractual cash flows do not change; only the yield required by the market changes and thereby the initial issue price.

The presence of a discount or premium by itself indicates nothing about the credit risk of the borrower. A solid firm, such as General Electric, with a small credit risk that would enable it to borrow funds at 6%, might issue 5% bonds that would sell at a discount. In contrast, a firm with a lower credit standing that requires it to pay 10% on loans might issue 12% bonds that would sell at a premium. As a practical matter, one would not expect to encounter coupon rates that differ by 1 or 2 percentage points (referred to as *100 or 200 basis points*) from the yield to maturity (except in the case of zero coupon bonds). Thus, discounts and premiums encountered in practice seldom differ from the face value as much as these examples indicate.

The next examples derive the initial issue proceeds for a \$100,000 face value bond with 12% semiannual coupons, maturing five years from initial issue.

Issued at Par The Macaulay Corporation issues \$100,000 face value of 12% semiannual coupon debenture bonds on July 1, Year 1. Macaulay must repay the principal amount five years later, on July 1, Year 6. Macaulay owes periodic payments (coupons) on January 1 and July 1 of each year. The coupon payments promised at each payment date total \$6,000. **Figure 11.1** presents a time line for the two sets of cash flows associated with this bond. Assume that the market rate of interest for Macaulay on July 1, Year 1, is 12 percent compounded semiannually. Then, the calculation of the loan proceeds would be as follows:

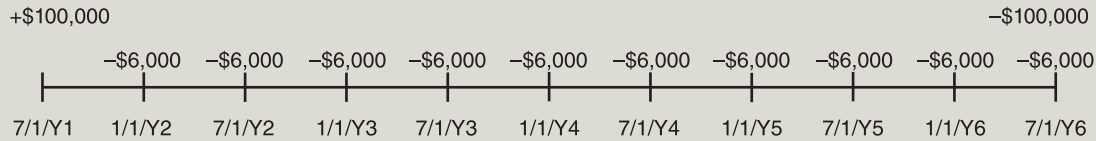
(a) Present Value of \$100,000 to Be Paid at the End of Five Years	\$ 55,839
(Appendix Table 2 shows the present value of \$1 to be paid in 10 periods at 6% per period to be \$0.55839; $\$100,000 \times 0.55839 = \$55,839$.)	
(b) Present Value of \$6,000 to Be Paid Each Six Months for Five Years	<u>44,161</u>
(Appendix Table 4 shows the present value of an ordinary annuity of \$1 per period for 10 periods discounted at 6% to be \$7.36009; $\$6,000 \times 7.36009 = \$44,161$.)	
Total Proceeds	<u><u>\$100,000</u></u>

Issued at Less Than Par Assume that Macaulay Corporation issued these same bonds at a price to yield 14% compounded semiannually. The cash flows promised after July 1, Year 1, associated with these bonds (periodic payments plus repayment of principal) equal those in the time line in **Figure 11.1**. The market discounts these future cash flows to their present value using a 14% discount rate compounded semiannually. The calculation of the issue proceeds (that is, initial market price) follows:

(a) Present Value of \$100,000 to Be Paid at the End of Five Years	\$50,835
(Present value of \$1 to be paid in 10 periods at 7% per period is \$0.50835; $\$100,000 \times 0.50835 = \$50,835$.)	

(continued)

FIGURE 11.1

Time Line for Five-Year Semiannual Coupon Bonds with 12 Percent Annual Coupons (100,000 par value, issued at par)


(b) Present Value of \$6,000 to Be Paid Each Six Months for Five Years	42,141
<small>(Present value of an ordinary annuity of \$1 per period for 10 periods discounted at 7% per period = 7.02358; \$6,000 × 7.02358 = \$42,141.)</small>	
Total Proceeds.	<u>\$92,976</u>

Assume Macaulay issues these bonds at 92.98 for \$92,980. This implies a market yield of slightly less than 14% compounded semiannually.

Issued at More Than Par Assume that Macaulay Corporation issued the bonds at a price to yield 10% compounded semiannually. The cash flows promised after July 1, Year 1, again equal those in **Figure 11.1**. The market discounts these future cash flows at 10% compounded semiannually. The calculation of the proceeds follows:

(a) Value of \$100,000 to Be Paid at the End of Five Years	\$ 61,391
<small>(Present value of \$1 to be paid in 10 periods at 5% per period is 0.61391; \$100,000 × 0.61391 = \$61,391.)</small>	
(b) Present Value of \$6,000 to Be Paid Each Six Months for Five Years	46,330
<small>(Present value of an ordinary annuity of \$1 per period for 10 periods, discounted at 5% per period = 7.72173; \$6,000 × 7.72173 = \$46,330.)</small>	
Total Proceeds.	<u>\$107,721</u>

Assume Macaulay issues these bonds at 107.72 (that is, 107.72% of par) for \$107,720. The price would imply a market yield of slightly more than 10% compounded semiannually.

The following generalizations describe bond proceeds at the date of issuance and their fair value at any subsequent date:

1. When the market interest rate equals the coupon rate, the proceeds or later fair value will equal par.
2. When the market interest rate exceeds the coupon rate, the proceeds or later fair value will be less than par.
3. When the market interest rate is less than the coupon rate, the proceeds or later fair value will exceed par.

PROBLEM 11.3 FOR SELF-STUDY

Calculating the issue price of bonds. Engel Corporation issues \$1,000,000 face value bonds on January 1, Year 1. The bonds carry a 10% coupon rate, payable in two installments on June 30 and December 31 each year. The bonds mature on December 31, Year 10. Compute the issue price of these bonds assuming that the market requires the following yields:

- a. 8% compounded semiannually.
- b. 10% compounded semiannually.
- c. 12% compounded semiannually.

ACCOUNTING FOR BONDS IN THE PERIODS AFTER ISSUANCE

Bonds Issued at Par The following illustrates bonds issued at par. We use the data presented in the previous sections for the Macaulay Corporation bonds issued at par, and we assume that the firm closes its books semiannually on June 30 and December 31. The entry at the time of issue follows:

7/1/Year 1		
Cash	100,000	
Debenture Bonds Payable		100,000
\$100,000 of 12%, five-year, semiannual coupon bonds issued at par.		

The borrower would recognize interest at the end of the accounting period and on the payment dates. Entries through January 1, Year 2, would be as follows:

12/31/Year 1		
Interest Expense	6,000	
Interest Payable		6,000
To record interest expense for six months.		
1/1/Year 2		
Interest Payable	6,000	
Cash		6,000
To record payment of six months' interest.		

Bonds Issued at Less Than Par Assume the data presented above where the Macaulay Corporation issued 12%, \$100,000-par value, five-year bonds to yield 14% compounded semiannually. Earlier, we derived the issue price to be \$92,976. The journal entry at issue would be as follows:

7/1/Year 1		
Cash	92,976	
Debenture Bonds Payable		92,976

The issuance of these bonds for \$92,976, instead of for the \$100,000 par value, indicates that lenders demand more than 12% from Macaulay Corporation, the borrower. At a price of \$92,976, those who invest in the bonds will earn the 14% return they require. The return will comprise 10 coupon payments of \$6,000 each over the next five years plus \$7,024 (= \$100,000 – \$92,976) as part of the payment at maturity.

For Macaulay Corporation, the total interest expense over the life of the bonds will equal \$67,024 (= periodic payments totaling \$60,000 plus \$7,024 paid at maturity). The accounting for these payments allocates the total interest expense of \$67,024 to the periods of the loan using the effective interest method, explained next. Following the next discussion will be easier if you refer to **Exhibit 11.3**.

Interest Expense Under the Effective Interest Method Under the **effective interest method**, interest expense each period equals the market interest rate at the time the firm initially issued the bonds (14% compounded semiannually, 7% per six months, in this example) multiplied by the book value of the liability at the beginning of the interest period. For example, interest expense for the period from July 1, Year 1, to December 31, Year 1, the first six-month period, is \$6,508 (= $0.07 \times \$92,976$). The bond indenture provides that the borrower pays only \$6,000 (= $0.06 \times \$100,000$) on January 1, Year 2, an amount equal to the coupon rate times the par value of the bonds. The difference between the interest expense of \$6,508 and the interest payable of \$6,000 increases the book value of the bond. The borrower will pay this amount as part of the principal payment at maturity. The journal entry made on December 31, Year 1, to recognize interest for the last six months of Year 1 follows:

EXHIBIT 11.3**Effective Interest Amortization Schedule for \$100,000 of 12%, Semiannual Coupon, Five-Year Bonds Issued for 92.976% of Par to Yield 14%, Interest Compounded Semiannually****Semiannual Journal Entry**

Interest Expense	Amount in Column (3)	
Cash		Amount in Column (4)
Debenture Bonds Payable		Amount in Column (5)

Period (6-Month Intervals) (1)	Liability at Start of Period (2)	Effective Interest: 7% per Period (3)	Coupon Rate: 6% of Par (4)	Increase in Recorded Book Value of Liability (5)	Liability at End of Period (6)
0					\$ 92,976
1	\$92,976	\$ 6,508	\$ 6,000	\$ 508	93,484
2	93,484	6,544	6,000	544	94,028
3	94,028	6,582	6,000	582	94,610
4	94,610	6,623	6,000	623	95,233
5	95,233	6,666	6,000	666	95,899
6	95,899	6,713	6,000	713	96,612
7	96,612	6,763	6,000	763	97,375
8	97,375	6,816	6,000	816	98,191
9	98,191	6,873	6,000	873	99,064
10	99,064	6,936	6,000	936	100,000
Total		<u>\$67,024</u>	<u>\$60,000</u>	<u>\$7,024</u>	

Note: In preparing this table, we rounded calculations to the nearest dollar.

Column (2) = column (6) from previous period.

Column (3) = $0.07 \times$ column (2), except for period 10, where it is a plug.

Column (4) is given.

Column (5) = column (3) – column (4), except for period 10, where it is a plug.

Column (6) = column (2) + column (5).

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12/31/Year 1

Interest Expense	6,508	
Interest Payable		6,000
Debenture Bonds Payable		508

To recognize interest expense for six months.

Interest Payable appears as a current liability on the balance sheet at the end of Year 1. Debenture Bonds Payable of \$93,484 (= \$92,976 + \$508) appears on the balance sheet as a noncurrent liability.

On January 1, Year 2, the borrower makes the first periodic cash payment.

1/1/Year 2

Interest Payable	6,000	
Cash		6,000

To record payment of interest for six months.

Interest expense for the second six months (from January 1, Year 2, through June 30, Year 2) is \$6,544 ($= 0.07 \times \$93,484$). It exceeds the \$6,508 for the first six months because the recorded book value of the liability at the beginning of the second six months has grown. The journal entry on June 30, Year 2, to record interest expense follows:

6/30/Year 2		
Interest Expense	6,544	
Interest Payable		6,000
Debenture Bonds Payable		544
To recognize interest expense for six months.		

An amortization schedule for these bonds over their five-year life appears in **Exhibit 11.3**. Column (3) shows the periodic interest expense, and column (6) shows the book value that appears on the balance sheet at the end of each period.

The effective interest method of recognizing interest expense on a bond has the following financial statement effects:

1. Interest expense equals a constant percentage of the recorded liability at the beginning of each interest period. This percentage equals the market interest rate for these bonds when the borrower issued them. When the borrower issues bonds for less than par value, the dollar amount of interest expense increases each period as the recorded carrying value amount increases.
2. On the balance sheet at the end of each period, the bonds appear at the present value of the remaining cash outflows discounted at the market interest rate measured when the borrower initially issued the bonds. For example, on July 1, Year 2, just after the borrower has made a coupon payment, the remaining cash payments have present value computed as follows:

(a) Present Value of \$100,000 to Be Paid at the End of Four Years	\$58,201
(Appendix Table 2 shows the present value of \$1 to be paid at the end of eight periods discounted at 7% to be \$0.58201; $\$100,000 \times 0.58201 = \$58,201$.)	
(b) Present Value of Eight Remaining Semiannual Interest Payments Discounted at 14% Compounded Semiannually	<u>35,827</u>
(Appendix Table 4 shows the present value of an ordinary annuity of \$1 per period for eight periods discounted at 7% to be \$5.97130; $\$6,000 \times 5.97130 = \$35,827$.)	
Total Present Value.	<u>\$94,028</u>

The amount \$94,028 appears in column (6) of **Exhibit 11.3** for the liability at the end of the second six-month period.

Bonds Issued at More Than Par The following discussion illustrates bonds issued at more than par. Assume the data presented where the Macaulay Corporation issued 12%, \$100,000 par value, five-year bonds to yield approximately 10% compounded semiannually. The issue price, derived previously, was \$107,721. The journal entry at the time of issue follows:

7/1/Year 1		
Cash	107,721	
Debenture Bonds Payable		107,721

The firm borrows \$107,721. The issuance of these bonds for \$107,721, instead of the \$100,000 par value, indicates that 12% exceeds the interest rate investors (lenders) demand. Their return comprises 10 coupon payments of \$6,000 each over the next five years reduced by the \$7,721 ($= \$107,721 - \$100,000$) paid as part of initial amount transferred to the borrower but not repaid at maturity.

For Macaulay Corporation, the total interest expense over the life of the bonds equals \$52,279 (= periodic payments totaling \$60,000 less \$7,721 received at the time of original issue but not repaid at maturity). Following the next discussion will be easier if you refer to **Exhibit 11.4**.

Interest Expense Under the Effective Interest Method Under the effective interest method, interest expense each period equals the market interest rate at the time the firm initially issued the bonds (10% compounded semiannually, equals 5% per six months, in this example), multiplied by the recorded book value of the liability at the beginning of the interest period. For example, interest expense for the period from July 1, Year 1, to December 31, Year 1, the first six-month period, is \$5,386 (= $0.05 \times \$107,721$). The bond indenture requires the borrower to pay \$6,000 (= $0.06 \times \$100,000$) on January 1, Year 2. This amount equals the coupon rate times the face value of the bonds. The difference between the payment of \$6,000 and the interest expense of \$5,386 reduces the amount of the liability. The journal entry made on December 31, Year 1, to recognize interest for the last six months of Year 1 follows:

EXHIBIT 11.4

Effective Interest Amortization Schedule for \$100,000 of 12%, Semiannual Coupon, Five-Year Bonds Issued for 107.721% of Par to Yield 10%, Compounded Semiannually

Semiannual Journal Entry

Interest Expense	Amount in Column (3)
Debenture Bonds Payable	Amount in Column (5)
Cash	Amount in Column (4)

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-col(4)		-col(5)		-col(3)	IncSt → RE

Period (6-Month Intervals) (1)	Liability at Start of Period (2)	Effective Interest: 5% per Period (3)	Coupon Rate: 6% of Par (4)	Decrease in Recorded Book Value of Liability (5)	Liability at End of Period (6)
0					\$107,721
1	\$107,721	\$ 5,386	\$ 6,000	\$ 614	107,107
2	107,107	5,355	6,000	645	106,462
3	106,462	5,323	6,000	677	105,785
4	105,785	5,289	6,000	711	105,074
5	105,074	5,245	6,000	746	104,328
6	104,328	5,216	6,000	784	103,544
7	103,544	5,177	6,000	823	102,721
8	102,721	5,136	6,000	864	101,857
9	101,857	5,093	6,000	907	100,950
10	100,950	5,050	6,000	950	100,000
Total		<u>\$52,279</u>	<u>\$60,000</u>	<u>\$7,721</u>	

Note: In preparing this table, we rounded calculations to the nearest dollar.

Column (2) = column (6) from previous period.

Column (3) = $0.05 \times$ column (2), except for period 10, where it is a plug.

Column (4) is given.

Column (5) = column (4) - column (3), except for period 10, where it is a plug.

Column (6) = column (2) - column (5).

12/31/Year 1

Interest Expense	5,386	
Debenture Bonds Payable	614	
Interest Payable		6,000
To recognize interest expense for six months.		

Interest Payable appears as a current liability on the balance sheet at the end of Year 1. Debenture Bonds Payable has a new balance of \$107,107 (= \$107,721 – \$614), which appears as a noncurrent liability.

On January 1, Year 2, the borrower makes the first periodic cash payment and the following entry:

1/1/Year 2

Interest Payable	6,000	
Cash		6,000
To record payment of interest for six months.		

Interest expense for the second six months (from January 1, Year 2, through June 30, Year 2) equals \$5,355 (= $0.05 \times \$107,107$). Because the amount of the liability has declined from the beginning of the preceding period to the beginning of the current period, interest expense for the period declines from \$5,386 for the first six months, and the borrower records it as follows:

6/30/Year 2

Interest Expense	5,355	
Debenture Bonds Payable	645	
Interest Payable		6,000
To recognize interest expense for six months.		

An amortization schedule for these bonds over their five-year life appears in **Exhibit 11.4**. Column (3) shows the periodic interest expense, and column (6) shows the book value that appears on the balance sheet at the end of the period.

The effective interest method of recognizing interest expense on a bond has the following financial statement effects:

1. Interest expense on the income statement equals a constant percentage of the recorded liability at the beginning of each interest period. This percentage equals the market interest rate when the borrower first issued the bonds. When the borrower issues bonds for more than par value, the dollar amount of interest expense will decrease each period as the unpaid liability decreases to the amount to be paid at maturity.
2. On the balance sheet at the end of each period, the bonds will appear at the present value of the remaining cash flows discounted at the market interest rate when the borrower initially issued the bonds.

► PROBLEM 11.4 FOR SELF-STUDY

Preparing journal entries to account for bonds. Refer to **Problem 11.3 for Self-Study**. Prepare the journal entries on January 1, June 30, and December 31, Year 1, to account for the bonds, assuming each of the following market-required interest rates at the time the firm issued the bonds:

- a. 8% compounded semiannually.
- b. 10% compounded semiannually.
- c. 12% compounded semiannually.

RETIREMENT OF DEBT

Many bonds remain outstanding until the stated maturity date. Refer to **Exhibit 11.3**, where Macaulay Corporation issued 12% coupon bonds to yield 14%. The company pays the final coupon, \$6,000, and the face amount, \$100,000, on the stated maturity date. The entries are as follows:

7/1/Year 6		
Interest Expense	6,936	
Cash		6,000
Debenture Bonds Payable		936
See row for Period 10 of Exhibit 11.3 .		
Debenture Bonds Payable	100,000	
Cash		100,000
To record retirement at maturity of bonds.		

Retirement Before Maturity A firm sometimes repurchases its own bonds from investors before maturity. Because of changes in market interest rates, the purchase price (that is, the fair value of the bonds when they are repurchased) will seldom equal the balance sheet carrying value of the bonds. Assume that Macaulay Corporation originally issued its 12% coupon bonds to yield 14% compounded semiannually. Assume that three years later, on June 30, Year 4, market interest rates have increased so that the market currently requires Macaulay Corporation to pay a 15% interest rate. We compute, but do not show the computations here, that the fair value of 12% bonds with two years until maturity is 94.9760% of par when the current interest rate is 15% compounded semiannually.

Accounting principles and practices do not constrain the pricing of bonds in the marketplace. Even though Macaulay Corporation shows Debenture Bonds Payable on the balance sheet at \$96,612 (see row for Period 6 of **Exhibit 11.3**), the marketplace puts a price of only \$94,976 on the bond issue. From the point of view of investors, these bonds are the same as two-year bonds issued on June 30, Year 4, at an effective yield of 15%, so they carry a discount of \$5,024 (= \$100,000 – \$94,976).

If on June 30, Year 4, Macaulay Corporation purchased \$10,000 of par value of its own bonds, it would pay \$9,498 (= $0.94976 \times \$10,000$) for those bonds, which have a book value of \$9,661. Macaulay would make the following journal entries at the time of purchase:

6/30/Year 4		
Interest Expense	6,713	
Interest Payable		6,000
Debenture Bonds Payable		713
See row for Period 6 of Exhibit 11.3 .		
Interest Payable	6,000	
Cash		6,000
To record payment of coupons, as usual.		
Debenture Bonds Payable	9,661	
Cash		9,498
Gain on Retirement of Bonds		163
To record purchase of bonds for less than the balance sheet carrying value. The gain is the difference between the purchase price and the balance sheet carrying value.		

The gain on bond retirement arises because the firm can extinguish a liability recorded at \$9,661, by paying a smaller amount, \$9,498. The borrower enjoyed this gain as interest rates increased between Year 1 and Year 4. Historical cost accounting reports the gain as earned in the period when the borrower realizes it—that is, in the period when the borrower retires the bonds. This phenomenon parallels the economic events that occur when a firm invests in land, holds the land as its value increases, sells the land in a subsequent year, and reports all the

gain in the year of sale. The phenomenon results from the accounting convention of recording amounts at historical cost and not recording changes in the fair values until the firm realizes those changes in arm's-length transactions with outsiders.

DISCLOSURES OF CARRYING AND FAIR VALUES OF DEBT

Authoritative guidance requires firms that account for notes and bonds using the historical market interest rate to report the carrying values, or book values, on the balance sheet and to disclose the fair values of these notes and bonds in notes to the financial statements.⁷ The fair value of long-term debt is the amount the firm would have to pay to repurchase the debt in an orderly market transaction on the measurement date, typically the balance sheet date. The fair value of bonds traded in an active market is the market price of the bonds on that date. The fair value of bonds not actively traded is the present value of the contractual cash payments discounted at the interest rate a lender would require on the measurement date.

FAIR VALUE OPTION

An earlier section indicated that U.S. GAAP and IFRS allow firms to account for certain financial assets and certain financial liabilities, including notes and bonds, using either (1) amortized cost, with measurements based on the historical market interest rate, as illustrated in previous sections of this chapter, or (2) fair value, with measurements based on current market conditions, including the current market interest rate.⁸ **Chapter 3** introduced fair value measurement. This section introduces certain implications of measuring financial assets and financial liabilities at their fair values on the balance sheet and recognizing the unrealized changes in fair values (often referred to as “unrealized gains and losses”) on the income statement. This discussion of the fair value option applies to other items discussed in later chapters as well, including investments in debt and equity securities and derivatives in **Chapter 13**.

Authoritative guidance has taken the position that measurements of financial assets and financial liabilities at fair value provide more relevant and reliable information than cost-based measurements. Accounting for notes and bonds using the historical market interest rate under the amortized cost approach is a cost-based approach. U.S. GAAP and IFRS require firms to report certain financial instruments related to hedging activities at fair value,⁹ a topic discussed in **Chapter 13**. U. S. GAAP and IFRS permit but do not require fair value measurement for qualifying financial assets and financial liabilities, perhaps as an interim step toward reporting all financial instruments at fair value.

Firms can choose between fair value measurement and the amortized cost approach based on historical market interest rates on a case-by-case (instrument-by-instrument) basis for qualifying financial instruments. Firms make this choice when they first adopt the *FASB Statement No. 159* or *IAS 39* or when they subsequently acquire a financial asset or incur a financial liability. The choice to use the fair value option is generally irrevocable.

*Statement No. 157*¹⁰ (**Codification Topic 820**) and IFRS 13 set forth the requirements for measuring fair values, when authoritative guidance permits or requires items to be measured at fair value. Regardless of whether a firm uses fair value or amortized cost (historical cost) to measure bonds on its balance sheet, and regardless of the methods the firm uses to record expense, gain, and loss, the total effect on income over the life of a bond issue depends solely on the cash

⁷FASB, *Statement of Financial Accounting Standards No. 107*, “Disclosures about Fair Value of Financial Instruments,” 1991 (**Codification Topic 825**); *Statement of Financial Accounting Standards No. 157*, “Fair Value Measurements,” 2006 (**Codification Topic 820**); IASB, *International Financial Reporting Standard 7*, “Financial Instruments: Disclosures,” 2005.

⁸FASB, *Statement of Financial Accounting Standards No. 159*, “The Fair Value Option for Financial Assets and Financial Liabilities,” 2007 (**Codification Topic 825**); IASB, *International Accounting Standard 39*, “Financial Instruments: Recognition and Measurement,” 1999, revised 2003.

⁹FASB, *Statement of Financial Accounting Standards No. 133*, “Accounting for Derivative Instruments and Hedging Activities,” 1998 (**Codification Topic 815**); IASB, *International Accounting Standard 39*, “Financial Instruments: Recognition and Measurement.”

¹⁰FASB, *Statement of Financial Accounting Standards No. 157*, “Fair Value Measurements,” 2006 (**Codification Topic 820**); IASB, *International Financial Reporting Standard 13*, “Fair Value Measurement,” 2011. IFRS 13 is effective starting January 1, 2013. The guidance in these two standards is similar.

flows related to the bond issue. The firm issuing the bonds will collect cash from the lenders. It will, over time, make payments for periodic obligations, for example, coupon payments and a final payment at maturity or when it buys back the bonds via repurchase. Total expense over the life of the bond issue will be the difference between the cash paid out for debt service payments and the cash collected from the lenders. If the cash received from the lenders exceeds the total debt service payments, then the borrowing firm will have a gain from issuing the bonds. One of the questions at the end of the chapter asks you to think about how this can happen.

UNDERLYING CONCEPTS FOR FAIR VALUE OPTION

Fair value is the amount a firm would receive if it sold an asset or would pay if it transferred, or settled, a liability in an orderly transaction with a market participant at the measurement date. Measuring fair value rests on the assumption that the transaction would occur in the principal market for the asset or liability or, in the absence of a principal market, in the most advantageous market from the viewpoint of the reporting entity. Thus, a firm that normally obtains and repays long-term debt in public capital markets would measure fair value based on the amount it would pay to repay bonds in those markets.

Measuring fair value also rests on the assumption that the market participants in the principal (or most advantageous) market are independent of the reporting entity, knowledgeable about the asset or liability, and willing and able to engage in a transaction with the reporting entity. Fair value in financial reporting reflects assumptions that market participants, as opposed to the reporting entity, would make about the best use of a financial asset or the best terms for settling a financial liability.

Inputs to measuring fair value fall into three categories:

1. Level 1: Observable market prices in active markets for identical assets or liabilities that the reporting entity is able to access at the measurement date.
2. Level 2: Observable inputs other than market prices within Level 1. This category might include prices for similar assets or liabilities in active markets or market prices for identical assets or liability in markets that are not active. This category also includes observable factors that would be of particular relevance in using present values of cash flows to measure fair value, including interest rates, yield curves, foreign exchange rates, credit ratings, and default rates.
3. Level 3: Unobservable inputs reflecting the reporting entity's own assumptions about the assumptions market participants would use in pricing an asset or settling a liability.

Firms should use Level 1 inputs if available to measure fair value, then Level 2 inputs, and finally Level 3 inputs.¹¹

Because the fair value option offers a free choice between measurement at fair value and measurement at amortized cost for qualifying instruments, firms could report some financial instruments using historical market interest rates (amortized cost measurement) and some using fair values. Disclosure requirements attempt to provide sufficient information to enable the user of the financial statements to understand the effect of this mixture of accounting measurements.

A firm must identify the financial assets and financial liabilities on the balance sheet for which it used the fair value option and disclose the reasons for choosing to measure those items at fair value.

ACCOUNTING FOR LEASES

Authors' Note. As this book goes to press, the FASB and IASB have proposed changes to the authoritative guidance for accounting for leases, including both lessor and lessee accounting. This textbook does not consider lessor accounting.

¹¹For a discussion of the difficulties firms encounter in measuring fair values using Level 2 and Level 3 inputs, see Securities and Exchange Commission, "Report and Recommendations Pursuant to Section 133 of the Emergency Economic Stabilization Act of 2008: Study on Mark-to-Market Accounting."

The current authoritative guidance for accounting for leases distinguishes between *operating leases* and *capital leases* (the IFRS term is *finance leases*). This textbook describes the accounting for both operating leases and capital (finance) leases. The FASB and IASB proposals would eliminate this distinction and would require that lessees account for most leases using an approach that is similar to the currently required accounting for capital leases. In this section, we refer to the *old rules*, to mean those in effect as we write and, where appropriate, the *proposed rules* to refer to those proposed by the IASB and FASB.

An alternative to borrowing cash to purchase buildings, equipment, and certain other assets is signing a contract to lease (that is rent) the property from its owner, the *lessor*. Leases vary in their characteristics but all convey to the lessee the right to use an asset. U.S. GAAP and IFRS provide for two methods of accounting for long-term leases: the **operating lease method** and the **capital or finance lease method**.¹² Under the capital lease method, the lessee records both the right to use leased asset and a lease liability, much the same as if it had borrowed to purchase the asset.

To understand these two methods, suppose that Food Barn wants to acquire a computer that has a three-year life and a purchase price of \$45,000. Assume that Food Barn must pay 8% per year to borrow funds for three years. The computer manufacturer will sell the computer to Food Barn for \$45,000 or lease it for three years for \$17,461.51 per year, payable at the end of each year.¹³ In practice, lessees usually make payments in advance, but assuming the payments occur at year-end simplifies the computations. Food Barn must pay for property taxes, maintenance, and repairs of the computer whether it purchases or leases. Food Barn signs the lease on January 1, 2013.

OPERATING LEASE METHOD—OLD RULES

The accounting designation of a lease as an operating lease is based on the idea that the owner, or lessor, retains all or most of the rewards and risks of ownership. The lessee merely pays for the right to use the asset for a specified period. A common example of an operating lease occurs when you rent a car from Hertz or Avis for a few days. If the lease specifies that the lessee must return the leased asset to the lessor at the end of the lease term, which the asset can still provide substantial future benefits, the lessor must then re-lease or sell the asset. The lessor bears the risk of technological change and other factors that would affect its ability to lease or sell the asset. If the computer manufacturer, and not Food Barn, bears most of the risks and rewards of ownership, the old rules the lease as an operating lease, that does not result in an asset or a liability on the lessee's balance sheet. Food Barn would make no entry on January 1, 2013, when it signs the lease, if the lease is classified as an operating lease. It makes the following entry on December 31 of each year:

December 31 of Each Year

Rent Expense	17,461.51	
Cash		17,461.51
To record annual expense of leasing computer under the operating lease method.		

CAPITAL LEASE METHOD—OLD RULES

The accounting designation of a lease as a capital lease results from the idea that the lessee has all or most of the rewards and risks of owning the leased asset. If, in the example, the lease period approximately equals the useful life of the leased computer, then Food Barn bears the risk of factors that affect the market value of the asset. If Food Barn—not the computer manufacturer—bears most of the risks and rewards of ownership, the old rules classify the lease as a capital lease. This treatment recognizes the signing of the lease as the simultaneous acquisition

¹²FASB, *Statement of Financial Accounting Standards No. 13*, "Accounting for Leases," 1975 (reissued and interpreted 1980) (**Codification Topic 840**); IASB, *International Accounting Standard 17*, "Leases" 1982, revised 1997 and 2003. U.S. GAAP uses the term *capital lease method* and IFRS uses the term *finance lease method*. We use the term *capital lease method* throughout this section on leases.

¹³The present value of an annuity of \$17,461.51 for three years at a discount rate of 8% is \$45,000.

of a long-term asset (the right to use the leased asset) and the incurring of a long-term liability for lease payments. At the time Food Barn signs the lease, it records both an asset and a liability at the present value of the required cash payments, \$45,000 in this example. The entry at the time Food Barn signs the three-year lease is as follows:

January 1, 2013

Leased Assets—Computer	45,000	
Lease Liability		45,000
To record lease asset and lease liability under the capital lease method.		

At the end of each year, Food Barn must account for the lease asset and the lease liability. In practice, many firms treat the right to use the leased asset similarly to the asset itself and recognize depreciation expense. Under this treatment and assuming straight-line depreciation method and zero salvage value, Food Barn makes the following entry at the end of each year:

December 31 of Each Year

Depreciation Expense (on Computer)	15,000	
Accumulated Depreciation—Computer		15,000
To record depreciation expense on leased asset under the capital lease method.		

The second entry made by Food Barn at the end of each year recognizes that each contractually specified lease payment both pays interest and reduces the lease liability. Separating the portion of the lease payment that represents interest from the portion reducing the liability follows the effective interest method illustrated for notes and bonds earlier in this chapter. The amortization schedule for this lease appears in **Exhibit 11.5**.

The entries made for the lease payments at the end of each year are as follows:

December 31, 2013

Interest Expense	3,600.00	
Lease Liability	13,861.51	
Cash		17,461.51
To recognize lease payment, interest on the lease liability for the first year of \$3,600.00 (= 0.08 × \$45,000), and the reduction in the liability, equal to the difference between the lease payment and Interest Expense. The present value of the lease liability after this entry is \$31,138.49 (= \$45,000 – \$13,861.51).		

December 31, 2014

Interest Expense	2,491.08	
Lease Liability	14,970.43	

(continued)

EXHIBIT 11.5

Amortization Schedule for \$45,000 Lease Liability, Accounted for as a Capital Lease, Repaid in Three Annual Installments of \$17,461.51 Each, Interest Rate 8%, Compounded Annually

Period (1)	Balance at Beginning of Period (2)	Interest Expense for Period (3)	Cash Payment (4)	Portion of Payment Reducing Principal (5)	Balance at End of Period (6)
1	\$45,000.00	\$3,600.00	\$17,461.51	(\$13,861.51)	\$31,138.49
2	31,138.49	2,491.08	17,461.51	(14,970.43)	16,168.06
3	16,168.06	1,293.45	17,461.51	(16,168.06)	0

Cash	17,461.51
To recognize lease payment, interest on the lease liability for the second year of \$2,491.08 ($= 0.08 \times \$31,138.49$), and the reduction in the liability, equal to the difference between the lease payment and Interest Expense. The present value of the lease liability after this entry is \$16,168.06 ($= \$31,138.49 - \$14,970.43$).	

December 31, 2015

Interest Expense	1,293.45
Lease Liability	16,168.06
Cash	17,461.51
To recognize lease payment, interest on the lease liability for the third year of \$1,293.45, which differs slightly due to rounding from \$1,293.44 ($= 0.08 \times \$16,168.06$), and the reduction in the liability. The present value of the lease liability after this entry is zero ($= \$16,168.06 - \$16,168.06$).	

EFFECT OF THE OPERATING AND CAPITAL LEASE METHODS ON THE FINANCIAL STATEMENTS OF THE LESSEE

Both the lease asset and the lease liability appear on the lessee's balance sheet under the capital lease method, whereas neither appears on the lessee's balance sheet under the operating lease method.

Exhibit 11.6 summarizes the nature and amount of expenses under the operating and capital lease methods for the Food Barn computer lease example. Total rent expense under the operating lease method equals \$52,384.53 ($= \$17,461.51 \times 3$). Total depreciation expense of \$45,000 ($= \$15,000 \times 3$) plus total interest expense of \$7,384.53 ($= \$3,600.00 + \$2,491.08 + \$1,293.45$) also equals \$52,384.53. Total expenses under the operating lease method and the capital lease method are the same and equal the total cash expenditures. The operating lease method and the capital lease method differ in the timing, but not in the total amount, of expense. For the lessee, the capital lease method recognizes expenses earlier than the operating lease method.

The operating lease method classifies all of the lease payment each period as an operating use of cash on the statement of cash flows. The capital lease method classifies the portion of the lease payment related to interest expense as an operating use of cash and the portion related to a reduction in the lease liability as a financing use of cash. In addition, the lessee adds depreciation expense to net income or net loss to compute cash flow from operations.

THE ACCOUNTING DISTINCTION BETWEEN OPERATING LEASES AND CAPITAL LEASES—OLD RULES

The capital lease method results in larger long-term debt and debt-equity ratios during the life of a lease than the operating lease method. A larger debt ratio makes a firm appear more risky. Thus, given a choice, lessees tend to prefer the operating lease method to the capital lease method. The operating lease method also recognizes expense more slowly over the life of the

EXHIBIT 11.6

Comparison of Expense Recognized Under Operating and Capital Lease Methods for Lessee

Year	Expense Recognized Each Year Under:	
	Operating Lease Method	Capital Lease Method
1	\$17,461.51	\$18,600.00 (= \$15,000.00 + \$3,600.00)
2	17,461.51	17,491.08 (= 15,000.00 + 2,491.08)
3	17,461.51	16,293.45 (= 15,000.00 + 1,293.45)
Total	<u>\$52,384.53</u>	<u>\$52,384.53</u> (= <u>\$45,000.00</u> + <u>\$7,384.53</u>)

lease than the capital lease method. These financial statement effects often lead lessees to structure leases so that under the old rules they qualify for as operating leases.

U.S. GAAP Criteria for Lease Accounting—Old Rules U.S. GAAP specifies criteria for a lease to qualify as a capital lease on the financial statement of the lessee. If the lease meets *none* of the following four conditions, the lessee treats the lease as an operating lease.

1. The lease transfers ownership of the leased asset to the lessee at the end of the lease term.
2. The lease provides the lessee with a bargain purchase option, the right to purchase the leased asset at a specified future time for a price less than the currently predicted fair value of the property at that future time.
3. The lease extends for at least 75% of the asset's expected useful life.
4. The present value of the contractual minimum lease payments equals or exceeds 90% of the fair value of the asset at the time the lessee signs the lease. The present value computation uses a discount rate appropriate for the creditworthiness of the lessee.

These criteria attempt to identify who enjoys the benefits and bears the economic risks of the leased property. If the leased asset, either automatically or for a bargain price, becomes the property of the lessee at the end of the lease period, then the lessee enjoys of the economic benefits of the asset and incurs all risks of ownership. If the life of the lease extends for most of the expected useful life of the asset (U.S. GAAP specifies 75% or more), then the lessee enjoys most of the benefits, particularly when we measure them in present values, and incurs most of the risk of technological obsolescence.

Lessors and lessees can usually structure leasing contracts to avoid the first three conditions and thereby qualify for operating lease treatment. Avoiding the fourth condition is more difficult. That condition compares the present value of the lessee's contractual minimum lease payments with the fair value of the leased asset at the time the lessee signs the lease. The lessor presumably could either sell the asset for its fair value or lease it to the lessee. The present value of the minimum lease payments has the economic character of a loan in that the lessee has committed to make payments just as it would commit to make payments on a bank loan. When the present value of the contractual minimum lease payments equals at least 90% of the amount that the lessor would receive if it sold the asset instead of leasing it, then the lessor receives most of its return from the leasing arrangement. That is, 90% of the fair value of the asset is not at risk, and the lessor need receive only 10% of the asset's fair value from selling or re-leasing the asset at the end of the lease term.

If, on the other hand, the lessor has more than 10% of the asset's initial fair value at risk, then the accounting criterion views the lessor as enjoying most of the benefits and bearing most of the risks of ownership and would classify the lease as an operating lease. Small changes in the amount or timing of lease payments can shift the present value of the lease payments to just below or just above the 90% threshold.

IFRS Criteria for Lease Accounting—Old Rules IFRS uses the same general criterion for classifying leases: *Which party to the lease enjoys the rewards and bears the risk in a leasing arrangement?* Unlike U.S. GAAP, IFRS does not specify strict percentages, such as the 75% useful life criterion or the 90% present value criterion. Instead, IFRS identifies several indicators to determine which entity enjoys the rewards and bears the risk in the leasing arrangement and permits firms and their independent accountants to apply their professional judgment to classify a lease as an operating lease versus a capital lease. The criteria are similar to those of U.S. GAAP but not as specific:

1. Does ownership transfer from the lessor to the lessee at the end of the lease?
2. Is there a bargain purchase option?
3. Does the lease extend for the major part of the asset's economic life?
4. Does the present value of the minimum lease payments equal substantially all of the asset's fair value?
5. Is the leased asset specialized for use by the lessee?

A lease for which the present value of the minimum lease payments was 89% of the fair value of the leased asset at inception of the lease could escape capital lease treatment under U.S. GAAP but might not under IFRS.

Lessee Accounting—Proposed Rules In a joint project, the IASB and FASB have proposed that lessees should use the capital lease method for most leases. That is, the lessee computes the present value of its expected cash payments under the lease and recognizes both a right-of-use asset and a lease liability for that amount. It then uses methods similar to those described for capital leases for expense recognition.

ACCOUNTING BY THE LESSOR—OLD RULES

Under the old rules, the entries to account for operating leases and capital leases for the lessor mirror those for the lessee with important differences.

Lessor Accounting for Operating Leases—Old Rules The leased asset appears on the books of the lessor in an operating lease. If the lessor also manufactured the leased property, the leased asset will appear at the cost of manufacturing the item. If the lessor is a financial institution that purchased the property that it subsequently leases, the leased asset will appear at the acquisition cost to the financial institution. Assume that the lessor's manufacturing cost of the computer it leased to Food Barn is \$39,000. The first entry made by the lessor reclassifies the leased asset from inventory, a current asset, to equipment, a noncurrent asset.

January 1, 2013

Equipment (Computer Leased to Customers)	39,000	
Inventory		39,000
To reclassify computer from inventory to equipment at its manufacturing cost of \$39,000.		

Each year the lessor records the cash received as Rent Revenue, mirroring the lessee's entries for Rent Expense.

December 31 of Each Year

Cash	17,461.51	
Rent Revenue		17,461.51
To record annual revenue of leasing computer under the operating lease method.		

The lessor must also recognize depreciation expense on the leased asset. The lessor uses its acquisition cost of \$39,000 to compute depreciation (analogous to the lessee using its acquisition cost of \$45,000 to compute depreciation under the capital lease method illustrated previously). The lessor also uses the expected useful life of the leased asset, which might exceed the lease period. We assume the computer has a three-year useful life with zero salvage value and the lessor uses the straight-line depreciation method.

December 31 of Each Year

Depreciation Expense	13,000	
Accumulated Depreciation—Computer		13,000
To record depreciation expense on rented computer of \$13,000 (= \$39,000/3).		

Lessor Accounting for Capital Leases—Old Rules The lessor initially records a capital lease as if it had *sold* the leasehold asset to the lessee. (Recall that the lessee records a capital lease as if it had *purchased* the leased asset with financing provided by the lessor.) The lessor receives a promise by the lessee to make future lease payments, which gives rise to a Lease Receivable. Continuing with the assumption that the lessor manufactured the computer leased to Food Barn, the lessor makes the following two entries at the time of signing the lease contract on January 1, 2013:

January 1, 2013

Lease Receivable	45,000	
Sales Revenue		45,000

To record the “sale” of a computer for a series of future cash flows with a present value of \$45,000. The lessor does not formally sell the asset but transfers a portion of its future benefits and risk to the user so that the arrangement resembles a sale for the transferred use of the asset.

January 1, 2013

Cost of Goods Sold	39,000	
Inventory		39,000

To record the cost of a computer “sold” as an expense.

Thus, the computer manufacturer recognizes \$6,000 (= \$45,000 – \$39,000) gross margin on signing the lease contract.

The lessor makes entries each year that mirror those of the lessee for the lease payment, for the portion of the payment representing Interest Revenue, and for the portion representing a reduction of Lease Receivable. The following entries use the amounts from the amortization table in **Exhibit 11.5**.

December 31, 2008

Cash	17,461.51	
Interest Revenue		3,600.00
Lease Receivable		13,861.51

To recognize lease payment received, interest on the lease receivable for the first year of \$3,600.00 (= $0.08 \times \$45,000$), and the reduction in the receivable, equal to the difference between cash received and Interest Revenue. The present value of the lease receivable after this entry is \$31,138.49 (= \$45,000.00 + \$3,600.00 – \$17,461.51).

December 31, 2014

Cash	17,461.51	
Interest Revenue		2,491.08
Lease Receivable		14,970.43

To recognize lease payment received, interest on the lease receivable for the second year of \$2,491.08 (= $0.08 \times \$31,138.49$), and the reduction in the receivable, equal to the difference between the cash received and Interest Revenue. The present value of the lease receivable after this entry is \$16,168.06 (= \$31,138.49 + \$2,491.08 – 17,461.51).

December 31, 2015

Cash	17,461.51	
Interest Revenue		1,293.45
Lease Receivable		16,168.06

To recognize lease payment received, interest on the lease receivable for the third year of \$1,293.45, which differs slightly due to rounding from \$1,293.44 (= $0.08 \times \$16,168.06$), and the reduction in the receivable. The present value of the lease receivable after this entry is zero (= \$16,168.06 + \$1,293.45 – \$17,461.51).

EFFECT OF THE OPERATING AND CAPITAL LEASE METHODS ON THE FINANCIAL STATEMENTS OF THE LESSOR—OLD RULES

Both assets and liabilities increase for a lessee using the capital lease method as compared to the operating lease method. For a lessor, however, under the old rules, either the leased asset (operating lease method) or a lease receivable (capital lease method) appears on the balance sheet. The amount in the Lease Receivable account exceeds the amount in the Equipment

EXHIBIT 11.7**Comparison of Income Recognized Under Operating and Capital Lease Methods for Lessor**

Year	Expense Recognized Each Year Under:	
	Operating Lease Method	Capital Lease Method
1	\$ 4,461.51 (= \$17,461.51 - \$13,000)	\$ 9,600.00 (= \$6,000.00 + \$3,600.00)
2	4,461.51 (= 17,461.51 - 13,000)	2,491.08 (= 0.00 + 2,491.08)
3	4,461.51 (= 17,461.51 - 13,000)	1,293.45 (= 0.00 + 1,293.45)
Total . .	<u>\$13,384.53</u> (= <u>\$52,384.53</u> - <u>\$39,000</u>)	<u>\$13,384.53</u> (= <u>\$6,000.00</u> + <u>\$7,384.53</u>)

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account by the gross margin (that is, sales minus cost of goods sold) recognized by the lessor from the “sale” of the leased asset. The balance sheet effects of the operating and capital lease methods do not differ as much for lessors as they do for lessees.

The effects of the operating versus capital lease methods on the income statement of the lessor are more pronounced. The lessor recognizes a gross margin from the “sale” of the leased asset at the time of signing the lease (\$6,000 in this case) and then recognizes interest revenue over the life of the lease. Total income over the life of the lease of \$13,384.53 equals the cash inflow from lease payments received of \$52,384.53 (= \$17,461.51 × 3) minus the \$39,000.00 cost of manufacturing the computer. **Exhibit 11.7** summarizes these differences in income.

Lessee Accounting—Proposed Rules The joint IASB-FASB proposals for lessor accounting would require a single approach for all lease arrangements that fall in the scope of the proposed guidance. Under these proposals, the lessor would recognize both a receivable (the present value of the contractually specified lease payments) and a residual asset (based on the estimated residual value of the leased asset at the end of the lease term and other factors). The accounting for cash received from the lessee is similar to the lessor’s accounting, under the old rules, for capital leases. Most of the complexities of lessor accounting under the proposed rules lie outside the scope of this introductory textbook.

► PROBLEM 11.5 FOR SELF-STUDY

Operating and Capital Lease Methods for Lessee and Lessor. On January 1, 2013, Holt Book Store will acquire a delivery van that a local automobile dealer sells for \$40,000. The dealer purchased the van from the manufacturer for \$36,000. The dealer offers Holt Book Store the option of leasing the van for four years, with rentals of \$11,543.65 due on December 31 of each year. Holt Book Store must return the van at the end of four years, although the automobile dealer anticipates that the resale value of the van after four years will be negligible. The automobile dealer considers 6% an appropriate interest rate to charge Holt Book Store to finance the acquisition.

- Does this lease qualify as an operating lease or as a capital lease for financial reporting according to the four criteria specified in U.S. GAAP under the old rules? Explain.
- Assume for this part that the lease qualifies as an operating lease. Give the journal entries made by Holt Book Store over the first two years of the life of the lease.
- Repeat part **b** for the automobile dealership. Use straight-line depreciation and zero estimated salvage value.
- Assume for this part that the lease qualifies as a capital lease. Give the journal entries made by Holt Book Store over the first two years of the life of the lease.
- Repeat part **d** for the automobile dealership.

(continued)

- f. Compute the amount of expenses that Holt Book Store recognizes during each of the four years under the operating and capital lease methods.
- g. Compute the amount of revenues and expenses that the automobile dealership recognizes during each of the four years under the operating and capital lease methods.
- h. Why are the lessee's total expenses the same under the operating and capital lease methods? Why is the lessor's total income (revenue minus expenses) the same under the operating and capital lease methods?
- i. Why do total expenses of the lessee differ from total income of the lessor?

LEASE DISCLOSURES

Firms must disclose in notes to the financial statements the cash flows associated with capital leases and with operating leases for each of the succeeding five years and for all years after five years in the aggregate. Firms must also indicate the present value of the cash flows for capital leases.¹⁴ **Exhibit 11.8** presents Mall Stores Corporation's (based on the financial statements of Target Corporation) lease disclosures.

Mall Stores Corporation includes \$4 million of capital leases in current liabilities and \$123 million in long-term debt. Mall Stores Corporation, like most firms, does not indicate the weighted-average interest rate it used to compute the present value of capital leases.

Most of Mall Stores Corporation's leases are operating leases. Thus, neither the leased assets nor the lease liabilities appear on the balance sheet. The user of the financial statements might follow one of two approaches when dealing with operating leases:

1. Leave the operating lease commitments off the balance sheet.
2. Place a present value on the operating lease commitments and include that amount in non-current assets and long-term debt a process called **constructive capitalization**.

Placing a present value on the operating lease commitments requires two estimates:

1. The discount rate to apply to the operating lease payments.
2. The timing of the aggregate cash flows after the fifth year.

The discount rate should reflect a long-term interest rate for collateralized borrowing. Assume that the weighted-average borrowing rate on Mall Stores Corporation's long-term notes and debentures on February 2, 2013, was 5.5%. We will use a discount rate of 5.5% to illustrate the constructive capitalization of operating leases.

The cash flows for operating leases for the first five years decline each year. One might assume a continuing decline in some pattern for the years after 2017. An alternative approach assumes that Mall Stores Corporation will continue to make payments on operating leases in an amount equal to that in 2017, or \$123 million a year, until it pays the \$2,843 aggregate remaining amount. Thus, Mall Stores Corporation will continue to pay \$123 million for 23.1 ($= \$2,843/\123) additional years. The estimated total years of these operating leases of 28.1 ($= 5.0 + 23.1$) years suggest that these leases are primarily for retail stores.

Exhibit 11.9 shows the computation of the present value of Mall Stores Corporation's operating lease commitments on February 2, 2013. The calculation of the present value of the cash flows after 2017 involves the present value of a deferred annuity.

Constructive capitalization of Mall Stores Corporation's operating leases adds \$1,982 million to property, plant, and equipment; \$227 million to the current portion of long-term debt; and \$1,755 ($= \$1,982 - \227) million to long-term debt classified as a noncurrent liability on the balance sheet. The long-term debt and the debt-equity ratios of Mall Stores Corporation on February 2, 2013, based on reported amounts and as adjusted for the capitalization of operating leases are as follows:

¹⁴Firms cannot currently apply the fair value options to assets and liabilities recognized under capital leases. See FASB, *Statement of Financial Accounting Standards No. 159*, "The Fair Value Option for Financial Assets and Financial Liabilities," par. 8, 2007 (**Codification Topic 825**); IASB, *International Accounting Standard 39*, "Financial Instruments: Recognition and Measurement," revised 2003.

EXHIBIT 11.8**Lease Disclosures for Mall Stores Corporation**

Future minimum lease payments required under noncancelable lease agreements existing at February 2, 2013, were as follows:

Future Minimum Lease Payments (millions)	Operating Leases	Capital Leases
2013	\$ 239	\$ 12
2014	187	16
2015	173	16
2016	129	16
2017	123	17
After 2017	<u>2,843</u>	<u>155</u>
Total future minimum lease payments	\$3,694 ^a	232
Less: Interest ^b		<u>(105)</u>
Present value of future minimum capital lease payments		<u>\$127^c</u>

^aTotal contractual lease payments include \$1,721 million related to options to extend lease terms that are reasonably assured of being exercised and also includes \$98 million of legally binding minimum lease payments for stores that will open in 2013 or later.

^bCalculated using the interest rate at inception for each lease.

^cIncludes the current portion of \$4 million.

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Long-Term Debt Ratio

Reported Amounts: $\$15,126/\$44,560 = 33.9\%$

Adjusted Amounts: $(\$15,126 + \$1,755)/(\$44,560 + \$1,982) = 36.3\%$

Debt-Equity Ratio

Reported Amounts: $\$15,126/\$15,307 = 98.8\%$

Adjusted Amounts: $(\$15,126 + \$1,755)/\$15,307 = 110.3\%$

The debt ratios for Mall Stores Corporation increase with the capitalization of operating leases. Larger increases in debt ratios typically occur for airlines, railroads, trucking companies, and other retailers, many of whom use operating leases extensively.

EXHIBIT 11.9**Present Value of Operating Lease Commitments**

Year	Payments	Present Value Factor at 5.5%	Present Value
2013	\$ 239	0.94787	\$ 227
2014	187	0.89845	168
2015	173	0.85161	147
2016	129	0.80722	104
2017	123	0.76513	94
After 2017	2,843 ^a	$13.19369^b \times 0.76513^c$	<u>1,242</u>
Total			<u>\$1,982</u>

^aAssume that Mall Stores Corporation makes the \$2,843 million payments after 2017 at the rate of \$123 million a year. Mall Stores Corporation makes these payments for 23.1 (= $\$2,843/\123) years.

^bFactor for the present value of an annuity of \$123 million for 23.1 periods.

^cFactor for the present value of \$1 for five periods.

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SUMMARY OF ACCOUNTING FOR LONG-TERM LIABILITIES

Long-term liabilities obligate the borrowing firm to pay specified amounts at definite times more than one year in the future. We now summarize the balance sheet presentation of long-term liabilities and procedures for computing both the balance sheet amounts and the amounts of interest expense.

Balance Sheet Presentation Unless the firm elects the fair value option, the long-term liabilities described in this chapter appear on the balance sheet at the present value of the remaining future payments. The present value computations use the historical rate of interest—the market interest rate on the date the borrower incurred the obligation.

Computation of Balance Sheet Amounts and Interest Expense for Amortized Cost Measurement The methods of computing balance sheet amounts for the long-term liabilities described in this chapter and their related expenses follow these procedures:

1. Initially record the liability at the cash equivalent value of the assets received. This amount equals the present value of the future contractual payments discounted using the market interest rate for the borrower on the date the loan or lease begins. (Sometimes the borrower must compute the original issue market interest rate by finding the internal rate of return. See the **Appendix**.)
2. When the firm makes a cash payment or an adjusting entry for interest, it computes interest expense as the book value of the liability at the beginning of the period (including any interest added in prior periods) multiplied by the historical interest rate. The accountant debits this amount to Interest Expense and credits it to the liability account. If the firm makes a cash payment, the accountant debits the liability accounts and credits Cash.

The effect of the second procedure will change the book value of the liabilities to a number closer to par value (or leave the amount at par if book value already equals par value) for the start of the next period. If the accountant follows these procedures, the liabilities on the balance sheet will have book value equal to the present value of the remaining future payments discounted at the historical market interest rate.

Amortization schedules, such as those in **Exhibits 11.2, 11.3, and 11.4**, illustrate this procedure for a variety of long-term liabilities. The next problem for self-study focuses on the procedure.

► PROBLEM 11.6 FOR SELF-STUDY

Unifying principles of accounting for long-term liabilities. This problem illustrates the accounting for long-term liabilities described just above. Assume that a firm closes its books once per year, making adjusting entries once per year. On the date the firm borrows, the market interest rate is 10% per year, compounded annually for all loans spanning a two-year period. Note the following steps:

1. Compute the initial issue proceeds received by the firm issuing the obligation (that is, borrowing the cash) on the date of issue.
2. Give the journal entry for issue of the liability and receipt of cash.
3. Show the journal entry or entries for interest accrual and cash payment, if any, at the end of the first year, and re-compute the book value of all liabilities related to the borrowing at the end of the first year. Combine the liability accounts for the main borrowing and accrued interest into a single account called Monetary Liability.
4. Show the journal entry or entries for interest accrual and cash payment at the end of the second year, and re-compute the book value of all liabilities related to the borrowing at the end of the second year.

Perform the above steps for each of the following borrowings:

- a. The firm issues a single-payment note on the first day of the first year, promising to pay \$1,000 on the last day of the second year.

- b. The firm issues a 10% annual coupon bond, promising to pay \$100 on the last day of the first year and \$1,100 (= \$1,000 + \$100) on the last day of the second year.
- c. The firm issues an 8% annual coupon bond, promising to pay \$80 on the last day of the first year and \$1,080 (= \$1,000 + \$80) on the last day of the second year.
- d. The firm issues a 12% annual coupon bond, promising to pay \$120 on the last day of the first year and \$1,120 (= \$1,000 + \$120) on the last day of the second year.
- e. The firm issues a level-payment note (like a mortgage or installment note), promising to pay \$576.19 on the last day of the first year and another \$576.19 on the last day of the second year.

SUMMARY

This chapter discussed the accounting for long-term notes, bonds, and leases. The accounting for these obligations depends on whether a firm uses either of the following:

1. Amortized cost measurement, based on the historical market interest rate.
2. Fair value measurement.

The fair value option in U.S. GAAP and IFRS allows firms to use either method for qualifying long-term notes and bonds, but not for long-term leases.

Exhibit 11.10 summarizes the balance sheet presentation of long-term liabilities considered in this chapter and the procedures for computing both balance sheet amounts and interest expense under both amortized cost and fair value measurements.

EXHIBIT 11.10

Summary of Accounting for Long-Term Debt Obligations

Amortized Cost Measurement Using Historical Market Interest Rate

Balance Sheet Presentation

Long-term liabilities appear on the balance sheet at the present value of the remaining cash flows discounted at the historical market interest rate on the date the borrower incurred the obligation.

Computations

1. Initially record the liability at the cash (or cash equivalent) value received. This amount equals the present value of the future contractual payments discounted using the historical market interest rate for the borrower on the date the loan begins. (Sometimes the borrower must compute an implicit historical market interest rate by finding the internal rate of return.)
2. At any subsequent time when the firm makes a cash payment or an adjusting entry for interest, it computes interest expense as the carrying value of the liability at the beginning of the period (which includes interest added in prior periods) multiplied by the historical market interest rate. The accountant debits this amount to Interest Expense and credits it to the liability. If the firm makes a cash payment, the accountant debits the liability account and credits Cash.

Fair Value Measurement

Balance Sheet Presentation

Long-term liabilities appear on the balance sheet at fair value.

Computations

1. Initially record the same amount as that at the left. On the date that a loan begins, the historical market interest rate and the current market interest rate are the same.
2. At each subsequent balance sheet date, record the fair value of the liability. One approach is to compute the present value of the remaining contractual cash flows using the current market interest rate on that date. The difference between the amount of the liability at the beginning and end of the period is the net of the cash payment, interest expense, and unrealized gain or loss. Authoritative guidance does not specify a procedure for allocating the net change in value between the two income elements.

SOLUTIONS TO SELF-STUDY PROBLEMS

SUGGESTED SOLUTION TO PROBLEM 11.1 FOR SELF-STUDY

(Vera Company; implicit interest rate and amortization schedule for interest-bearing note.)

a.

Year	Cash Payment	Present Value Factor at 7%	Present Value ^a
1	\$ 6,000	0.93458	\$ 5,607.48
2	6,000	0.87344	5,240.63
3	106,000	0.81630	<u>86,527.58</u>
Total.			<u>\$97,375.69</u>

^aPresent value calculations use present value factors with more decimal places than shown.

b. The amortization schedule appears in **Exhibit 11.11**.

SUGGESTED SOLUTION TO PROBLEM 11.2 FOR SELF-STUDY

(Amortization schedule for zero coupon bonds.)

- a. See **Exhibit 11.12**.
- b. As the time until payment at maturity decreases, the present value of that payment increases. The increase each period is the interest expense for that period.

SUGGESTED SOLUTION TO PROBLEM 11.3 FOR SELF-STUDY

(Engel Corporation; calculating the issue price of bonds.)

a.

Required Cash Flows	Present Value Factor for 8% Interest Rate Compounded Semiannually for 10 Years	Present Value of Required Cash Flows
\$1,000,000 at end of 10 years	0.45639 ^a	\$ 456,390
\$50,000 every six months for 10 years	13.59033 ^b	<u>679,516</u>
Issue Price		<u>\$1,135,906</u>

^aAppendix Table 2, 4% column and 20-period row.

^bAppendix Table 4, 4% column and 20-period row.

EXHIBIT 11.11

Amortization Schedule for \$100,000, 6% Note Discounted at a Required Yield of 7% Compounded Annually (Problem 11.1 for Self-Study)

Period (1)	Balance at Beginning of Period (2)	Interest Expense for Period (3)	Cash Payment (4)	Increase (Decrease) in Liability (5)	Balance at End of Period (6)
1	\$97,375.69	\$6,816.30	\$ 6,000.00	\$816.30	\$98,191.99
2	98,191.99	6,873.44	6,000.00	873.44	99,065.43
3	99,065.43	6,934.57 ^a	106,000.00	934.57	0

^aAmount reduced by \$0.01 to compensate for rounding.

EXHIBIT 11.12

**Amortization Schedule for \$300 Million Face Value
10-Year Zero Coupon Bonds Priced Initially to
Yield 8% Compounded Semiannually
(Problem 11.2 for Self-Study)**

Period (1)	Balance at Beginning of Period (2)	Interest Expense for Period (3)	Cash Payment (4)	Increase in Liability (5)	Balance at End of Period (6)
1	\$136,916,084	\$ 5,476,643	\$0	\$ 5,476,643	\$142,392,727
2	142,392,727	5,695,709	0	5,695,709	148,088,436
3	148,088,436	5,923,537	0	5,923,537	154,011,974
4	154,011,974	6,160,479	0	6,160,479	160,172,453
5	160,172,453	6,406,898	0	6,406,898	166,579,351
6	166,579,351	6,663,174	0	6,663,174	173,242,525
7	173,242,525	6,929,701	0	6,929,701	180,172,226
8	180,172,226	7,206,889	0	7,206,889	187,379,115
9	187,379,115	7,495,165	0	7,495,165	194,874,280
10	194,874,280	7,794,971	0	7,794,971	202,669,251
11	202,669,251	8,106,770	0	8,106,770	210,776,021
12	210,776,021	8,431,041	0	8,431,041	219,207,062
13	219,207,062	8,768,282	0	8,768,282	227,975,344
14	227,975,344	9,119,014	0	9,119,014	237,094,358
15	237,094,358	9,483,774	0	9,483,774	246,578,132
16	246,578,132	9,863,125	0	9,863,125	256,441,258
17	256,441,258	10,257,650	0	10,257,650	266,698,908
18	266,698,908	10,667,956	0	10,667,956	277,366,864
19	277,366,864	11,094,675	0	11,094,675	288,461,539
20	288,461,539	11,538,462	0	11,538,462	300,000,000

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b.

Required Cash Flows	Present Value Factor for 10% Interest Rate Compounded Semiannually for 10 Years	Present Value of Required Cash Flows
\$1,000,000 at end of 10 years	0.37689 ^a	\$ 376,890
\$50,000 every six months for 10 years	12.46221 ^b	623,110
Issue Price		<u>\$1,000,000</u>

^aAppendix Table 2, 5% column and 20-period row.^bAppendix Table 4, 5% column and 20-period row.

c.

Required Cash Flows	Present Value Factor for 12% Interest Rate Compounded Semiannually for 10 Years	Present Value of Required Cash Flows
\$1,000,000 at end of 10 years	0.31180 ^a	\$311,800
\$50,000 every six months for 10 years	11.46992 ^b	573,496
Issue Price		<u>\$885,296</u>

^aAppendix Table 2, 6% column and 20-period row.^bAppendix Table 4, 6% column and 20-period row.

SUGGESTED SOLUTION TO PROBLEM 11.4 FOR SELF-STUDY

(Engel Corporation; preparing journal entries to account for bonds.)

a.**January 1**

Cash	1,135,906	
Bonds Payable		1,135,906
To record issue of \$1,000,000-par value, 10% semiannual coupon bonds priced to yield 8% compounded semiannually.		

June 30

Interest Expense (= $0.04 \times 1,135,906$)	45,436	
Bonds Payable	4,564	
Cash (= $0.05 \times \$1,000,000$)		50,000
To record interest expense and amount paid for first six months.		

December 31

Interest Expense [= $0.04 \times (\$1,135,906 - \$4,564)$]	45,254	
Bonds Payable	4,746	
Cash (= $0.05 \times \$1,000,000$)		50,000
To record interest expense and amount payable for second six months.		

b.**January 1**

Cash	1,000,000	
Bonds Payable		1,000,000
To record issue of \$1,000,000-par value, 10% semiannual coupon bonds priced to yield 10% compounded semiannually.		

June 30

Interest Expense (= $0.05 \times \$1,000,000$)	50,000	
Cash (= $0.05 \times \$1,000,000$)		50,000
To record interest expense and amount paid for first six months.		

December 31

Interest Expense (= $0.05 \times \$1,000,000$)	50,000	
Cash (= $0.05 \times \$1,000,000$)		50,000
To record interest expense and amount paid for second six months.		

c.**January 1**

Cash	885,296	
Bonds Payable		885,296
To record issue of \$1,000,000-par value, 10% semiannual coupon bonds priced to yield 12% compounded semiannually.		

June 30

Interest Expense (= $0.06 \times \$885,296$)	53,118	
Cash (= $0.05 \times \$1,000,000$)		50,000
Bonds Payable		3,118
To record interest expense and amount paid for first six months.		

December 30

Interest Expense [= $0.06 \times (\$885,296 + \$3,118)$]	53,305	
Cash (= $0.05 \times \$1,000,000$).		50,000
Bonds Payable.		3,305
To record interest expense and amount payable for second six months.		

SUGGESTED SOLUTION TO PROBLEM 11.5 FOR SELF-STUDY

(Holt Book Store and automobile dealer; operating and capital lease methods for lessee and lessor.)

a. Application of the four criteria is as follows:

- (1) Ownership transferred to lessee at end of lease term: not satisfied.
- (2) Lease contains a bargain purchase option: not satisfied.
- (3) Lease period extends for at least 75% of asset's life: satisfied.
- (4) Present value of contractual minimum lease payments equals or exceeds 90% of the fair market value of the asset at the time lessee signs the lease: satisfied. The present value of the lease payments when discounted at 6% is \$40,000 (= $\$11,543.65 \times 3.46511$), which equals the \$40,000 market value of the asset on at the inception of the lease.

The lease is therefore a capital lease because it meets at least one of the four criteria (in fact, it meets two conditions).

b.

December 31 of Each Year

Rent Expense.	11,543.65	
Cash		11,543.65
To recognize annual rent expense on rental of delivery van accounted for as an operating lease.		

c.

January 1, 2013

Equipment (delivery van leased to customer)	36,000	
Inventory		36,000
To record transfer of delivery van from inventory to equipment.		

December 31 of Each Year

Cash	11,543.65	
Rent Revenue		11,543.65
To recognize annual rent revenue from rental of delivery van accounted for as an operating lease.		

December 31 of Each Year

Depreciation Expense	9,000	
Accumulated Depreciation		9,000
To recognize annual depreciation of \$9,000 (= $\$36,000/4$) on leased van accounting for as an operating lease.		

d.

January 1, 2013

Leased Asset—Delivery Van	40,000	
Lease Liability.		40,000
To record "acquisition" of delivery van and related liability accounted for as a capital lease.		

December 31, 2013

Interest Expense (= $0.06 \times \$40,000$)	2,400.00	
Lease Liability	9,143.65	
Cash		11,543.65
To recognize interest expense for 2008, the cash payment, and the reduction in the liability under the capital lease method. The carrying value of the liability at the end of 2008 is \$30,856.35 (= $\$40,000 + \$2,400.00 - \$11,543.65$).		

December 31, 2013

Depreciation Expense	10,000	
Accumulated Depreciation		10,000
To record depreciation expense for 2008 of \$10,000 (= $\$40,000/4$) for lessee.		

December 31, 2014

Interest Expense (= $0.06 \times \$30,856.35$)	1,851.38	
Lease Liability	9,692.27	
Cash		11,543.65
To recognize interest expense for 2009, the cash payments, and the reduction in the liability under the capital lease method. The carrying value of the liability at the end of 2009 is \$21,164.08 (= $\$30,856.35 + \$1,851.38 - \$11,543.65$).		

December 31, 2014

Depreciation Expense	10,000	
Accumulated Depreciation		10,000
To record depreciation expense for 2009 of \$10,000 (= $\$40,000/4$) for lessee.		

e.

January 1, 2013

Lease Receivable	40,000	
Sales Revenue		40,000
To record "sale" of delivery van accounted for as a capital lease.		

January 2, 2013

Cost of Goods Sold	36,000	
Inventory		36,000
To record cost of delivery van "sold" under capital lease arrangement.		

December 31, 2013

Cash	11,543.65	
Interest Revenue	2,400.00	
Lease Receivable		9,143.65
To record interest revenue, cash received, and reduction in lease receivable for 2013. The amounts mirror those of the lessee.		

December 31, 2014

Cash	11,543.65	
Interest Revenue		1,851.38
Lease Receivable		9,692.27
To record interest revenue, cash received, and reduction in lease receivable for 2014. The amounts mirror those of the lessee.		

f.

Year	Expense Recognized Each Year Under:	
	Operating Lease Method	Capital Lease Method
2013.....	\$11,543.65	\$12,400.00 (= \$10,000.00 + \$2,400.00)
2014.....	11,543.65	11,851.38 (= 10,000.00 + 1,851.38)
2015.....	11,543.65	11,269.84 (= 10,000.00 + 1,269.84)
2016.....	<u>11,543.65</u>	<u>10,653.38</u> (= <u>10,000.00</u> + <u>653.38</u>)
Total.....	<u>\$46,174.60</u>	<u>\$46,174.60</u> (= <u>\$40,000.00</u> + <u>\$6,174.60</u>)

g.

Year	Income Recognized Each Year Under:	
	Operating Lease Method	Capital Lease Method
2013.....	\$ 2,543.65 (= \$11,543.65 - \$ 9,000.00)	\$ 6,400.00 (= \$4,000.00 + \$2,400.00)
2014.....	2,543.65 (= 11,543.65 - 9,000.00)	1,851.38 (= 0.00 + 1,851.38)
2015.....	2,543.65 (= 11,543.65 - 9,000.00)	1,269.84 (= 0.00 + 1,269.84)
2016.....	<u>2,564.65</u> (= <u>11,543.65</u> - <u>9,000.00</u>)	<u>653.38</u> (= <u>0.00</u> + <u>653.38</u>)
Total.....	<u>\$10,174.60</u> (= <u>\$46,174.60</u> - <u>\$36,000.00</u>)	<u>\$10,174.60</u> (= <u>\$4,000.00</u> + <u>\$6,174.60</u>)

- h. The lessee's total expenses equal cash outflows, and the lessor's income equals cash inflows minus cash outflows. The operating and the capital lease methods recognize the revenues, expenses, and income associated with these cash flows in different periods.
- i. The lessee's total expenses equal its total cash outflows of \$46,174.60 (= \$11,543.65 × 4). The lessor's income equals its total cash inflows of \$46,174.60 (= \$11,543.60 × 4) minus its cash outflow to purchase the van of \$36,000.

SUGGESTED SOLUTION TO PROBLEM 11.6 FOR SELF-STUDY

(Unifying principles of accounting for long-term liabilities.)

Exhibit 11.13 shows the accounting for five types of long-term monetary liabilities stated at the present value of future cash flows in columns labeled a through e. The accounting for each of these monetary liabilities follows a common procedure.

1. Compute the initial amount of cash received by the borrower as well as the historical market interest rate. Sometimes you will know both of these. Sometimes you will know the cash received and you must calculate the interest rate. Sometimes, as **Exhibit 11.13** illustrates in all five cases, you will know the interest rate and must compute the initial cash received.
 - a. To compute the initial amount of cash received, given the contractual payments and the historical market interest rate, multiply each of the contractual payments by the present value factor (as from **Appendix Table 2** at the back of the book) for a single payment of \$1 to be received in the future. **Exhibit 11.13** shows the present value factors at 10% interest for payments to be received in one year (0.90909) and in two years (0.82645).
 - b. Computing the historical market interest rate, given the initial cash proceeds and the series of contractual payments, requires finding the *internal rate of return* of the series of cash flows. The **Appendix** at the back of the book illustrates this process. **Exhibit 11.13** shows that only the 10% coupon bond and the level-payment note have initial cash proceeds equal to \$1,000. The difference in amounts arises because each of the items has a different present value, in spite of the fact that some people might, loosely speaking, call each a "\$1,000 liability."
2. Record a journal entry debiting cash and crediting the monetary liability with the amount of cash received. This presentation showing the common theme uses the generic account title Monetary Liability, although in practice a firm would use more descriptive titles.
3. At every contractual payment date and at the end of an accounting period, compute interest expense as the book value of the liability at the beginning of the period (which includes

EXHIBIT 11.13

**Accounting for Long-Term Financial Liabilities Based
on the Present Value of Future Cash Flows
(Problem 11.6 for Self-Study)**

	a. Single-Payment Note of \$1,000 Maturing in Two Years			b. Two-Year Annual Coupon Bond—10%(\$100) Coupons		
	Amount	Dr.	Cr.	Amount	Dr.	Cr.
(1) Compute Present Value of Future Contractual Payments Using Historical Interest Rate on Day Monetary Liability Is First Recorded. Rate is 10.0%.						
(a) 1 Year Hence	\$ 0			\$ 100.00		
(b) 2 Years Hence	\$1,000.00			\$1,100.00		
Multiply Payment by Present Value Factors (Appendix Table 2).						
0.90909 × (a)	\$ 0			\$ 90.91		
0.82645 × (b)	<u>826.45</u>			<u>909.09</u>		
(c) Total Present Value	<u>\$ 826.45</u>			<u>\$1,000.00</u>		
(2) Record Initial Liability and Cash or Other Assets Received from Step 1.						
Cash or Other Assets		826.45		1,000.00		
Monetary Liability.			826.45			1,000.00
(3) First Recording (payment date or end of period): End of First Year						
(a) Compute Interest Expense as Financial Liability × Historical Interest Rate.						
Amount on Line 1(c) × 0.10	<u>\$ 82.64</u>			<u>\$ 100.00</u>		
(b) Record Interest Expense.						
Interest Expense		82.64		100.00		
Monetary Liability			82.64			100.00
(c) Record Cash Payment (if any).						
Monetary Liability				100.00		
Cash.		—				100.00
(d) Compute Book Value of Monetary Liability.						
Beginning Balance	\$ 826.45			\$1,000.00		
Add Interest Expense	<u>82.64</u>			<u>100.00</u>		
Subtotal	\$ 909.09			\$1,100.00		
Subtract Cash Payment (if any).	<u>—</u>			<u>(100.00)</u>		
= Ending Balance	<u>\$ 909.09</u>			<u>\$1,000.00</u>		
(4) Second Recording: End of Second Year						
(a) Compute Interest Expense as Monetary Liability × Historical Interest Rate.						
Amount on Line 3(d) × 0.10	<u>\$ 90.91</u>			<u>\$ 100.00</u>		
(b) Record Interest Expense.						
Interest Expense		90.91		100.00		
Monetary Liability			90.91			100.00
(c) Record Cash Payment (if any).						
Monetary Liability		1,000.00		1,100.00		
Cash.			1,000.00			1,100.00
(d) Compute Book Value of Monetary Liability.						
Beginning Balance	\$ 909.09			\$1,000.00		
Add Interest Expense	<u>90.91</u>			<u>100.00</u>		
Subtotal	\$1,000.00			\$1,100.00		
Subtract Cash Payment (if any).	<u>(1,000.00)</u>			<u>(1,100.00)</u>		
= Ending Balance	<u>\$ 0</u>			<u>\$ 0</u>		

c. Two-Year Annual Coupon Bond—8%(\$80) Coupons			d. Two-Year Annual Coupon Bond—12%(\$120) Coupons			e. Two-Year Level-Payment Note—Annual Payments of \$576.19		
Amount	Dr.	Cr.	Amount	Dr.	Cr.	Amount	Dr.	Cr.
\$ 80.00			\$ 120.00			\$ 576.19		
\$1,080.00			\$1,120.00			\$ 576.19		
\$ 72.73			\$ 109.09			\$ 523.81		
<u>892.57</u>			<u>925.62</u>			<u>476.19</u>		
<u>\$ 965.30</u>			<u>\$1,034.71</u>			<u>\$1,000.00</u>		
	965.30			1,034.71			1,000.00	
		965.30			1,034.71			1,000.00
<u>\$ 96.53</u>			<u>\$ 103.47</u>			<u>\$ 100.00</u>		
	96.53			103.47			100.00	
		96.53			103.47			100.00
	80.00			120.00			576.19	
		80.00			120.00			576.19
\$ 965.30			\$1,034.71			\$1,000.00		
<u>96.53</u>			<u>103.47</u>			<u>100.00</u>		
\$1,061.83			\$1,138.18			\$1,100.00		
<u>(80.00)</u>			<u>(120.00)</u>			<u>(576.19)</u>		
<u>\$ 981.83</u>			<u>\$1,018.18</u>			<u>\$ 523.81</u>		
<u>\$ 98.18</u>			<u>\$ 101.82</u>			<u>\$ 52.38</u>		
	98.18			101.82			52.38	
		98.18			101.82			52.38
	1,080.00			1,120.00			576.19	
		1,080.00			1,120.00			576.19
\$ 981.83			\$1,018.18			\$ 523.81		
<u>98.18</u>			<u>101.82</u>			<u>52.38</u>		
\$1,080.01			1,120.00			\$ 576.19		
<u>(1,080.00)</u>			<u>(1,120.00)</u>			<u>(576.19)</u>		
<u>\$ 0^a</u>			<u>\$ 0</u>			<u>\$ 0</u>		

^aRounding error of \$0.01.

the principal liability account and the Interest Payable account if the firm keeps these amounts in separate accounts) multiplied by the historical market interest rate. Debit the computed amount to Interest Expense and credit the Monetary Liability account.

If the borrower makes a cash payment, credit cash and debit the Monetary Liability account. The book value of the liability is now equal to the beginning balance plus interest expense recorded less cash payments made, if any.

Exhibit 11.13 does not illustrate this fact directly, but if you were to return to step 1 at this point and compute the present value of the remaining contractual payments using the historical market interest rate (10% in the examples), that present value would equal the book value computed after step 3.

- At each payment date, or at each period-end closing date, repeat step 3. Eventually, when the borrower makes the final payment (as illustrated at the bottom of **Exhibit 11.13**), it will have discharged the entire amount of the liability plus interest. The remaining liability is zero. The accounting has amortized the liability to zero at the same time that the firm has extinguished its obligation.

KEY TERMS AND CONCEPTS

Note	Implicit interest rate
Notes Payable	Historical market interest rate
Bond	Current market interest rate
Bond indenture	Amortized cost
Bonds Payable	Fair value
Unsecured borrowing	Fair value option
Senior rights; subordinated rights	Amortization schedule
Debenture bond	Effective interest method
Serial bond	Principal (face) value
Zero coupon bond	Coupon interest rate
Convertible bond	Maturity value
Callable bond	Market value
Put option (for bond)	Discount to face value; premium to face value
Fixed interest rate; variable interest rate	Effective interest method
Present value of future cash flows	Operating lease method
Financial instrument	Capital lease method; finance lease method
Internal rate of return; yield to maturity	Constructive capitalization
Market interest rate	

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

- Review the meaning of the terms and concepts listed in Key Terms and Concepts.
- “Using amortized cost based on the historical market interest rate to account for bonds in periods subsequent to their initial issuance provides a carrying value for bonds that is consistent with using historical, or acquisition, cost measurements for assets.” Explain.
- “Applying the effective interest method using the historical market interest rate gives a constant amount of interest expense on bonds each period.” Do you agree? If not, how would you change the statement to make it accurate?
- A firm issues two bonds with identical issue prices, market-required yields, and final maturity dates. One bond is a semiannual coupon bond, and the other bond is a serial bond. Will the total interest expense over the life of these two bonds be the same or different? Explain.

5. Firm A issues \$1,000,000 face value, 9% semiannual coupon bonds at a price to yield 8% compounded semiannually. Firm B issues \$1,000,000 face value, 7% semiannual coupon bonds at a price to yield 8% compounded semiannually. Both bond issues mature in 20 years. Will these firms receive the same initial issue price for these bonds? Explain.
6. “The total effect on income before income taxes over the life of a bond that a firm repays at maturity will be the same whether the firm accounts for the bond using amortized cost measurement based on the historical market interest rate or fair value measurement based on the current market interest rate.” Do you agree? Explain.
7. Refer to question 6. Would your answer differ if the firm repaid the bond prior to maturity?
8. Refer to the preceding two questions. Describe the circumstances under which a firm would report a net gain from its borrowing activities. Give an example and the general principle. You may find using zero coupon bonds as examples a good way to think about these issues, although the principles apply to all forms of borrowing.
9. A retailer leases space in a shopping center, whose buildings have a 30-year life, on a 10-year lease. The lessee pays a small fixed amount per month plus 10% of sales for the previous month. How will the retailer treat this lease under the old/current rules?
10. Refer to the preceding question. How will the retailer treat this lease under the new/proposed rules?
11. In what ways is a lessee’s capital lease similar to, and different from, purchasing the equipment using the proceeds of a loan repayable in installments?
12. “The lessor who manufactured the equipment it leases to the lessee recognizes the same amount of income (revenue minus expenses) over the term of a lease as the lessee recognizes as expenses.” Do you agree or disagree? Explain.
13. “If permitted, a lessee generally prefers to account for leases using the operating lease method for financial reporting and the capital lease method for tax reporting.” Explain.
14. “If permitted, a lessor generally prefers to account for leases using the capital lease method for financial reporting and the operating lease method for tax reporting.” Explain.

EXERCISES

15. **Amortization schedule for note where stated interest rate differs from historical market rate of interest.** Hager Company acquires a computer from Volusia Computer Company. The cash price (fair value) of the computer is \$37,938. Hager Company gives a three-year, interest-bearing note with a maturity value of \$40,000. The note requires annual payments of 6% of face value, or \$2,400 per year, payable at the end of each year. The interest rate implicit in the note is 8% per year.
 - a. Prepare an amortization schedule for the note similar to **Exhibit 11.2**.
 - b. Prepare journal entries for Hager Company over the life of the note. Ignore entries for depreciation expense on the computer.
16. **Computing the issue price of bonds.** Compute the issue price of each of the following bonds.
 - a. \$10,000,000 face value, zero coupon bonds due in 20 years, priced on the market to yield 8% compounded semiannually.
 - b. \$10,000,000 face value, serial bonds repayable in 40 equal semiannual installments of \$500,000, which includes coupon payments and repayment of principal, for 20 years, priced on the market to yield 6% compounded annually.
17. **Computing the issue price of bonds.** Compute the issue price of each of the following bonds.
 - a. \$1,000,000 face value, zero coupon bonds due in 20 years, priced on the market to yield 10% compounded semiannually.
 - b. \$1,000,000 face value, serial bonds repayable in equal semiannual installments of \$50,000 for 20 years, priced on the market to yield 6% compounded semiannually.
 - c. \$1,000,000 face value, 10% semiannual coupon bonds with interest payable each six months and the principal due in 20 years, priced on the market to yield 8% compounded semiannually.
 - d. \$1,000,000 face value semiannual coupon bonds, with an annual coupon rate of 6% for the first 10 years and 8% for the second 10 years and the principal due in 20 years, priced on the market to yield 10% compounded semiannually.

- 18. Amortization schedule for bonds.** On January 1 of the current year, Womack Company issues 10% semiannual coupon bonds maturing five years from the date of issue. The firm issues the bonds to yield 8% compounded semiannually. The bonds have a face value of \$100,000.
- Compute the initial issue proceeds of these bonds.
 - Construct an amortization schedule, similar to that in **Exhibit 11.2**, for this bond issue, assuming that Womack Company uses amortized cost measurement based on the historical market interest rate to account for the bonds.
 - Assume that at the end of the bonds' third year of life, Womack Company reacquires \$10,000 face value of these bonds for 103% of face value and retires them. Give the journal entry to record the retirement.
- 19. Amortization schedule for bonds.** On January 1, 2012, Seward Corporation issues \$100,000 face value, 8% semiannual coupon bonds maturing three years from the date of issue. The coupons, dated for June 30 and December 31 of each year, each promise 4% of the face value, 8% total for a year. The firm issues the bonds to yield 10%, compounded semiannually.
- Compute the initial issue proceeds of these bonds.
 - Construct an amortization schedule, similar to that in **Exhibit 11.2**, for this bond issue, assuming that Seward Company uses amortized cost measurement based on the historical market interest rate to account for the bonds.
 - Give the journal entries related to these bonds for 2012. Seward uses the calendar year as its reporting period.
 - On January 1, 2014, Seward Corporation reacquires \$20,000 face value of these bonds for 102% of face value and retires them. Give the journal entry to record the retirement.
- 20. Accounting for bonds using amortized cost measurement based on the historical market interest rate.** O'Brien Corporation issues \$8,000,000 face value, 8% semiannual coupon bonds maturing in 20 years. The market initially prices these bonds to yield 6% compounded semiannually. O'Brien Corporation accounts for these bonds using amortized cost measurement based on the historical market interest rate.
- Compute the issue price of these bonds.
 - Compute the interest expense on these bonds for the first six months.
 - Compute the interest expense on these bonds for the second six months.
 - Compute the carrying value of these bonds at the end of the second six-month period.
 - Use present value computations to verify the carrying value of the bonds at the end of the second six-month period as computed in part **d** above.
- 21. Accounting for bonds using amortized cost measurement based on the historical market interest rate.** Robinson Company issues \$5,000,000 face value, 8% semiannual coupon bonds maturing in 10 years. The market initially prices these bonds to yield 10% compounded semiannually. Robinson Company accounts for these bonds using amortized cost measurement based on the historical market interest rate.
- Compute the issue price of these bonds.
 - Compute the interest expense for the first six months.
 - Compute the interest expense for the second six months.
 - Compute the carrying value of these bonds at the end of the second six-month period.
 - Use present value computations to verify the carrying value of the bonds at the end of the second six-month period as computed in part **d** above.
- 22. Accounting for bonds using amortized cost measurement based on the historical market interest rate.** Several years ago, Huergo Dooley Corporation (HDC) issued \$2,000,000 face value, 8% semiannual coupon bonds on the market initially priced to yield 10% compounded semiannually. The bonds require HDC to make semiannual payments of 4% of face value on June 30 and December 31 of each year. The bonds mature on December 31, 2012.
- Compute the carrying value of these bonds on January 1, 2008, assuming that HDC has used amortized cost measurement based on the historical market interest rate to account for these bonds.

- b. Give HDC's journal entry to recognize interest expense and cash payment on June 30, 2008.
 - c. Give HDC's journal entry to recognize interest expense and cash payment on December 31, 2008.
 - d. On January 1, 2009, these bonds trade in the market at a price to yield 6%, compounded semiannually. On this date, HDC repurchased 20% of these bonds on the open market and retired them. Give the journal entry to record the repurchase.
- 23. Accounting for bonds using the fair value option based on the current market interest rate.** Stroud Corporation issues \$10,000,000 face value, 10-year, 6% semiannual coupon bonds on January 1, 2013. The bonds require coupon payments on June 30 and December 31 of each year. The market initially priced the bonds to yield 6% compounded semiannually. The current market yield on these bonds was 6.2% compounded semiannually on June 30, 2013, and 6.6% compounded semiannually on December 31, 2008. Stroud Corporation computes interest expense for each six-month period using the market yield at the beginning of the period.
- a. Compute the carrying value of these bonds on January 1, June 30, and December 31 of 2013, using the fair value option. You may interpolate in the interest tables or use a calculator or use a spreadsheet program to compute the compound interest factors not provided in the tables.
 - b. Compute the total amount of interest expense and unrealized gain or loss for the first six months of 2013. Do not attempt to separate this amount into interest expense and holding gain or loss.
 - c. Compute the total amount of interest expense and unrealized gain or loss for the second six months of 2013. Do not attempt to separate this amount into interest expense and holding gain or loss.
- 24. Accounting for bonds using the fair value option based on the current market interest rate.** Restin Corporation issues \$20,000,000 face value, 10 year, 8% semiannual coupon bonds on January 1, 2014. The bonds promise coupon payments on June 30 and December 31 of each year. The market initially priced the bonds to yield 7% compounded semiannually. The current market yield on these bonds was 6.8% compounded semiannually on June 30, 2014, and 6.4% on December 31, 2014. Restin Corporation computes interest expense for each six-month period using the market yield at the beginning of the period.
- a. Compute the carrying value of these bonds on January 1, June 30, and December 31 of 2014 using the fair value option. You may interpolate in the interest tables or use a calculator or use a spreadsheet program to compute the compound interest factors not provided in the tables.
 - b. Compute the total amount of interest expense and unrealized gain or loss for the first six months of 2014. Do not attempt to separate this amount into interest expense and holding gain or loss.
 - c. Compute the total amount of interest expense and unrealized gain or loss for the second six months of 2014. Do not attempt to separate this amount into interest expense and holding gain or loss.
- 25. Applying the capital lease criteria under the current/old rules.** Boeing manufactures a jet aircraft at a cost of \$50 million. The usual selling price for this aircraft is \$60 million, and its typical useful life is 25 years. United Airlines desires to lease this aircraft from Boeing. The parties contemplate the following alternatives for structuring the lease. Indicate whether each arrangement qualifies as an operating lease or a capital lease under the current/old rules. Assume that all cash flows occur at the end of each year.
- a. United Airlines will lease the aircraft for 20 years at an annual rental of \$6 million. At the end of 20 years, United will return the aircraft to Boeing. The interest rate appropriate to a 20-year collateralized loan for United Airlines is 10%.
 - b. United Airlines will lease the aircraft for 15 years at an annual rental of \$7.2 million. At the end of 15 years, United Airlines will return the aircraft to Boeing. The interest rate appropriate for a 15-year collateralized loan for United Airlines is 10%.
 - c. United Airlines will lease the aircraft for 10 years at an annual rental of \$5.5 million. At the end of 10 years, United Airlines has the option of returning the aircraft to Boeing

or purchasing it for \$55 million. The interest rate appropriate for a 10-year collateralized loan for United Airlines is 8%.

- d. United Airlines will lease the aircraft for 18 years at an annual rental of \$6.2 million and will return the aircraft at the end of the lease term. In addition, United Airlines will pay a fee of \$1,500 per hour for each hour over 5,000 hours per year that United Airlines flies the aircraft. United Airlines' average usage of its aircraft is currently 6,200 hours per year. The interest rate appropriate for an 18-year collateralized loan for United Airlines is 10%.
26. **Applying the new/current rules for leases.** Refer to the four scenarios in the preceding question. Describe the accounting for these leases under the new/current rules.
27. **Preparing lessor's journal entries for an operating lease and a capital lease.** Sun Microsystems manufactures an engineering workstation for \$7,200 and sells it for \$12,000. Although the workstation has a physical life of approximately 10 years, rapid technological change limits its expected useful life to three years. Sun leases a workstation to Design Consultants for the three-year period beginning January 1, 2013. The annual rental payments of \$4,386.70 are due at the beginning of each year. The interest rate appropriate for discounting cash flows is 10%, compounded annually. Sun uses a calendar year as its reporting period.
- a. Does this lease qualify as an operating lease or a capital lease under the current/old rules? Explain.
- b. Assume that this lease qualifies as an operating lease. Give the journal entries for Sun Microsystems over the three-year period.
- c. Repeat part b assuming that the lease qualifies as a capital lease.
28. **Preparing lessee's journal entries for an operating lease and a capital lease.** On January 1, 2013, Baldwin Products, as lessee, leases a machine used in its operations. The annual lease payment of \$10,000 is due on December 31 of 2013, 2014, and 2015. The machine reverts to the lessor at the end of the three years. The lessor can either sell the machine or lease it to another firm for the remainder of its expected total useful life of five years. Baldwin Products could borrow on a three-year collateralized loan at 8%. The market value of the machine at the inception of the lease is \$30,000. Round all amounts to the nearest dollar.
- a. Does this lease qualify as an operating lease or a capital lease?
- b. Assume that this lease qualifies as an operating lease. Give the journal entries for Baldwin Products over the three-year period.
- c. Assume this lease qualifies as a capital lease. Repeat part b.
- d. Compute the total expenses for the three-year period under the operating and capital lease methods.

PROBLEMS

29. **Accounting for long-term bonds.** The notes to the financial statements of Aggarwal Corporation for 2013 reveal the following information with respect to long-term debt. *All interest rates in this problem assume semiannual compounding and the effective interest method of amortization using amortized cost measurement based on the historical market interest rate.*

	December 31	
	2013	2012
\$800,000 zero coupon notes due December 31, 2022, initially priced to yield 10%	?	\$ 301,512
\$1,000,000 7% bonds due December 31, 2017. Interest is payable on June 30 and December 31. The bonds' initial price implies a yield of 8%.	\$966,336	?
\$1,000,000, 9% bonds due December 31, 2028. Interest is payable on June 30 and December 31. The bonds' initial price implies a yield of 6%.	?	\$1,305,832

- a. Compute the carrying value of the zero coupon notes on December 31, 2013. A zero coupon note requires no periodic cash payments; only the face value is payable at maturity. Do not overlook the italicized sentence above.
 - b. Compute the amount of interest expense for 2013 on the 7% bonds.
 - c. On July 1, 2013, Aggarwal Corporation acquires half of the 9% bonds (\$500,000 face value) in the market for \$526,720 and retires them. Give the journal entry to record this retirement.
 - d. Compute the amount of interest expense on the 9% bonds for the second half of 2013.
- 30. Accounting for zero coupon debt.** When Time Warner Inc. announced its intention to borrow about \$500 million by issuing 20-year zero coupon (single payment) notes, *The Wall Street Journal* reported the following:

New York—Time Warner announced an offering of debt that could yield the company as much as \$500 million. . . . The media and entertainment giant said that it would offer \$1.55 billion principal amount of zero-coupon . . . notes due [in 20 years] . . . through Merrill Lynch. . . . Zero-coupon debt is priced at a steep discount to principal, [which] is fully paid at maturity. . . . A preliminary prospectus . . . didn't include the issue price and yield on the notes.¹⁵

- a. Assume the initial yield on the notes is 6% per year, compounded annually. What initial issue proceeds will Time Warner realize from issuing these notes?
 - b. Assume the initial issue proceeds from these notes are \$500 million. What is the initial yield on these notes?
 - c. Assume the initial issue proceeds from these notes are \$400 million and their annual yield is 7% compounded annually. What interest expense will Time Warner record for 2013, the first year the notes are outstanding, assuming that it uses the amortized cost method based on the historical market interest rate?
 - d. Assume the initial issue proceeds from these notes are \$400 million and their annual yield is 7% compounded annually. What interest expense will Time Warner record for 2032, the last year the notes are outstanding, assuming that it uses the amortized cost method based on the historical market interest rate?
 - e. Assume that Time Warner initially issued the notes to yield 6% compounded annually and that the bonds traded in the market on December 31, 2022, to yield 8% compounded annually. Give the journal entry that Time Warner would make if it repurchased and retired \$700 million face value of these zero coupon notes on this date. Round amounts to the nearest one million.
- 31. Understanding and using bond tables.** Exhibit 11.14 presents a bond table for 8%, semiannual bonds for various market yields and years to maturity. Don't overlook that this table presents values for semiannual coupon bonds, the most usual kind. The amounts in the table given are percentages of face value for a stated interest rate and number of years to maturity. The interest rate is compounded semiannually.
- a. Why are the amounts in the 8.0% market yield column equal to 100% regardless of the number of years to maturity?
 - b. Why are the amounts in the columns to the left of the 8.0% column greater than 100% and the amounts in the columns to the right of the 8.0% column less than 100% for all years to maturity?
 - c. Why do the amounts in the columns to the left of the 8.0% column decrease toward 100% and the amounts in the columns to the right of the 8.0% column increase toward 100% as the years to maturity decrease?
- Assume for the remaining parts of this problem that a firm issues \$1 million face value, 8% semiannual coupon bonds on January 1, 2013, at a price to yield 7% compounded semiannually. The firm uses the historical market interest rate to account for these bonds for parts **d** to **f** and the fair value option for parts **g** to **i**.

¹⁵*The Wall Street Journal*, December 8, 1992, p. A6. Assume Time Warner borrows funds at the beginning of 2013 and pays \$1.55 billion in a single payment at the end of 2032.

EXHIBIT 11.14**Bond Values in Percent of Face Value
8% Semiannual Coupon Bonds^a
(Problem 31)**

Years to Maturity	Market Yield Percent per Year Compounded Semiannually					
	6.0	7.0	7.8	8.0	8.3	9.0
0.5	100.9709%	100.4831%	100.0962%	100%	99.8560%	99.5215%
1.0	101.9135	100.9498	100.1889	100	99.7177	99.0637
1.5	102.8286	101.4008	100.2780	100	99.5849	98.6255
2.0	103.7171	101.8365	100.3638	100	99.4574	98.2062
2.5	104.5797	102.2575	100.4464	100	99.3350	97.8050
5.0	108.5302	104.1583	100.8151	100	98.7924	96.0436
9.0	113.7535	106.5948	101.2763	100	98.1240	93.9200
9.5	114.3238	106.8549	101.3246	100	98.0548	93.7034
10.0	114.8775	107.1062	101.3711	100	97.9883	93.4960
15.0	119.6004	109.1960	101.7504	100	97.4528	91.8556
19.0	122.4925	110.4205	101.9649	100	97.1564	90.9750
19.5	122.8082	110.5512	101.9874	100	97.1257	90.8852
20.0	123.1148	110.6775	102.0091	100	97.0962	90.7992
25.0	125.7298	111.7278	102.1855	100	96.8588	90.1190
30.0	127.6756	112.4724	102.3059	100	96.7007	89.6810
40.0	130.2008	113.3744	102.4440	100	96.5253	89.2173

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^aThe amounts of the entries of this exhibit result from using the present value function in a spreadsheet and then dividing the result by 10,000 to express as a percentage.

- d. What are the initial issue proceeds for these bonds if they mature in 25 years?
- e. What is the carrying value of these bonds after five years?
- f. Use the bond table to compute the amount of interest expense, using historical cost methods, for 2018. Independently verify this amount of interest expense for 2018 by multiplying the historical market interest rate times the liability at the beginning of each six-month period during 2018.

32. Interpreting disclosures of long-term debt. Exhibit 11.15 presents excerpts from the notes to the financial statements of Home Supply Company.

- a. The amounts shown for Debentures, Notes, and the Medium-Term Notes appear as the same amounts on February 1, 2012 and 2013. What is the likely interpretation for the identical reported amounts at the beginning and end of the year?
- b. The Senior Notes comprise two debt issues on February 1, 2012, and an additional two debt issues on February 1, 2013. Indicate the amounts in each of the following cells.

Hint: Given the face value, term to maturity, and coupon rate, use Excel to solve for the historical market interest rate. Solving for the historical market interest rate involves inputting various interest rates until the present value is within \$1 million of the issue price. Be sure to consider semiannual payments and semiannual compounding. Express the coupon interest rate and the historical market interest rate in the following cells as annual rates based on semiannual compounding.

Issue Date	Face Value	Term to Maturity at Issue Date	Issue Price	Coupon Interest Rate	Historical Market Interest Rate
October 2011					
October 2011					
October 2012					
October 2012					

EXHIBIT 11.15

**Excerpts from Notes to the Financial Statements
of Home Supply Company
(in millions)
(Problem 32)**

NOTE 6—LONG-TERM DEBT:

	Interest Rates %	Fiscal Year of Final Maturity	February 2, 2013	February 3, 2012
Secured Debt				
Mortgage Notes	6.57 to 8.25	2028	\$ 30	\$ 38
Unsecured Debt				
Debentures	6.50 to 6.88	2029	693	693
Notes	8.25	2010	498	498
Medium-Term Notes—Series A.	7.35 to 8.20	2023	27	27
Medium-Term Notes—Series B.	6.70 to 7.61	2037	267	267
Senior Notes	5.00 to 5.80	2036	1,980	988
Convertible Notes	0.86 to 2.50	2021	518	596
Capital Leases and Other		2030	400	424
Total Long-Term Debt.			4,413	3,531
Less Current Maturities			88	32
Long-Term Debt, Excluding Current Maturities			<u>\$4,325</u>	<u>\$3,499</u>

SENIOR NOTES

In October 2011, the Company issued \$1 billion of unsecured Senior Notes, comprised of two \$500 million tranches maturing in October 2021 and October 2041, respectively. The first \$500 million tranche of 5.0% Senior Notes was sold at a discount of \$4 million. The second \$500 million tranche of 5.5% Senior Notes was sold at a discount of \$8 million. Interest on the Senior Notes is payable semiannually in arrears in April and October of each year until maturity. The discount associated with the issuance is included in long-term debt and is being amortized over the respective terms of the Senior Notes. The net proceeds of approximately \$988 million were used for the repayment of \$600 million in outstanding notes due December 2011, for general corporate purposes, including capital expenditures and working capital needs, and to finance repurchases of common stock.

In October 2012, the Company issued \$1 billion of unsecured senior notes, comprised of two tranches: \$550 million of 5.4% Senior Notes maturing in October 2022 and \$450 million of 5.8% Senior Notes maturing in October 2042. The 5.4% Senior Notes and the 5.8% Senior Notes were each issued at a discount of approximately \$4.4 million. Interest on the Senior Notes is payable semiannually in arrears in April and October of each year until maturity, beginning in April 2013. The discount associated with the issuance is included in long-term debt and is being amortized over the respective terms of the Senior Notes. The net proceeds of approximately \$991 million were used for general corporate purposes, including capital expenditures and working capital needs, and to finance repurchases of common stock.

NOTE 7—FINANCIAL INSTRUMENTS:

The fair value of the Company's long-term debt excluding capital leases and other is as follows:

(in millions)	February 2, 2013		February 3, 2012	
	Carrying Amount	Fair Value	Carrying Amount	Fair Value
Liabilities:				
Long-Term Debt (excluding capital leases and other)	\$4,013	\$4,301	\$3,107	\$3,578

Interest rates that are currently available to the Company for issuance of debt with similar terms and remaining maturities are used to estimate fair value for debt issues that are not quoted on an exchange.

- c. The amount on the balance sheet for Senior Notes on February 1, 2013, of \$1,980 million slightly exceeds the total issue price of the four Senior Notes of \$1,979 million (= \$988 × \$991). Why do the amounts differ and why is the difference so small?
- d. Why are the interest rates on the convertible notes so much lower than those on Home Supply Company other debt?

- e. Refer to Note 7 on Financial Instruments. Is the weighted-average historical market interest rate on long-term debt higher or lower than the weighted-average current market interest rate on February 1, 2012, and February 1, 2013? Explain.
- 33. Accounting for lease by lessor and lessee.** IBM manufactures a particular computer for \$6,000 and sells it for \$10,000. Adair Corporation needs this computer in its operations and contemplates three ways of acquiring it on January 1, 2013. The computer has a three-year estimated useful life and zero salvage value. Both firms use the straight-line depreciation method.
- (1) **Outright Purchase:** Adair Corporation will borrow \$10,000 from its bank and purchase the computer from IBM. The bank loan bears interest at 8% annually and requires payments of \$3,880, which includes principal and interest, on December 31 of 2013, 2014, and 2015.
 - (2) **Operating Lease:** Adair Corporation will lease the computer from IBM and account for it as an operating lease under the current/old rules. IBM sets the annual payment due on December 31, 2013, 2014, and 2015 at \$3,810.
 - (3) **Capital Lease:** Adair Corporation will lease the computer from IBM and account for it as a capital lease, using an annual interest rate of 7%. The annual payment due on December 31 of 2013, 2014, and 2015 is \$3,810.
- a. Give the journal entries on the books of Adair Corporation on January 1, 2013, December 31, 2013, and December 31, 2014, related to the loan and acquisition of the equipment assuming the outright purchase alternative.
 - b. Repeat part a assuming the operating lease alternative under the old rules.
 - c. Repeat part a assuming the capital lease alternative under the old rules.
 - d. Give the journal entries on the books of IBM on January 1, 2013, December 31, 2013, and December 31, 2014, related to the sale of the equipment assuming the outright sale alternative.
 - e. Repeat part d assuming the operating lease alternative.
 - f. Repeat part d assuming the capital lease alternative.
 - g. Prepare a schedule of the total expenses incurred by Adair Corporation for 2013, 2014, and 2015 under each of the three alternatives.
 - h. Prepare a schedule of the total revenues and total expenses recognized by IBM for 2013, 2014, and 2015 under each of the three alternatives.
- 34. Comparison of borrow/buy with operating and capital leases.** Carom Sports Collectibles Shop plans to acquire, as of January 1, 2013, a computerized cash register system that costs \$100,000 and has a five-year life and no salvage value. The company considers two plans for acquiring the system:
- (1) **Outright purchase.** To finance the purchase, the firm will issue \$100,000 of face value, 10% semiannual coupon bonds on January 1, 2013, at par. The bonds mature in five years.
 - (2) **Lease.** The lease requires five annual payments on December 31, 2013, 2014, 2015, 2016, and 2017. The lease payments are such that they have a present value of \$100,000 on January 1, 2013, when discounted at 10% per year.
- The firm will use the straight-line method for all depreciation and amortization computations for assets.
- a. Applying the old rules, verify that the amount of the required lease payment is \$26,380 by constructing an amortization schedule for the five payments. Note that there will be a \$2 rounding error in the fifth year. Nevertheless, you may treat each payment as being \$26,380 in the rest of the problem.
 - b. What balance sheet accounts are affected if the firm selects plan (1)? What if the firm uses plan (2) and the firm uses the operating lease method? What if the firm selects plan (2) and it uses the capital lease method?
 - c. What is the total depreciation and interest expense for the five years under plan (1)?
 - d. What is the total expense for the five years under plan (2) if the firm could account for the lease as an operating lease? As a capital lease?
 - e. Why are the answers in part d the same? Why do the answers in part c differ from those in part d?

- f. What is the total expense for the first year under plan (1)? Under plan (2) accounted for as an operating lease? Under plan (2) accounted for as a capital lease?
 - g. Repeat part f for 2012.
35. **Financial statement effects of capital and operating leases.** Excerpts from the notes to the financial statements of Northern Airlines for two recent years reveal the following (amounts in millions). Northern Airlines uses the current/old rules of accounting for its leases.

	December 31	
	2013	2012
Capitalized Leased Asset	\$ 865	\$ 1,019
Capital Lease Liability	927	1,088
Long-Term Debt (including Capital Lease)	12,041	13,456
Total Assets	29,145	29,495

Future minimum commitments under leases with lease periods extending beyond one year taken from notes to the financial statements for the year ending December 31, 2012, appear in the following table.

Year	Capital Leases	Operating Leases
2013	\$ 263	\$ 1,065
2014	196	1,039
2015	236	973
2016	175	872
2017	140	815
After 2017	794	7,453
Total	<u>\$1,804</u>	<u>\$12,217</u>
Less Interest Portion	(716)	
Lease Liability	<u>\$1,088</u>	

Future minimum commitments under leases with lease periods extending beyond one year taken from notes to the financial statements for the year ending December 31, 2013, appear next.

Year	Capital Leases	Operating Leases
2014	\$ 196	\$ 1,098
2015	236	1,032
2016	175	929
2017	140	860
2018	142	855
After 2018	652	6,710
Total	<u>\$1,541</u>	<u>\$11,484</u>
Less Interest Portion	(614)	
Lease Liability	<u>\$ 927</u>	

- a. Assume that Northern Airlines makes all lease payments at the end of each year. Prepare an analysis that explains how the capital lease liability decreased from \$1,088 million on December 31, 2012, to \$927 million on December 31, 2013.
- b. Compute the weighted-average interest rate that Northern Airlines apparently used to compute the present value of capital lease commitments on December 31, 2012.
- c. Prepare an analysis that explains how the capitalized leased asset decreased from \$1,019 million on December 31, 2012, to \$865 million on December 31, 2013.
- d. Give the journal entries to account for capital leases during 2013.

- e. Give the journal entries to account for operating leases during 2013.
 - f. Assume that 10% is an appropriate interest rate to compute the present value of operating lease commitments on December 31, 2012, and December 31, 2013. Compute the present value of operating lease commitments on each date. Assume that the operating lease payment in the fifth year continues at that amount (\$815 million for the lease commitments on December 31, 2012, and \$855 million for the lease commitments on December 31, 2013) until the firm has paid all commitments for years after 2017 and after 2018, respectively.
 - g. Compute the long-term debt ratio on December 31, 2012, and December 31, 2013, based on the reported amounts (that is, without capitalization of operating leases).
 - h. Repeat part g but capitalize the operating lease commitments.
 - i. Referring to the results above, explain why many lessees prefer to avoid treating leases as capital leases.
- 36. Measuring interest expense.** GSB Corporation issued semiannual coupon bonds with a face value of \$110,000 several years ago. The annual coupon rate is 8%, with two coupons due each year, six months apart. The historical market interest rate was 10% compounded semiannually when GSB Corporation issued the bonds, equal to an effective interest rate of 10.25% [= $(1.05 \times 1.05) - 1$]. GSB Corporation accounts for these bonds using amortized cost measurement based on the historical market interest rate. The current market interest rate at the beginning of the current year on these bonds was 6% compounded semiannually, for an effective interest rate of 6.09% [= $(1.03 \times 1.03) - 1$]. The market interest rate remained at this level throughout the current year. The bonds had a book value of \$100,000 at the beginning of the current year. When the firm made the payment at the end of the first six months of the current year, the accountant debited a liability for the exact amount of cash paid. Compute the amount of interest expense on these bonds for the last six months of the life of the bonds, assuming all bonds remain outstanding until the retirement date.

Liabilities: Off-Balance-Sheet Financing, Retirement Benefits, and Income Taxes

1. Understand why and how firms use off-balance-sheet financing and the authoritative guidance for it.
2. Understand the issues in measuring and recognizing the cost of retirement benefits and in reporting overfunded and underfunded benefits.
3. Understand the effects of recognizing revenues and expenses for financial reporting in a period different from that used for tax reporting.

LEARNING OBJECTIVES

Chapter 4 introduces the concept of an accounting liability. **Chapter 9** discusses current liabilities and **Chapter 11** discusses long-term notes, bonds, and leases. This chapter explores three additional topics related to the recognition and measurement of liabilities:

1. Off-balance-sheet financing, other than operating leases.
2. Retirement benefits.
3. Income taxes.

OFF-BALANCE-SHEET FINANCING

Off-balance-sheet financing refers to obtaining cash, or other assets, or services without a borrowing arrangement that qualifies for liability recognition under U.S. GAAP or IFRS. This section explores the rationale for off-balance-sheet financing and the arrangements, other than operating leases (which were discussed in **Chapter 11**), that typically create such obligations.

RATIONALE FOR OFF-BALANCE-SHEET FINANCING

Some managers cite the following reasons for using off-balance sheet financing:

1. **Reduced borrowing costs.** Lower borrowing costs might result if lenders ignore off-balance-sheet financing in setting lending rates.
2. **Avoid debt covenant violation.** If debt covenants include only items that are recognized in the financial statements, off-balance sheet arrangements would not affect compliance with these covenants. For example, debt covenants may preclude increases in debt ratios.

The first reason is based on an assumption that some lenders do not possess the knowledge, skills, and information needed to identify and deal with off-balance-sheet arrangements. Although there is little evidence that lenders ignore these obligations, managers sometimes structure financing arrangements as though they believe they do. The second reason results from a firm's desire to borrow more than would be permitted under existing debt covenants.

STRUCTURING OFF-BALANCE-SHEET FINANCING

Chapter 4 defined liabilities as present obligations of an entity to transfer assets or provide services to other entities in the future as a result of past transactions and events. Many off-balance-sheet financings fall into one of two categories that accounting typically does not recognize as liabilities: executory contracts and contingent obligations.

Executory Contracts Firms may sign contracts promising to pay defined amounts in the future in return for future benefits. For an obligation to qualify as an accounting liability, the firm must have received a *past* or *current* benefit. If the firm will receive benefits only in the future and has not received past or current benefits, accounting treats the obligation as an **executory contract**. Firms typically do not recognize executory contracts as liabilities.

Example 1 Operating lease commitments, discussed in **Chapter 11**, are a common example of an executory contract. If United Airlines (United) wants to acquire additional aircraft, it could borrow the needed funds and purchase the aircraft. This arrangement places additional debt on United's balance sheet. Instead, United signs an operating lease agreement in which it agrees to pay the aircraft owner certain amounts each year for 12 years. The aircraft has an estimated service life of 18 years. United paints its name on the aircraft, uses the aircraft in operations, and makes the required lease payments. The assumption underlying an operating lease is that United receives benefits when it uses the aircraft, not when it initially signs the lease. That is, United has future benefits, not past or current benefits. Thus, United obtains financing for some aircrafts without showing a liability on its balance sheet.

Example 2 Louisiana-Pacific Corporation and Weyerhaeuser Company (forest products companies) need additional pulp-processing capacity. Each firm could borrow the needed funds and build its own manufacturing plant. Instead, they form a joint venture in which each firm agrees to use half of the new plant's capacity each year for 20 years and to pay half of all operating and debt service costs. The joint venture uses the purchase commitments of the two firms to obtain a loan to build the facility. Accounting views the purchase commitments as executory contracts—all benefits occur in the future—and therefore neither firm will recognize a liability for its portion of the loan. The loan will appear as a liability on the balance sheet of the joint venture.¹

Contingent Obligations As an alternative to borrowing and using a particular asset as collateral, a firm might obtain cash by selling (transferring) an asset to a purchaser (transferee). In some cases, the arrangement requires the seller to pay cash to the purchaser under certain conditions. For example, if the asset generates less cash for the purchaser than anticipated, the arrangement may require the seller to make a cash payment to the purchaser. There are at least two accounting questions about this arrangement:

1. Should the transferor account for the transfer of the asset as a sale or as a secured borrowing?
2. If the transferor accounts for the transfer as a sale, how should it account for the obligation to make a future cash payment if certain conditions are met?

We present two examples to illustrate these arrangements now, and return to these questions later in the chapter.

Example 3 Great Deal extends credit to its customers to purchase televisions, stereos, and other electronic items. Great Deal could borrow from a bank, using its accounts receivable as collateral, and use the cash collections from the receivables to repay the bank loan with interest. Alternatively, Great Deal could sell its receivables to the bank, for an amount that reflects both the expected defaults and the cost of the collections work required of the bank. If Great Deal accounts for this transaction as a sale, it will recognize no incremental debt on the balance sheet.

¹These firms would likely structure the arrangement so that neither firm controls the joint venture and therefore neither firm would prepare consolidated financial statements with the joint venture. As **Chapter 14** explains more fully, consolidating the financial statements of the joint venture with those of either joint owner would result in reporting the loan to finance the pulp-processing plant on the consolidated balance sheet of the consolidating firm.

Example 4 Seagram Company, a distiller of liquors, ages its whiskeys for approximately 10 years. The firm must pay the costs to produce the whiskey and store it during the aging process. Using the whiskey as collateral, Seagram could finance the costs incurred during the aging process and recognize the liability. Alternatively, Seagram could sell the whiskey to a bank and agree to oversee the aging process on the bank's behalf. At the completion of the aging, Seagram helps the bank find a buyer but is not responsible for ensuring that a sale occurs. Under this arrangement, the bank bears the risk of changes in whiskey selling prices. Seagram will probably treat this transaction as a sale, with no incremental debt on the balance sheet.

TREATMENT OF OFF-BALANCE-SHEET FINANCING ARRANGEMENTS UNDER U.S. GAAP AND IFRS

U.S. GAAP and IFRS provide guidance for determining whether a given financing arrangement is reported as a liability on the balance sheet or is disclosed in the notes. The authoritative guidance tends to be tied to specific facts and circumstances of a particular arrangement. Two themes emerge in this authoritative guidance:

- Identifying the party that enjoys the economic benefits of the resource in each transaction and bears the economic risk of holding it.
- Identifying the party that obtains financing.

If the entity that *obtains* financing also controls the benefits and risks, the typical outcome is the recognition of a liability by that entity. If the entity that *provides* the financing also controls the benefits and risks, the typical outcome is no recognition of a liability by the entity needing financing. The financing remains off-balance-sheet.

Example 5 Refer to **Example 1**. Recall from **Chapter 11** that the criteria for a capital lease are intended to identify the entity, either lessor or lessee, that enjoys the benefits and incurs the risk of the leased asset. When the *lessor* enjoys the benefits and incurs the risk, the lease is an operating lease, and no liability appears on the lessee's balance sheet. When the *lessee* enjoys the benefits and incurs the risk, the lease is a capital lease and a lease liability appears on the lessee's balance sheet.

Example 6 Refer to **Example 2**. If the lender relies only on the purchase commitments, neither Louisiana-Pacific nor Weyerhaeuser guarantees repayment of the loan, and neither firm controls the joint venture, then no liability will appear on either company's balance sheet. If, however, the lender requires at least one of the firms to guarantee payment of the loan, the guarantor(s) would recognize the fair value of the guarantee (under both U.S. GAAP and IFRS).² If loan default becomes probable, then the guarantor(s) would apply **loss contingency** accounting (U.S. GAAP) or **provision** accounting (IFRS) and recognize a liability.

Example 7 Refer to **Example 3**. Assume that Great Deal must transfer additional receivables to the lender if any receivables become uncollectible or if interest rates rise above a specified level. Great Deal bears both credit risk and interest rate risk and should treat the transfer of receivables as a loan. Therefore, debt would appear on Great Deal's balance sheet.

Example 8 Refer to **Example 4**. If Seagram guarantees a selling price that pays the lender both the original purchase price and a reasonable return over that amount, Seagram bears the economic risk and must show a liability on its balance sheet. If, however, the lender does not require Seagram to guarantee a minimum selling price, the lender bears both the risk of market prices changes and the uncertainty about the quality of the whiskey. In this case, Seagram will likely record the transaction as a sale and not a loan.

TRANSFER OF RECEIVABLES IN EXCHANGE FOR CASH

A transfer of receivables is a common form of financing. **Example 3** and **Example 7** involve transfers of receivables to a bank. In more complicated financing arrangements, some firms sell

²The guarantee might affect whether one of the two guarantors is determined to be in control of the joint venture and would consolidate it.

batches of receivables to a legally separate entity whose sole purpose is to hold the receivables and issue claims on their cash flows. Such an entity is called a **special purpose entity (SPE)** or a **variable interest entity (VIE)**.³ The firm that sells the receivables is the *transferor*. The SPE or VIE issues securities to investors in return for cash, and then transfers the cash to the transferor in payment for the receivables. The investors receive payments out of the cash flows from the transferred receivables. This process is called a **securitization** of the receivables. **Exhibit 12.1** depicts a simplified securitization structure.

Securitization transactions may include continuing involvement of the transferor with the transferred receivables. For example, the transferor may continue to service the receivables by collecting cash and pursuing customers who do not pay on time or at all. The transferor may also retain some credit risk or interest rate risk. U.S. GAAP and IFRS rules apply to transfers like the one illustrated in **Exhibit 12.1**. If the transferor accounts for the transaction as a sale, it will recognize assets it controls and liabilities it has incurred.⁴

SUMMARY OF THE ACCOUNTING TREATMENT OF OFF-BALANCE-SHEET FINANCING ARRANGEMENTS

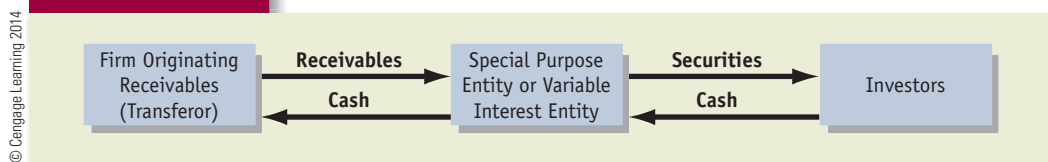
The accounting for transfers of receivables has come under the scrutiny of standard setters, as has the accounting for transfers involving inventories and research and development arrangements.⁵ A goal in formulating appropriate reporting standards is to reflect the economic effect of such arrangements. The trend in recent standards is to recognize more obligations as liabilities.

► PROBLEM 12.1 FOR SELF-STUDY

Off-balance-sheet financing. Weyerhaeuser, a forest and paper products company, wishes to obtain \$75 million of additional financing. It creates a legally separate trust to which, on January 1, it transfers cutting rights to a mature timber tract. The trust will pay for these rights by borrowing \$75 million for five years from a bank, with interest at 8% per year. The trust promises to make equal installment payments on December 31 of each year for five years. The trust will harvest and sell timber each year to obtain cash to make the loan payments and to pay operating costs. At current prices, the value of the standing wood is 10% more than the amounts the trust will need to service the loan and to pay ongoing operating costs. The future selling price of timber will determine the trust's actions, as follows:

(continued)

EXHIBIT 12.1 Simplified Structure of Receivables Securitization



³Chapter 14 discusses the conditions under which firms must prepare consolidated financial statements with such entities.

⁴The guidance is FASB, *Statement of Financial Accounting Standards No. 166*, "Accounting for Transfers of Financial Assets," 2009 (**Codification Topic 860**); *Statement of Financial Accounting Standards No. 156*, "Accounting for Servicing of Financial Assets," 2006 (**Codification Topic 860**); IASB, *International Accounting Standard 39*, "Financial Instruments: Recognition and Measurement," revised 2003.

⁵The U.S. GAAP guidance for transfers involving inventories is FASB, *Statement of Financial Accounting Standards No. 49*, "Accounting for Product Financing Arrangements," 1981 (**Codification Topic 470**); for research and development arrangements, the U.S. GAAP guidance is FASB, *Statement of Financial Accounting Standards No. 68*, "Research and Development Arrangements," 1982 (**Codification Topic 730**). The IFRS guidance is more general; some of it is contained in the IFRS standard that describes consolidation policy, IASB, *International Financial Reporting Standard 10*, "Consolidated Financial Statements," 2011.

- If timber prices decline, the trust will harvest more timber and sell it to service the debt and to pay operating costs.
- If timber prices increase, the trust will harvest timber at the level originally planned and invest cash receipts that exceed debt service and operating costs. At the end of five years, the trust will distribute any cash and uncut timber to Weyerhaeuser.

Weyerhaeuser will guarantee the debt if cash flows from selling the timber are inadequate to pay operating costs and service the debt. The bank has the right to inspect the tract at any time and to replace Weyerhaeuser's forest-management personnel with managers of its own choosing if it feels that Weyerhaeuser is mismanaging the tract.

- a. Identify Weyerhaeuser's economic returns and risks in this arrangement.
- b. Identify the bank's economic returns and risks in this arrangement.
- c. Should Weyerhaeuser treat this transaction as a loan (a liability on its balance sheet) or as a sale (with no liability on its balance sheet)? Explain your reasoning. Assume that Weyerhaeuser will not consolidate the trust.

RETIREMENT BENEFITS

Some employers provide retirement benefits to their employees, primarily pensions and health insurance. This section discusses two issues related to such benefits:

- The measurement and recognition of the cost of retirement plans;
- The reporting of the assets and obligations of retirement plans.

The discussion focuses on the accounting for pension plans but similar principles apply to health insurance benefits. Provisions in U.S. GAAP and IFRS are based on similar principles, although some of the specific requirements differ.⁶

RECOGNITION OF PENSION EXPENSE

The employer must recognize the cost of pension plans. An important conceptual question is whether the employer should recognize this cost as an expense:

1. During the time employees render services, or
2. When retired employees receive benefits.

The first approach records the cost of pension benefits as **deferred compensation** in the period when employees render services. This approach is similar to the accounting for current compensation, such as salaries and wages.

The second approach records the cost of pension benefits as an expense after employees render services. Typically accounting records a cost as an expense when a firm receives services (when employees earn pension benefits) regardless of when a firm actually settles the obligation (when employees receive the benefits). Both U.S. GAAP and IFRS require firms to recognize the cost of pension benefits as an expense during the years when employees render services.

PENSION PLAN STRUCTURE AND DEFINITIONS

Exhibit 12.2 presents the structure of a typical pension plan.

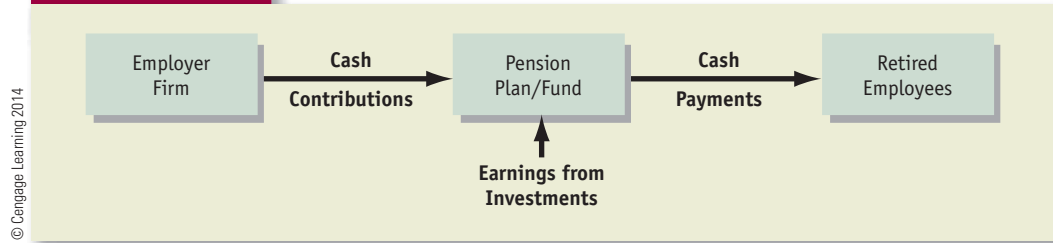
The elements of the structure are as follows:

1. The employer sets up a pension plan that is legally separate from the employer. The plan specifies the eligibility of employees, the promises to employees, the method of funding, and

⁶FASB, *Statement of Financial Accounting Standards No. 158*, "Employers' Accounting for Defined Benefit Pension and Other Postretirement Plans, 2006 (**Codification Topic 715**); IASB, *International Accounting Standard 19*, "Employee Benefits," revised 2011.

EXHIBIT 12.2

Structure of a Typical Pension Plan



the plan administrator. Some employers promise to contribute a certain amount to the plan each period for each employee (usually based on an employee's salary). **Defined contribution plans** do not specify the benefits employees will receive during retirement. These amounts depend on the investment performance of the plan. In most defined contribution plans, employees have a say regarding how the administrator invests the amounts contributed on their behalf. **Defined benefit plans** specify the retirement benefit that employees will receive. Employer contributions plus earnings from investments made with those contributions pay the specified benefit. For reasons discussed later, the assets in a defined benefit plan will usually not equal the liabilities of the plan, resulting in an overfunded or underfunded plan.

- Each period the employer transfers cash to the pension plan. The plan is usually organized as a trust, and the plan administrator serves in a fiduciary capacity for the benefit of employees. The employer cannot access assets in the plan, except under specific conditions that vary by jurisdiction. The employer does not consolidate the assets and liabilities of the plan with the company's own assets and liabilities. The pension expense recognized for a particular period equals the cash contribution for defined contribution plans. For defined benefit plans, the cash contribution rarely equals the pension expense.⁷
- The pension plan invests the cash it receives from the employer and pays cash to retired employees each period. The assets in the plan change each period as follows:

Assets at Beginning of the Period	
+/- Actual Earnings on Pension Plan Investments	
+ Contributions Received from the Employer	
- Payments to Retirees	
= Assets at End of the Period	

U.S. GAAP and IFRS require firms to report pension plan assets at fair value. Thus, actual earnings from pension plan investments include interest and dividends plus realized and unrealized changes in the fair value of plan investments.

- The pension plan computes the amount of the pension liability each period. The liability for a defined contribution plan equals the assets in the plan. The computation of the liability for a defined benefit plan uses the pension benefit formula underlying the plan. This formula requires management to estimate employee turnover, mortality, interest rates, and other *actuarial estimates* or *actuarial assumptions*. The liability of the pension plan equals the present value of the expected benefits that will be paid to employees. The discount rate that firms use in measuring the liability is the rate of return on high-quality, fixed-income investments with a maturity approximately equal to the maturity of the pension benefits.

The typical benefit formula for a defined benefit plan takes into account length of service and salary. For example, the employer might promise to pay an employee an annual pension equal to a stated percentage (say, 2% per year worked) of the employee's average annual salary during his or her five highest-paid working years. In this example, an employee with 40 years of service receives an annual pension equal to 80% of that employee's average salary during the five highest-paid working years.

⁷We discuss the measurement of pension expense for defined benefit plans later in this section.

U.S. GAAP defines the primary measurement of the pension liability as the **projected benefit obligation (PBO)**. The PBO is the present value of the amount the pension plan expects to pay to employees during retirement based on accumulated service and the expected *future* salary level. IFRS uses similar measurement methods but defines the pension liability as the **present value of a defined benefit obligation**.

A related measure of the pension obligation, found in U.S. GAAP and not in IFRS, is the **accumulated benefit obligation (ABO)**. The ABO is the present value of amounts the pension plan expects to pay to employees during retirement based on accumulated service and *current* salary at the time of measuring the liability. The difference between the PBO and the ABO relates to expected future salary increases. The PBO incorporates them, whereas the ABO does not.

U.S. GAAP and IFRS require firms to base both pension expense and the funded status on the PBO. The liability of the pension plan usually changes each period as follows:

	PBO at Beginning of the Period
+	Increase in PBO for Interest
+	Increase in PBO for Current Employee Service (Service Cost)
+/-	Actuarial Gains and Losses
-	Payments to Retirees
=	PBO at End of the Period
	PBO at End of the Period

The projected benefit obligation changes for several reasons:

- Interest accrues as the payment dates approach (that is, payments are one year nearer to becoming cash outflows).
- Employees work another period and earn rights to a larger pension.
- Changes in assumptions about employee turnover, mortality, and similar factors.

SUMMARY OF PENSION PLAN STRUCTURE AND DEFINITIONS

The following points summarize the discussion of pension plan structure:

1. The employer firm and the pension plan are legally separate entities, each with its own financial reports.
2. The balance sheet of a defined benefit plan includes the assets in the plan measured at fair value and the projected benefit obligation measured using the current interest rate on high-quality, fixed-income investments. The difference between the assets and the liabilities indicates the extent to which a pension plan is overfunded or underfunded.
3. The total pension expense over time equals the amount of cash contributed to the pension plan. Each period, however, the cash contribution rarely equals pension expense for that period for a defined benefit plan.

ILLUSTRATION OF THE ACCOUNTING BY A DEFINED BENEFIT PLAN

Exhibit 12.3 presents the assets and liabilities of a simplified pension plan for its first four years.

2010 Assume this firm begins operations on January 1, 2010, and establishes a defined benefit pension plan. On December 31, 2010, the firm computes the present value of retirement benefits earned by employees during the year based on one year of service and the expected future salary levels on which the plan will pay benefits to employees. These computations consider estimates of employee turnover, mortality, and other actuarial factors. The computation of the projected benefit obligation uses an 8% discount rate. In 2010, the employer contributes \$100 cash, called the **service cost**, which is equal to the increase in the projected benefit obligation for current employees' services. The assets in the plan equal the liabilities at the end of 2010. That is, the plan is fully funded.

2011 During 2011 the projected benefit obligation increases by \$8 ($= 0.08 \times \100) because the benefits earned during 2010 are one year closer to being paid. This amount is called the **interest cost**. The projected benefit obligation also increases by \$120 for current employee

EXHIBIT 12.3**Illustrative Data for Defined Benefit Pension Plan**

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	Pension Plan Assets			
	2010	2011	2012	2013
Pension Plan Assets at Beginning of Year	\$ 0	\$100	\$228	\$379
Contributions from Employer	100	120	140	160
Income from Investments	0	8	11	30
Payments to Retirees	0	0	0	0
	<u>\$100</u>	<u>\$228</u>	<u>\$379</u>	<u>\$569</u>
	Pension Plan Liabilities			
	2010	2011	2012	2013
Pension Plan Liability at Beginning of Year	\$ 0	\$100	\$228	\$421
Increase from Current Service Cost	100	120	140	160
Increase from Interest	0	8	18	34
Changes in Actuarial Assumptions	0	0	5	0
Change Due to Prior Service	0	0	30	0
Payments to Retirees	0	0	0	0
Pension Plan Liability at End of Year	<u>\$100</u>	<u>\$228</u>	<u>\$421</u>	<u>\$615</u>

service, suggesting that the firm added employees during 2011, or that projected salary levels increased above those anticipated at the end of 2010. The plan invested the cash on hand on January 1, 2011. The actual return on plan assets was 8%, resulting in investment income of \$8. The employer contributes \$120 to the plan. The assets in the plan at the end of 2011 equal the projected benefit obligation (that is, the pension plan remains fully funded). This result occurs because (1) the assets in the pension plan equal the projected benefit obligation at the beginning of the year, (2) the rate of return on assets equals the discount rate used to compute the projected benefit obligation, (3) the employer's contribution equals the increase in the projected benefit obligation for current services, and (4) there were no changes in actuarial estimates of employee turnover, mortality, or other factors. A divergence in any one of the first three or a change in the fourth will cause the amount of plan assets to differ from the projected benefit obligation.

2012 In 2012, the illustration changes as follows:

- The actual rate of return on pension investments is 4.8% (= $\$11/\228), not the 8% earned in 2011. The expected return on assets is \$18 (= $0.08 \times \$228$).
- Changes in actuarial assumptions increase the projected benefit obligation by \$5.
- The employer changes the pension benefit formula and agrees to give employees credit for the time they have already worked. This retroactive benefit increases the projected benefit obligation by \$30. The cost of this increased benefit is called **prior service cost**.

We continue to use an 8% discount rate to compute the projected benefit obligation. The service cost increases during 2012 to \$140 because of more employees or higher projected salary levels.

Exhibit 12.3 shows that the assets in the pension plan at the end of 2012 are less than the projected benefit obligation by \$42 (= $\$379 - \421). The pension plan is underfunded by \$42, as follows:

Actual Return on Investments of \$11 Is Less Than the \$18 Expected	\$ 7
Change in Actuarial Assumptions	5
Change in Pension Benefit Formula Increasing Prior Service Cost	30
Total Amount of Underfunding	<u>\$42</u>

In a defined benefit plan, the employer is responsible for the underfunding. Thus, the employer must increase its cash contribution, pension investments must generate higher returns, or changes in the projected benefit obligation in the future must offset the increased obligation.

2013 During 2013, pension fund investments earn 8% (= \$30/\$379), up from 4.8% in 2012. There are no changes in the interest rate used to compute the projected benefit obligation (8%), in actuarial assumptions, or in the pension benefit formula. Thus, at the end of 2013, the pension plan is underfunded by \$46 (= \$569 – \$615) as follows:

Deficient Return on Assets of \$7 in 2012 plus Deficient Return on Assets of \$4 [= 0.08 × (\$7 + \$5 + \$30)] in 2013 Due to Lost Earnings on \$7 Deficient Return in 2012 and Lost Earnings Because Employer Did Not Immediately Contribute Cash for the Change in Actuarial Assumptions and Prior Service Cost from 2012	\$11
Change in Actuarial Assumptions Carried Over from 2012	5
Change in Pension Benefit Formula Increasing Prior Service Cost Carried Over from 2012	<u>30</u>
Total Amount of Underfunding	<u>\$46</u>

The pension plan carries forward the effects of underfunding in that liabilities continue to increase for interest cost. Because assets are less than liabilities, investment returns are less than the interest cost. The claim on the employer’s assets helps explain the accounting for pension arrangements discussed in the next section.

ILLUSTRATION OF EMPLOYER ACCOUNTING FOR A DEFINED BENEFIT PLAN

The accounting for a defined benefit pension plan considers the balance sheet, the measurement of pension expense, and the relation between pension accounting on the balance sheet and the income statement.

Reporting the Funded Status on the Balance Sheet Both U.S. GAAP and IFRS require employers to recognize the funded status of a defined benefit plan as either an asset (pension plan is overfunded) or as a liability (pension plan is underfunded).⁸ A firm with multiple plans nets the pension assets and pension liabilities for each plan and may further combine all overfunded plans and separately combine all underfunded plans. A firm with both net underfunded plans and net overfunded plans would show both an asset and a liability. IFRS refers to this amount as the **net defined benefit liability (asset)**, depending on whether the plan is underfunded or overfunded. The firm debits or credits Other Comprehensive Income, a shareholders’ equity account that is not part of net income, for the offsetting amount. We continue the example summarized in **Exhibit 12.3**.

2010 and 2011 Pension assets equal pension liabilities at the end of 2010 and 2011. The net asset (or liability) is zero. Therefore, the employer’s balance sheet shows neither an asset nor a liability.

2012 At the end of 2012, the pension plan is underfunded by \$42, and the employer records the following journal entry:

December 31, 2012	
Other Comprehensive Income: Performance and Actuarial Losses	12
Other Comprehensive Income: Prior Service Cost	30
Liability for Pension Benefits	42
	<i>(continued)</i>

⁸FASB, *Statement of Financial Accounting Standards No. 158*, “Employers’ Accounting for Defined Benefit Pension and Other Postretirement Plans,” 2006 (**Codification Topics 715 and 958**). IASB, *International Accounting Standard 19*, “Employee Benefits,” revised 2011.

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		+42		-12	OCI → AOCI
				-30	OCI → AOCI

To recognize both a liability for an underfunded pension plan of \$42 and offsetting entries in other comprehensive income.

The \$12 debit to Other Comprehensive Income includes the deficient earnings on pension investments of \$7 and the actuarial loss of \$5. U.S. GAAP requires that the firm amortize these charges to Other Comprehensive Income.⁹

Recognition of Pension Expense in the Income Statement Pension expense (or credit) for a defined benefit plan¹⁰ under U.S. GAAP comprises the following:

	Interest Cost (the increase in the obligation because of the passage of time)
+	Service Cost (the increase in the obligation because of an additional year of employee service)
-	Expected Return on Pension Investments
+/-	Amortization of Performance and Actuarial Gains and Losses
+/-	Amortization of Prior Service Cost
=	Net Pension Expense (or Credit)

Including interest cost as a positive amount and the expected return on pension investments as a negative amount illustrates the extent to which expected earnings from pension investments cover the increase in the pension liability. If the expected return is large enough, the firm will report a pension credit to income, not an expense. When pension assets equal pension liabilities and the expected rate of return on pension investments equals the discount rate used, then the amounts on these two lines offset each other. This was the case for 2011 in the previous example. When the interest cost exceeds the expected return on pension investments, as occurred in 2012, either employer contributions or future earnings on pension plan investments must make up the difference. Computing pension expense using the expected return (not the actual return) rests on the view that pension plans should take a long-term perspective and generate earnings from investments based on a long-term expected rate of return. Annual deviations from this long-term expected rate should not flow through to net income. Finally, including service cost as an increase in expense is similar to treating salaries and wages as expenses.

IFRS requirements for the recognition of pension cost differ from the requirements of U.S. GAAP in three ways:

1. Under IFRS, service cost includes both the increase in the obligation because of an additional year of employee service and the effects of any change in the obligation that arises because of a plan amendment. The latter, which U.S. GAAP refers to as prior service cost, is expensed immediately and not amortized.
2. Pension cost under IFRS does not include separate amounts for interest cost and expected return on plan assets. Instead, it includes an amount equal to net interest on the overfunded or underfunded amount. This net interest combines interest income on plan assets and interest cost on the defined benefit obligation. Interest income on plan assets is analogous to the expected return amount under U.S. GAAP, although the details of the calculation differ.
3. Under IFRS, actuarial gains and losses plus the difference between interest income on plan assets and the actual return on plan assets are viewed as plan rerevaluations. They are included in other comprehensive income.

⁹The rules for amortization of these amounts are complex and beyond the scope of this book.

¹⁰Pension expense for a defined contribution plan equals the employer's contribution to the plan.

SUMMARY OF ACCOUNTING FOR DEFINED BENEFIT PENSION PLANS

Under both U.S. GAAP and IFRS, the funded status of the defined benefit plan on the employer's balance sheet mirrors the funded status on the books of the pension plan. Differences between pension assets and pension liabilities relate to funding policies of the employer, investment performance, changes in actuarial assumptions, and changes in the pension benefit formula. Pension plans measure and report assets at fair values and measure and report liabilities using a current market interest rate for high-quality, fixed-income investments. Thus, the amounts reported on the balance sheets of the employer and the pension fund reflect value changes as they occur.

Both U.S. GAAP and IFRS require employers to record pension expense (or credit) that includes service cost, measures of return on plan assets and interest cost on plan liabilities, and other components that differ between the two sets of authoritative guidance. Under U.S. GAAP, employers include unamortized performance and actuarial gains and losses and unamortized prior service cost in other comprehensive income. Firms amortize these items and include them in pension expense. Under IFRS, amounts included in other comprehensive income are not amortized.

OTHER POSTRETIREMENT BENEFIT PLANS

The accounting and reporting of health care and other postretirement plans follow the concepts and procedures discussed and illustrated for defined benefit pension plans. The liability for the underfunded health care obligation may exceed the liability for underfunded pensions. This higher liability occurs because the projected rate of increase in health care costs is higher than that for salaries and because some employers do not make cash contributions to cover their postretirement health care obligations.¹¹

INTERPRETING RETIREMENT BENEFIT DISCLOSURES

Firms report extensive information about their retirement plans in notes to the financial statements. We illustrate certain of these disclosures taken from the notes to the financial statements of Intertel Corporation, a U.S. computer manufacturer, for the year ended December 31, 2013.

Exhibit 12.4 shows the disclosures related to the funded status of Intertel's pension plans for two recent years. The underfunded amounts appear in noncurrent liabilities on the balance sheet at the end of 2012 (\$156 million) and 2013 (\$170 million). The amounts that Intertel includes in accumulated other comprehensive income represent unamortized net actuarial losses. Intertel had no unamortized prior service costs in 2012 or 2013.

Exhibit 12.5 shows the components of Intertel's net pension cost in 2012 and 2013. The interest cost and the expected return on pension plan assets largely offset.

Exhibit 12.6 presents some of the estimates Intertel used in accounting for its pension plans. Intertel decreased the discount rate it uses to compute the pension obligation, from 6.7% at the end of 2012 to 6.1% at the end of 2013. A smaller discount rate increases the pension obligation. Intertel maintained the expected return on plan assets at 4.5%. Intertel increased the assumed rate of compensation increases from 5.0% to 5.1%. The increase in compensation also increases the pension obligation.

From **Exhibit 12.4** and **Exhibit 12.5**, we can break down the items affecting the unamortized actuarial loss included in accumulated other comprehensive income:

	Pension Plans
Unamortized Actuarial Loss at End of 2012	\$(268)
Actuarial Loss for 2013	(123)
Amortization of Actuarial Loss for 2013	18
Unamortized Actuarial Loss at End of 2013	<u>\$(373)</u>

¹¹The regulatory and tax treatments of employer contributions to postretirement benefit arrangements, including pensions, are jurisdiction-specific. In the United States, both the regulatory treatment and the tax treatment of employer contributions differ substantially between postretirement health plans and defined benefit pension plans. Regulations and tax treatments create stronger incentives (and in the United States, requirements) to contribute to defined benefit pension plans than to postretirement health plans.

EXHIBIT 12.4**Intertel Corporation
Funded Status of Selected Defined Benefit Pension Plans
(amounts in millions of US\$)**

	<u>Pension Plans</u>	
	2013	2012
Benefit Obligation, January 1	\$567	\$542
Service Cost	38	12
Interest Cost	34	35
Actuarial Loss (Gain)	123	(10)
Benefits Paid	<u>(23)</u>	<u>(12)</u>
Benefit Obligation, December 31	<u>\$739</u>	<u>\$567</u>
Fair Value of Plan Assets, January 1	\$411	\$303
Actual Return on Assets	18	20
Employer Contributions	163	100
Benefits Paid	<u>(23)</u>	<u>(12)</u>
Fair Value of Plan Assets, December 31	<u>\$569</u>	<u>\$411</u>
Unfunded Status as of December 31	<u>\$170</u>	<u>\$156</u>
Amounts recognized in balance sheet:		
Noncurrent Liabilities	\$170	\$156
Accumulated Other Comprehensive Income	373	268

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EXHIBIT 12.5**Intertel Corporation
Elements of Pension Expense
(amounts in millions of US\$)**

	<u>Pension Plans</u>	
	2013	2012
Service Cost	\$ 38	\$ 12
Interest Cost	34	35
Expected Return on Assets	(18)	(13)
Amortization of Prior Service Cost	—	—
Amortization of Prior Actuarial Loss	<u>18</u>	<u>22</u>
Net Expense	<u>\$ 72</u>	<u>\$ 56</u>

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EXHIBIT 12.6**Intertel Corporation
Actuarial Assumptions for Pension Plans**

Actuarial Assumptions:	<u>Pension Plans</u>	
	2013	2012
Discount Rate	6.1%	6.7%
Expected Return on Assets	4.5%	4.5%
Rate of Compensation Increase	5.1%	5.0%

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The actuarial loss for 2013 appears in the analysis of the change in the pension obligation in **Exhibit 12.4**. **Exhibit 12.5** includes the amount of the amortization of the actuarial loss.

JOURNAL ENTRY TO RECORD CHANGE IN BENEFIT OBLIGATIONS

Intertel's journal entry to record the change in the underfunded pension obligation for 2013 is as follows:

2013

Pension Expense	72	
Other Comprehensive Income (Actuarial Loss: \$373 – \$268)	105	
Pension Liability (Noncurrent Liability: \$170 – \$156)		14
Cash		163

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-163		+14		-72	IncSt → RE
				-105	OCI → AOCI

To record pension expense, pension funding, and the change in balance sheet accounts related to the pension plan.

Exhibits 12.4 and **12.5** provide the amounts for the pension contribution and pension expense, respectively. The entry for the underfunded pension liability reported in noncurrent liabilities adjusts the amount on the balance sheet at the end of 2012 to the amount at the end of 2013. The entries in Other Comprehensive Income reflect the change in unamortized prior actuarial losses during 2013.

► PROBLEM 12.2 FOR SELF-STUDY

Interpreting retirement plan disclosures. **Exhibit 12.7** presents the elements of pension, health care, and life insurance expense for Microgen Incorporated for 2011, 2012, and 2013. **Exhibit 12.8** presents the funded status of pension, health care, and life insurance plans for 2012 and 2013 and the actuarial assumptions made.

- Refer to the disclosures in **Exhibit 12.8** of Microgen's benefit obligation for its principal pension plans. What is the likely explanation for the actuarial gain of \$3,205 million in 2013?
- Refer to the disclosures in **Exhibit 12.8** for the amount of prior service cost for both pension plans and health care plans. What is the likely explanation for the increase in prior service cost for 2013?
- Evaluate the performance of Microgen's pension and health care plan investments in 2012 and 2013 relative to expectations.
- Why does Microgen include the net funded asset for its principal pension plans in both assets and liabilities on its balance sheet?
- Prepare an analysis that explains the change in the prior service cost included in shareholders' equity from \$831 at the end of 2012 to \$2,060 at the end of 2013 for Microgen's principal pension plans and from \$2,046 at the end of 2012 to \$5,700 at the end of 2013 for its health care plans.
- Prepare an analysis that explains the change in the net actuarial loss (gain) included in shareholders' equity for Microgen's principal pension plans (from a loss of \$2,162 at the end of 2012 to a gain of \$4,974 at the end of 2013) and for its health care plans (from a gain of \$31 at the end of 2012 to a loss of \$210 at the end of 2013).

(continued)

EXHIBIT 12.7

Microgen Incorporated
Elements of Pension (Principal Plans) and Health Care Expense
 (amounts in millions of US\$)
 (Problem 12.2 for Self-Study)

	Principal Pension Plans			Health Care Plans		
	2013	2012	2011	2013	2012	2011
Service Cost	\$ 1,355	\$ 1,402	\$ 1,359	\$ 286	\$ 229	\$ 243
Interest Cost	2,416	2,304	2,248	577	455	507
Expected Return on Assets	(3,950)	(3,811)	(3,885)	(125)	(127)	(138)
Prior Service Cost	241	253	256	603	363	326
Actuarial Loss	693	729	351	(17)	64	70
Net Expense	<u>\$ 755</u>	<u>\$ 877</u>	<u>\$ 329</u>	<u>\$1,324</u>	<u>\$ 984</u>	<u>\$1,008</u>

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EXHIBIT 12.8

Microgen Inc.
Funded Status of Pension (Principal Plans) and Health Care Plans
 (amounts in millions of US\$)
 (Problem 12.2 for Self-Study)

	Principal Pension Plans		Health Care Plans	
	2013	2012	2013	2012
Benefit Obligation, January 1	\$43,293	\$43,331	\$ 8,262	\$ 9,084
Service Cost	1,355	1,402	286	229
Interest Cost	2,416	2,304	577	455
Plan Amendments	1,470	80	4,257	—
Actuarial Loss (Gain)	(3,205)	(1,514)	320	(707)
Participant Contributions	173	162	47	43
Benefits Paid	(2,555)	(2,472)	(796)	(810)
Other	—	—	30	(32)
Benefit Obligation, December 31	<u>\$42,947</u>	<u>\$43,293</u>	<u>\$ 12,983</u>	<u>\$ 8,262</u>
Fair Value of Plan Assets, January 1	<u>\$54,758</u>	<u>\$49,096</u>	<u>\$ 1,710</u>	<u>\$ 1,619</u>
Actual Return on Assets	7,188	7,851	221	222
Employer Contributions	136	121	622	636
Participant Contributions	173	162	47	43
Benefits Paid	(2,555)	(2,472)	(796)	(810)
Fair Value of Plan Assets, December 31	<u>\$59,700</u>	<u>\$54,758</u>	<u>\$ 1,804</u>	<u>\$ 1,710</u>
Net Funded Asset (Liability)	<u>\$16,753</u>	<u>\$11,465</u>	<u>\$(11,179)</u>	<u>\$(6,552)</u>
Recognized in:				
Noncurrent Assets	\$20,190	\$15,019	\$ —	\$ —
Current Liabilities	(111)	(106)	(675)	(681)
Noncurrent Liabilities	(3,326)	(3,448)	(10,504)	(5,871)
Net Asset (Liability) Recognized	<u>\$16,753</u>	<u>\$11,465</u>	<u>\$(11,179)</u>	<u>\$(6,552)</u>
Recognized in Shareholders' Equity:				
Prior Service Cost	\$ 2,060	\$ 831	\$ 5,700	\$ 2,046
Net Actuarial Loss (Gain)	\$(4,974)	\$ 2,162	\$ 210	\$ (31)
Actuarial Assumptions:				
Discount Rate	6.34%	5.70%	6.31%	5.75%
Expected Return on Assets	8.50%	8.50%	8.50%	8.50%
Rate of Compensation Increase	5.00%	5.00%	—	—
Initial Health Care Cost Trend Rate	—	—	9.10%	9.20%
Ultimate Health Care Cost Trend Rate	—	—	6.00%	5.00%
Number of Years to Ultimate Trend Rate	—	—	18 years	7 years

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- g. Give the journal entry that Microgen made on its books to recognize pension expense, pension funding, and the change in the net funded asset for 2013.
- h. Give the journal entry that Microgen made on its books to recognize health care expense and funding and the change in the net funded liability for 2013.

INCOME TAXES

Income tax expense affects assessments of profitability as much as any other expense. A common ratio for analyzing the effect of income taxes on profitability is the **effective tax rate**, computed as income tax expense¹² divided by financial reporting income before income taxes:

$$\text{Effective Tax Rate} = \frac{\text{Income Tax Expense}}{\text{Pretax Book Income}}$$

Consider the data for Intertel and Great Deal in **Exhibit 12.9**.

Intertel's profit margin ratio is higher than Great Deal's: 26.3% versus 4.4%. Part of that higher profit margin is due to Intertel's lower effective tax rate: 28.6% versus 36.5%. Income tax is one factor that causes Intertel's profit margin to be higher than Great Deal's. Other factors include other expenses associated with the operating structures and business models of the two enterprises.¹³

This section discusses the measurement of income tax expense and how information about income tax positions appears in the notes to the financial statements. We consider both U.S. GAAP and IFRS, which provide similar authoritative guidance.

MEASUREMENT OF INCOME TAX EXPENSE

The amount of income taxes imposed by the government is the amount of income tax payable. Income tax payable does not equal income tax expense. The amounts of revenues and expenses recognized for financial reporting purposes will usually differ from the amounts of revenues and expenses reported for income tax purposes. In the discussion that follows, we use these terms:

- *Book purposes* and *tax purposes* to distinguish the financial statements from the tax return.
- *Book income* to refer to financial statement income and *taxable income* to refer to income on the tax return.
- *Book basis* to refer to the unamortized cost of an item for financial reporting and *tax basis* to refer to the unamortized cost of an item for tax reporting.

EXHIBIT 12.9

Effective Income Tax Rates and Profit Margin Data

	Intertel	Great Deal
Effective Tax Rate	28.6%	36.5%
Profit Margin (= Net Income/Revenues)	26.3%	4.4%

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¹²Firms that apply U.S. GAAP sometimes use the term *provision for income taxes* instead of *income tax expense* in their financial reports. See the **Glossary**. In U.S. GAAP, *provision* means an expense; in IFRS, *provision* means a liability.

¹³Factors influencing profit margins are discussed in **Chapter 7**.

The difference between book income and taxable income arises from two factors.

1. **Permanent differences.** Book income includes revenues or expenses that taxable income never includes. An example in the United States is interest revenue on certain municipal bonds.
2. **Temporary differences.** Book income includes revenues and expenses in one period, whereas taxable income includes them in a different period. A common example is depreciation on long-lived assets.

Firms use taxable income as the base for computing **income tax payable**. Taxable income excludes permanent differences and uses the accounting methods that income tax laws require or permit firms to use for tax reporting. The number and nature of permanent differences and temporary differences are jurisdiction-specific.

Income tax expense is the amount reported in calculating book income. Should income tax expense equal:

1. The income taxes actually payable each period based on taxable income?
2. The income taxes actually payable each period plus (minus) the income taxes a firm expects to pay (save) in the future when temporary differences between book income and taxable income of the current period reverse?

Advocates of the first approach view income taxes similar to other taxes, such as property taxes. Governments define the tax base (for example, assessed value of property) and apply a rate to this base to measure the taxes due each period.

Advocates of the second approach focus on two financial reporting objectives: recognizing the amount of taxes payable in the current year and recognizing **deferred tax assets** and **deferred tax liabilities** for the future consequences of temporary differences. Under this approach, a temporary difference that implies a future tax deduction gives rise to a deferred tax asset. A temporary difference that implies a future increase in income tax payable gives rise to a deferred tax liability. Income tax expense is based on book income, not taxable income. Note that permanent differences never reverse, never affect cash outflows for income taxes, and therefore never affect income tax expense for any period. The second approach is the basis used by both U.S. GAAP and IFRS.¹⁴

ILLUSTRATION OF TEMPORARY DIFFERENCES

Exhibit 12.10, which shows data for Burns Corporation for a six-year period, illustrates some of the issues in accounting for income taxes for a firm with temporary differences. Burns Corporation acquires equipment that cost \$120,000 and that has a six-year life, with no expected salvage value. Columns (1) and (5) show that Burns Corporation's income *before depreciation expense and income tax expense* is \$100,000 for each of the six years of the asset's life.

Columns (1) through (4) show data from the income tax return of Burns Corporation for each of the six years. The firm uses an allowable depreciation method under the tax code, which results in accelerated depreciation deductions relative to the straight-line depreciation method. Column (3) shows the amount of taxable income after subtracting accelerated depreciation. Column (4) shows the amount of income taxes payable for each year, assuming an income tax rate of 40%.

The data in Columns (5) through (7) come from the financial statements of Burns Corporation. Column (6) shows depreciation expense computed using the straight-line method. Column (7) shows the amounts of pretax book income.

Assume that, contrary to U.S. GAAP and IFRS, Burns Corporation reported income tax expense equal to income tax payable, so that income tax expense equals the amounts in Column (4), resulting in the hypothetical net income numbers in Column (8). The caption on Column (8) does not say *Net Income* because U.S. GAAP and IFRS do not measure income tax expense this way. Column (8) shows pretax book income minus income taxes payable.

¹⁴FASB, *Statement of Financial Accounting Standards No. 109*, "Accounting for Income Taxes," 1996 (**Codification Topic 740**); IASB, *International Accounting Standard 12*, "Income Taxes," 1996, 2001. The two standards have broadly similar requirements, but there are differences that are beyond the scope of this book.

Note the behavior of the hypothetical income numbers in Column (8): up 11.6% from the first year to the second year, down 11.3% from the second year to the third year, and down in each of the next three years by varying amounts. Recall that one purpose of the income statement is to assist a user of financial reports to understand *why* income behaves as it does. If operations remain the same and tax rates do not change, the user of financial reports will expect net income to remain the same. The numbers in Column (8), however, portray instability, even though Burns Corporation does the same thing and its performance remains constant, over the six-year period. If income tax expense equaled income taxes payable, reported earnings would vary from year to year simply because temporary differences cause book income to differ from taxable income.

Exhibit 12.11 summarizes the computation of income tax expense for each year. Income tax expense in Column (7) equals income taxes currently payable in Column (2) plus (minus) the income tax the firm expects to pay (save) in the future on the temporary depreciation difference in Column (5). Total income tax expense of \$192,000 for the six years equals total cash payments for income taxes of \$192,000. The pattern of expense recognition differs from the pattern of cash outflows.

U.S. GAAP and IFRS require firms to calculate income tax expense based on pretax book income. Thus, when pretax book income remains the same, \$80,000 ($= \$100,000 - \$20,000$) in this example, income tax expense also remains the same, \$32,000 ($= 0.40 \times \$80,000$). Net income is \$48,000 ($= \$80,000 - \$32,000$) each year, as Column (10) shows. This example assumes there are no permanent differences.

RECORDING INCOME TAX EXPENSE

Exhibits 12.10 and **12.11** illustrate that income tax expense differs from income tax payable each year. The difference in the first year gives rise to a deferred tax liability. The temporary difference associated with accelerated depreciation for tax purposes and straight-line depreciation for book purposes means that Burns Corporation will pay lower income taxes in the early years of the asset's life. This temporary difference will reverse over the entire six years, resulting in higher taxes in later years. The journal entry to record income taxes for the first year is as follows:

December 31, First Year

Income Tax Expense	32,000	
Income Tax Payable		30,400
Deferred Tax Liability		1,600

The credit to Deferred Tax Liability represents the income taxes saved (today) because Burns Corporation claimed more depreciation for tax purposes than for book purposes. Burns Corporation will make similar entries for the second and third years, adding \$7,360 to Deferred Tax Liability for the second year and \$1,120 for the third year. The balance in Deferred Tax Liability at the end of the third year is \$10,080 ($= \$1,600 + \$7,360 + \$1,120$). This amount equals the 40% tax rate times the cumulative difference between tax depreciation of \$85,200 ($= \$24,000 + \$38,400 + \$22,800$) and book depreciation of \$60,000 ($= \$20,000 \text{ per year} \times 3 \text{ years}$).

The temporary differences for depreciation begin to reverse in the fourth year. The journal entry to recognize income tax expense for the fourth year is as follows:

December 31, Fourth Year

Income Tax Expense	32,000	
Deferred Tax Liability	2,240	
Income Tax Payable		34,240

Depreciation recognized for book purposes in the fourth year of \$20,000 exceeds the depreciation deduction for tax purposes of \$14,400. The portion of Deferred Tax Liability that is currently payable is \$2,240 [$= 0.40 \times (\$20,000 - \$14,400)$]. Burns Corporation will make similar entries in the fifth year, reducing (debiting) Deferred Tax Liability by \$2,720 [$= 0.40 \times (\$20,000 - \$13,200)$], and in the sixth year, reducing Deferred Tax Liability by \$5,120 [$= 0.40$

EXHIBIT 12.10
Burns Corporation
Computation of Income Taxes over Six-Year Life of Equipment
(Equipment Costs \$120,000 and Has Six-Year Life)

Year	Information from (or Based on) Tax Returns			Accounting Not Allowed by U.S. GAAP and IFRS			Accounting Required by U.S. GAAP and IFRS		
	Income Before Depreciation and Taxes [1]	Depreciation Deduction on Tax Return [2]	Taxable Income [3]	Pretax Income = \$100,000 – \$20,000 [7]	Pretax Income Less Income Taxes Payable [8]	Percentage Change in Column [9]	Pretax Income Less Income Taxes at 40% of Pretax Income [10]	Percentage Change in Column [11]	
1	\$100,000	\$ 24,000	\$ 76,000	\$ 80,000	\$ 49,600	11.6%	\$ 48,000	—	
2	100,000	38,400	61,600	80,000	55,360	—	48,000	—	
3	100,000	22,800	77,200	80,000	49,120	–11.3%	48,000	—	
4	100,000	14,400	85,600	80,000	45,760	–6.8%	48,000	—	
5	100,000	13,200	86,800	80,000	45,280	–1.0%	48,000	—	
6	100,000	7,200	92,800	80,000	42,880	–5.3%	48,000	—	
Totals		<u>\$120,000</u>	<u>\$480,000</u>	<u>\$480,000</u>	<u>\$288,000</u>		<u>\$288,000</u>		

[1] = Given [3] = [1] – [2] [5] = Given [7] = [5] – [6] [9] = ([8] this year/[8] last year) – 1
 [2] = Given [4] = 0.40 × [3] [6] = \$120,000/6 [8] = [7] – [4] [10] = (1.00 – 0.40) × [7]

EXHIBIT 12.11**Burns Corporation
Summary Computation of Income Tax Expense**

Year (1)	Income Taxes Payable (2)	Tax Depreciation (3)	Book Depreciation (4)	Temporary Difference (5)	40% of Temporary Difference (6)	Income Tax Expense (7)
1	\$ 30,400	\$ 24,000	\$ 20,000	\$ 4,000	\$ 1,600	\$ 32,000
2	24,640	38,400	20,000	18,400	7,360	32,000
3	30,880	22,800	20,000	2,800	1,120	32,000
4	34,240	14,400	20,000	(5,600)	(2,240)	32,000
5	34,720	13,200	20,000	(6,800)	(2,720)	32,000
6	37,120	7,200	20,000	(12,800)	(5,120)	32,000
Totals	<u>\$192,000</u>	<u>\$120,000</u>	<u>\$120,000</u>	<u>\$ 0</u>	<u>\$ 0</u>	<u>\$192,000</u>

Column (5) = Column (3) – Column (4).

Column (6) = 0.40 × Column (5).

Column (7) = Column (2) + Column (6).

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× (\$20,000 – \$7,200)]. The reductions in the Deferred Tax Liability in these three years total \$10,080 (= \$2,240 + \$2,720 + \$5,120), resulting in a zero balance at the end of the sixth year. Total lifetime depreciation amounts are the same for both financial reporting and tax reporting: \$120,000; only the timing differs. **Exhibit 12.12** illustrates the entries for the six years in the Deferred Tax Liability T-account.

► PROBLEM 12.3 FOR SELF-STUDY

Computing income tax expense. Wade Corporation acquires a machine on January 1 of the current year, costing \$80,000 and having a four-year service life and zero salvage value. Wade deducts depreciation on its income tax return as follows:

(continued)

EXHIBIT 12.12**Burns Corporation
Deferred Tax Liability Account
(amounts with check mark appear on the balance sheet)**

Deferred Tax Liability			
		0	✓ Balance at Beginning of First Year
		1,600	[1] Entry for First Year
		1,600	✓ Balance at End of First Year
		7,360	[2] Entry for Second Year
		8,960	✓ Balance at End of Second Year
		1,120	[3] Entry for Third Year
		10,080	✓ Balance at End of Third Year
Entry for Fourth Year	[4] 2,240		
		7,840	✓ Balance at End of Fourth Year
Entry for Fifth Year	[5] 2,720		
		5,120	✓ Balance at End of Fifth Year
Entry for Sixth Year	[6] 5,120		
		<u>0</u>	✓ Balance at End of Sixth Year

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- 33% of the cost of the machine in first year;
- 44% in second year;
- 15% in third year;
- 8% in fourth year.

The firm uses the straight-line method for financial reporting. Income before depreciation and income taxes is \$100,000 each year, and the income tax rate is 40%.

- a. Compute the amount of income taxes currently payable for each year.
- b. Compute the amount of income tax expense for each year.
- c. Give the journal entries for income taxes for each year.

A FURTHER LOOK AT FINANCIAL REPORTING REQUIREMENTS FOR INCOME TAXES

The illustration for Burns Corporation in the previous section showed that income tax expense each period equals pretax book income multiplied by the income tax rate. In this example, income tax expense is \$32,000 ($= 0.40 \times \$80,000$) each year. Income tax expense of Burns Corporation also equals income taxes payable plus the change in Deferred Tax Liability. For example, income tax expense for the first year equals current income taxes payable of \$30,400 plus the \$1,600 increase in Deferred Tax Liability. The change in Deferred Tax Liability each year is the tax effect of the temporary differences between depreciation for book reporting and tax reporting.

U.S. GAAP and IFRS require a more complex procedure for accounting for income taxes than we illustrate for Burns Corporation. The complexities include:

1. Income tax rates change over time, so the deferred tax liability need not represent the amount of taxes the firm actually pays later.
2. Some temporary differences create deferred tax assets. A deferred tax asset arises when a firm recognizes an expense earlier for financial reporting than for tax reporting. For example, firms provide for estimated uncollectible accounts in their financial statements in the period when they recognize sales on account, but they deduct uncollectible accounts on their tax returns when they determine particular customers' accounts are uncollectible. As another example, firms provide for estimated warranty costs on their financial statements in the year they sell warranted products; but the tax deduction occurs later when they make expenditures for warranty repairs.
3. Firms recognize deferred tax assets only to the extent that they expect to generate sufficient taxable income to realize the future tax savings. U.S. GAAP requires using a **deferred tax asset valuation allowance** to reduce the balance in the Deferred Tax Asset account to the amount the firm expects to realize in tax savings in the future. IFRS requires that firms recognize the expected realizable amount of deferred tax assets, with explanatory disclosures.

Thus, the Deferred Tax Asset and Deferred Tax Liability accounts on the balance sheet can change each period for the following reasons:

1. Temporary differences originate or reverse during the current period.
2. Income tax rates expected to apply in future periods when temporary differences reverse change during the current period.
3. A firm's expectations of future taxable income change. These expectations affect whether a firm can realize its deferred tax assets by reducing future tax payments.

The example for Burns Corporation in **Exhibit 12.10** illustrates only the first factor, temporary differences. In such cases, we can measure income tax expense using pretax book income amounts and add or subtract the difference between income tax expense and income tax payable to deferred tax asset or deferred tax liability accounts. Because the second and third factors often occur, U.S. GAAP and IFRS require firms to measure income tax expense following a procedure more complex than the one illustrated for Burns Corporation.

INTERPRETING DISCLOSURES OF INCOME TAXES

Exhibit 12.13 contains information from the disclosures in Great Deal's fiscal 2012 financial report.

The difference between the statutory and effective tax rates reflects (1) tax rate differences and (2) permanent differences between amounts reported for book income and taxable income. In fiscal 2012, Great Deal's federal statutory tax rate was 35%. Its state taxes were another 4.6%, or a 3.0% ($= 4.6\%/[1 - 0.35]$) increase in the effective tax rate after adjusting for federal tax benefits. Its effective tax rate was reduced because of its foreign operations. Great Deal reports a difference of \$42 million in income, or 1.9% reduction in its tax rate, from its foreign operations. This \$42 million reflects either differences in tax rates imposed on income generated by Great Deal's foreign (non-U.S.) subsidiaries as compared to U.S. tax rates or permanent differences between items included in taxable income and book income in those foreign subsidiaries.

In its disclosure of deferred taxes, Great Deal reports the following information pertaining to current income taxes payable and deferred taxes:

	2012	2011
Current	\$832	\$717
Deferred	(30)	(43)
Income Tax Expense	<u>\$802</u>	<u>\$674</u>

From this information, we can conclude that Great Deal made the following summary journal entry to recognize income taxes in fiscal 2012:

Income Tax Expense	802	
Deferred Tax Assets/Liabilities	30	
Current Income Taxes Payable		832

Great Deal's disclosure shows the net change in deferred taxes, not the specific deferred tax assets and deferred tax liabilities debited or credited. Great Deal would maintain detailed records about all deferred tax asset and deferred tax liability accounts, and its internal records would reflect this detail.

Exhibit 12.14 shows the components of Great Deal's deferred tax assets and deferred tax liabilities.

From **Exhibit 12.14**, Great Deal's deferred tax assets were \$885 million as of February 27, 2013. Great Deal also reports a deferred tax asset valuation allowance equal to \$151 million. This amount indicates that Great Deal expects to be unable to realize, in the form of future tax deductions, \$151 million of the \$885 million of deferred tax assets. The valuation allowance increased between 2011 and 2012, from \$79 million to \$151 million, or \$72 million.

Great Deal reports total deferred tax liabilities of \$608 million at the end of fiscal 2012, of which \$381 million pertains to property and equipment. This amount likely reflects the tax effects of the difference in depreciation methods described in the Burns Corporation example.

EXHIBIT 12.13

Great Deal Income Tax Disclosures Year Ended February 27, 2013

	%	\$ millions
Federal Income Tax at Statutory Rate	35.0%	\$768
State Income Taxes, Net of Federal Income Tax Benefit	3.0%	66
Benefit from Foreign Operations	(1.9%)	(42)
Other	<u>0.5%</u>	<u>10</u>
Effective Income Tax Rate	<u>36.5%</u>	<u>\$802</u>

EXHIBIT 12.14**Great Deal
Disclosures of Deferred Taxes**

	2012	2011
DEFERRED TAX ASSET		
Accrued Property Expenses	\$ 275	\$ 297
Deferred Revenue	150	115
Compensation and Benefits	189	192
Net Operating Loss Carryforwards	211	150
Other	60	84
Total Deferred Tax Assets	<u>885</u>	<u>838</u>
Valuation Allowance	(151)	(79)
Total Deferred Tax Assets After Valuation Allowance	<u>734</u>	<u>759</u>
DEFERRED TAX LIABILITY		
Property and Equipment	(381)	(383)
Goodwill and Intangible Assets	(196)	(192)
Other	(31)	(47)
Total Deferred Tax Liabilities	<u>(608)</u>	<u>(622)</u>
Net Deferred Tax Assets	<u>\$ 126</u>	<u>\$ 137</u>
Included in the Following Line Items on the Balance Sheet:		
Other Current Assets	\$ 244	\$ 236
Other Assets	19	28
Other Long-Term Liabilities	(137)	(127)
Net Deferred Tax Assets	<u>\$ 126</u>	<u>\$ 137</u>

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Great Deal reports a net deferred tax asset of \$126 million, included on its balance sheet in Other Current Assets (\$244 million), Other Assets (\$19 million), and Other Long-Term Liabilities (\$137 million).

► PROBLEM 12.4 FOR SELF-STUDY

Working backward to components of book and taxable income. Dominiak Company reports the following information for financial and tax reporting for a year:

Depreciation Expense for Financial Reporting	\$270,000
Pretax Book Income for Financial Reporting	160,000
Income Tax Expense for Financial Reporting	36,000
Income Tax Payable for Tax Reporting	24,000

The combined federal and state statutory income tax rate is 40%. Permanent differences result from municipal bond interest that appears as revenue for book purposes but is exempt from federal and state income taxes. Temporary differences result from the use of accelerated depreciation for tax purposes and the straight-line method for financial reporting.

Reconstruct the income statement for financial reporting and for tax reporting for the year, identifying temporary differences and permanent differences.

SUMMARY OF ACCOUNTING FOR INCOME TAXES

The central questions in accounting for the tax effects of temporary differences between book and taxable income are: when do they originate, and when do they reverse? In measuring income tax expense, U.S. GAAP and IFRS require recognition of the tax effect when temporary differences originate. Any difference between income tax expense and income taxes payable for a given reporting period results in a deferred tax asset or deferred tax liability.

SOLUTIONS TO SELF-STUDY PROBLEMS

SUGGESTED SOLUTION TO PROBLEM 12.1 FOR SELF-STUDY

(Weyerhaeuser; off-balance-sheet financing.)

- Weyerhaeuser receives an immediate benefit of \$75 million cash on January 1. Weyerhaeuser retains a residual interest in the cash and uncut timber at the end of five years. Weyerhaeuser's principal risk is that cash flows from cutting and selling timber will be inadequate to service the debt and pay operating costs, and Weyerhaeuser will have to make debt service payments.
- The bank has rights to a future revenue stream of 8% of the unpaid balance of the loan and repayment of the loan as it matures. The bank bears relatively little risk because Weyerhaeuser has guaranteed the loan and because at current prices the timber will generate excess cash flows of 10%.
- Weyerhaeuser should initially recognize a liability equal to the fair value of its guarantee of the debt. The fair value of the guarantee will reflect the excess cash flows of the timber, 10% at current prices. If timber prices decrease or the quality of the timber declines such that Weyerhaeuser has to make debt service payments, then Weyerhaeuser will recognize a liability for the debt. Note: the statement of the problem asks you to assume that Weyerhaeuser does not consolidate the trust. As a practical matter, however, U.S. GAAP might require that the trust be accounted for as a variable interest entity and that Weyerhaeuser analyze its association with the trust to determine if it should consolidate the trust and include the debt to the bank as a liability on the consolidated balance sheet.

SUGGESTED SOLUTION TO PROBLEM 12.2 FOR SELF-STUDY

(Microgen; interpreting retirement plan disclosures.)

- Microgen increased the discount rate it uses to compute the present value of the benefit obligation from 5.7% to 6.34%, which decreased the liability and resulted in an actuarial gain. Another possibility is that Microgen changed some of its actuarial assumptions, and the changes decreased the liability.
- Microgen might have made plan amendments that increased the benefits provided to retired employees. The analysis of changes in the benefit obligation in **Exhibit 12.8** indicates that plan amendments increased the obligation for both pensions and health care benefits.
- The actual return on investments exceeded the expected return in each year and for each type of plan. The actual return of \$7,188 million for 2013 on Microgen's principal pension plan compares to an expected return of \$3,950 million.
- Microgen has multiple pension plans, some of which were overfunded and some of which were underfunded. Because Microgen cannot use the assets in an overfunded plan to finance the obligation in an underfunded plan, authoritative guidance requires Microgen to report both the net assets of overfunded plans and the net liabilities of underfunded plans.

e.	Principal Pension Plans	Health Care Plans
Prior Service Cost, December 31, 2012	\$ 831	\$2,046
Plus Additional Prior Service Cost for 2013	1,470	4,257
Minus Amortization of Prior Service Cost for 2013	(241)	(603)
Prior Service Cost, December 31, 2013	<u>\$2,060</u>	<u>\$5,700</u>

f.	Principal Pension Plans	Health Care Plans
Net Actuarial Loss (Gain), December 31, 2012	\$ 2,162	\$(31)
Minus Deferral of Excess of Actual Return on Investments over Expected Return for 2013: (\$7,188 – \$3,950) and (\$221 – \$125)	(3,238)	(96)
Actuarial (Gain) Loss for 2013.	(3,205)	320
Amortization of Actuarial (Loss) Gain for 2013	(693)	17
Net Actuarial Loss (Gain), December 31, 2013	<u>\$(4,974)</u>	<u>\$210</u>

g.

December 31, 2013

Pension Expense	755	
Pension Asset (Noncurrent Asset: \$20,190 – \$15,019)	5,171	
Pension Liability (Noncurrent Liability: \$3,326 – \$3,448)	122	
Other Comprehensive Income (Prior Service Cost and Amortization of Prior Service Cost: \$1,470 – \$241)	1,229	
Cash		136
Pension Liability (Current Liability: \$111 – \$106)		5
Other Comprehensive Income (Excess Return on Pension Plan Investments: \$7,188 – \$3,950)		3,238
Other Comprehensive Income (Actuarial Gain and Amortization of Actuarial Loss: \$3,205 – \$693)		3,898

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+5,171		-122		-755	IncSt → RE
-136		+5		-1,229	OCI → AOCI
				+3,238	OCI → AOCI
				+3,898	OCI → AOCI

h.

December 31, 2013

Health Care Expense	1,324	
Health Care Liability (Current Liability: \$675 – \$681)	6	
Other Comprehensive Income (Prior Service Cost and Amortization of Prior Service Cost: \$4,257 – \$603)	3,654	
Other Comprehensive Income (Actuarial Loss and Amortization of Actuarial Gain: \$320 + \$17)	337	
Other Comprehensive Income (Other)	30	
Cash		622
Health Care Liability (Noncurrent Liability: \$10,504 – \$5,871)		4,633
Other Comprehensive Income (Excess Return on Health Care Plan Investments: \$221 – \$125)		96

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-622		-6		-1,324	IncSt → RE
		+4,633		-3,654	OCI → AOCI
				-337	OCI → AOCI
				-30	OCI → AOCI
				+96	OCI → AOCI

SUGGESTED SOLUTION TO PROBLEM 12.3 FOR SELF-STUDY

(Wade Corporation: computing income tax expense.)

a.	Year	Income Before Depreciation and Income Taxes [1]	Deduction on Tax Return [2]	Taxable Income [3]	Income Tax Payable [4]
	1	\$100,000	\$26,400	\$ 73,600	\$ 29,440
	2	100,000	35,200	64,800	25,920
	3	100,000	12,000	88,000	35,200
	4	100,000	6,400	93,600	37,440
	Totals	<u>\$400,000</u>	<u>\$80,000</u>	<u>\$320,000</u>	<u>\$128,000</u>

Column [1] is given.

Column [2] = \$80,000 × 0.33 for first year, 0.44 for second year, 0.15 for third year, and 0.08 for fourth year.

Column [3] = [1] – [2].

Column [4] = 0.40 × [3].

b.

Year	Income Before Depreciation and Income Taxes [1]	Depreciation Expense [2]	Income Before Income Taxes [3]	Income Tax Expense [4]
1	\$100,000	\$20,000	\$ 80,000	\$ 32,000
2	100,000	20,000	80,000	32,000
3	100,000	20,000	80,000	32,000
4	100,000	20,000	80,000	32,000
Totals	<u>\$400,000</u>	<u>\$80,000</u>	<u>\$320,000</u>	<u>\$128,000</u>

Column [1] is given.

Column [2] = $\$80,000/4 = \$20,000$.

Column [3] = [1] - [2].

Column [4] = $0.40 \times [3]$.

c.

First Year

Income Tax Expense	32,000	
Income Tax Payable		29,440
Deferred Tax Liability		2,560

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		+29,440		-32,000	IncSt → RE
		+2,560			

To recognize income tax expense, income tax payable, and the change in deferred taxes for first year.

Second Year

Income Tax Expense	32,000	
Income Tax Payable		25,920
Deferred Tax Liability		6,080

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		+25,920		-32,000	IncSt → RE
		+6,080			

To recognize income tax expense, income tax payable, and the change in deferred taxes for second year.

Third Year

Income Tax Expense	32,000	
Deferred Tax Liability	3,200	
Income Tax Payable		35,200

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		-3,200		-32,000	IncSt → RE
		+35,200			

To recognize income tax expense, income tax payable, and the change in deferred taxes for third year.

Fourth Year

Income Tax Expense	32,000	
Deferred Tax Liability		5,440
Income Tax Payable		37,440

(continued)

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		-5,440		-32,000	IncSt → RE
		+37,440			

To recognize income tax expense, income tax payable, and the change in deferred taxes for fourth year.

SUGGESTED SOLUTION TO PROBLEM 12.4 FOR SELF-STUDY

(Dominiak Company; working backward to components of book and taxable income.)

See Exhibit 12.15.

EXHIBIT 12.15

Dominiak Company Temporary and Permanent Differences (Suggested Solution to Problem 12.4 for Self-Study)

	Financial Statements	Type of Difference	Income Tax Return
Operating Income Except Depreciation	\$ 360,000 (6)	—	\$ 360,000 (4)
Depreciation	(270,000) (g)	Temporary	(300,000) (3)
Municipal Bond Interest	<u>70,000</u> (5)	Permanent	<u>—</u>
Taxable Income			<u>\$ 60,000</u> (2)
Pretax Book Income	\$ 160,000 (g)		
Income Tax Payable at 40%			<u>\$ 24,000</u> (g)
Income Tax Expense at 40% of \$90,000 = \$160,000 - \$70,000, Which Is Book Income Excluding Permanent Differences	<u>(36,000)</u> (g)		
Net Income	<u>\$ 124,000</u> (1)		

Order and derivation of computations:

(g) Given.

(1) $\$124,000 = \$160,000 - \$36,000$.

(2) $\$60,000 = \$24,000/0.40$.

(3) Temporary difference for depreciation is $(\$36,000 - \$24,000)/0.40 = \$30,000$. Because income taxes payable are less than income tax expense, depreciation deducted on the tax return exceeds depreciation expense on the financial statements. Thus, the depreciation deduction on the tax return is $\$300,000 = \$270,000 + \$30,000$.

(4) $\$360,000 = \$300,000 + \$60,000$.

(5) Financial statement income before taxes, excluding permanent differences, is $\$90,000 = \$36,000/0.40$. Financial statement income before taxes, including permanent differences, is $\$160,000$. Hence, permanent differences are $\$160,000 - \$90,000 = \$70,000$.

(6) $\$160,000 + \$270,000 - \$70,000 = \$360,000$. See also (4), for check.

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KEY TERMS AND CONCEPTS

Off-balance-sheet financing

Executory contract

Loss contingency accounting or provision accounting

Contingent obligation (U.S. GAAP and IFRS) versus provision (IFRS)

Special purpose entity (SPE)

Variable interest entity (VIE)

Securitization

Deferred compensation

Defined contribution plan

Defined benefit plan

Projected benefit obligation (PBO)

Present value of a defined benefit obligation

Accumulated benefit obligation (ABO)	Temporary difference
Service cost	Income tax payable
Interest cost	Income tax expense
Prior service cost	Deferred tax asset
Net defined benefit liability (asset)	Deferred tax liability
Effective tax rate	Deferred tax asset valuation allowance
Permanent difference	

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

1. Review the meaning of the terms and concepts listed in Key Terms and Concepts.
2. Compare and contrast the financial statement effects of achieving off-balance-sheet financing through an executory contract versus an asset sale in which the seller of the assets will reimburse the buyer for any shortfall in collections from the purchased asset.
3. “Recognizing rights and obligations embodied in all executory contracts would eliminate a means of off-balance-sheet financing.” How might such an action confuse and possibly mislead financial statement users?
4. What role does a special purpose entity or variable interest entity serve in achieving off-balance-sheet financing involving the sale of receivables?
5. “The principal accounting issue involving deferred compensation relates to when firms recognize compensation cost as an expense.” Explain.
6. Suggest reasons why the total assets and total liabilities of a defined benefit pension plan do not appear, but their net amount does appear, on the employer’s balance sheet.
7. Over sufficiently long periods of time, why is the total amount of an employer’s pension expense equal to the cash the employer pays into a pension plan, instead of the cash the pension plan pays retired employees?
8. Under what circumstances would an employer firm report both a net pension asset and a net pension liability on its balance sheet? Why don’t U.S. GAAP and IFRS permit the firm to net these amounts and show only a single net pension asset or net pension liability?
9. When an employer firm recognizes the change in either a pension asset or pension liability for a period, the offsetting credit or debit required by U.S. GAAP is usually to Other Comprehensive Income. Why doesn’t this amount immediately affect pension expense as a credit or debit instead?
10. Describe the U.S. GAAP rationale for reducing pension expense for the return on pension investments.
11. Describe the U.S. GAAP rationale for reducing pension expense by the expected return on investments instead of the actual return.
12. “The principal issue in accounting for income taxes concerns when firms recognize the tax effects of temporary differences between income for book purposes and income for tax purposes.” Explain.
13. “One might view a deferred tax liability as an interest-free loan from the government.” Do you agree? Why or why not?
14. Under what circumstances will a firm report a deferred tax asset on the balance sheet? Under what circumstances will a firm report a deferred tax liability on the balance sheet?
15. “The required accounting for deferred taxes delays recognizing in net income the benefits and costs of temporary differences from the period when they originate to the period when they reverse.” Explain.
16. Of what value is information in the tax reconciliation about the reasons for differences between the statutory tax rate and the effective tax rate?
17. Of what value is information about the components of deferred tax assets and deferred tax liabilities, given that firms calculate income tax expense on income before taxes and not on individual revenues and expenses?

EXERCISES

- 18. Using accounts receivable to achieve off-balance-sheet financing.** Cypres Appliance Store has \$100,000 of accounts receivable on January 2, 2013. These receivables are due on December 31, 2013. The firm wants to use these accounts receivables to obtain financing.
- Prepare journal entries during 2013 for the transactions in parts (i) and (ii) below:
 - The firm borrows \$92,593 from its bank, using the accounts receivable as collateral. The loan is repayable on December 31, 2013, with interest at 8%.
 - The firm sells the accounts receivable to the bank for \$92,593. It collects amounts due from customers on these accounts and remits the cash to the bank.
 - Compare and contrast the income statement and balance sheet effects of these two transactions.
 - How should Cypres Appliance Store structure this transaction to ensure that it qualifies as a sale instead of a collateralized loan?
- 19. Using inventory to achieve off-balance-sheet financing.** Lorimar Company grows and ages tobacco. On January 2, 2013, the firm has aging tobacco in inventory with a cost of \$200,000 and a current market value of \$300,000. Lorimar wants to use this tobacco to obtain financing. The firm uses a December 31 year-end.
- Prepare journal entries during 2013 and 2014 for the transactions in parts (i) and (ii) below:
 - The firm borrows \$300,000 from its bank, using the tobacco inventory as collateral. The loan is repayable on December 31, 2014, with interest at 10% per year compounded annually. Assume zero storage costs. The firm expects to (and does) sell the tobacco on December 31, 2014, for \$363,000.
 - The firm sells the tobacco inventory to the bank for \$300,000. It promises to sell the inventory on behalf of the bank at the end of two years and remit the proceeds to the bank.
 - Compare and contrast the income statement and balance sheet effects of these two transactions.
 - How should Lorimar structure this transaction to ensure that it qualifies as a sale instead of a collateralized loan?
- 20. Preparing a summary journal entry for a defined benefit plan.** AirFlight, an aerospace manufacturer, reports the following information related to its only pension plan for 2013 (amounts in millions of U.S. dollars). AirFlight applies U.S. GAAP.

Pension Plan Assets, Beginning of 2013	\$43,484
Plus Actual Return on Investments	4,239
Plus Employer Contribution	526
Less Benefits Paid	<u>(2,046)</u>
Pension Plan Assets, End of 2013	<u>\$46,203</u>
Pension Plan Liability, Beginning of 2013	\$45,183
Plus Service Cost	908
Plus Interest Cost	2,497
Less Actuarial Gain	(960)
Less Benefits Paid	<u>(2,046)</u>
Pension Plan Liability, End of 2013	<u>\$45,582</u>
Service Cost	\$ 908
Interest Cost	2,497
Expected Return on Pension Plan Investments	(3,456)
Amortization of Actuarial Losses	<u>1,101</u>
Net Pension Expense	<u>\$ 1,050</u>

Give a single journal entry on the books of AirFlight to recognize pension expense, the pension plan contribution, and the change in the net pension asset or net pension liability for 2013. Be sure to consider needed entries to Other Comprehensive Income, supporting these entries with amounts from the disclosures above. Ignore income taxes.

- 21. Preparing a summary journal entry for a defined benefit plan.** Tasty Dish Inc., a consumer foods company, reports the following information related to its only pension plan for 2013 (amounts in millions of U.S. dollars). Tasty Dish applies U.S. GAAP.

Pension Plan Assets, Beginning of 2013	\$5,086
Plus Actual Return on Investments	513
Plus Employer Contribution	19
Less Benefits Paid	<u>(233)</u>
Pension Plan Assets, End of 2013	<u>\$5,385</u>
Pension Plan Liability, Beginning of 2013	\$5,771
Plus Service Cost	245
Plus Interest Cost	319
Less Actuarial Gain	(155)
Less Benefits Paid	<u>(233)</u>
Pension Plan Liability, End of 2013	<u>\$5,947</u>
Service Cost	\$ 245
Interest Cost	319
Expected Return on Pension Plan Investments	(391)
Amortization of Actuarial Losses	<u>167</u>
Net Pension Expense	<u>\$ 340</u>

Give a single journal entry for Tasty Dish to recognize pension expense, the pension plan contribution, and the change in the net pension asset or net pension liability for 2013. Be sure to consider needed entries to Other Comprehensive Income, supporting these entries with amounts from the disclosures above. Ignore income taxes.

- 22. Preparing a summary journal entry for a health care plan.** Reliance, an automobile manufacturer, reports the following information related to its health care plan for 2013 (amounts in millions of euros). Reliance applies U.S. GAAP.

Health Care Plan Assets, Beginning of 2013	€ 6,497
Plus Actual Return on Investments	510
Plus Employer Contribution	0
Less Benefits Paid	<u>(1,547)</u>
Health Care Plan Assets, End of 2013	<u>€ 5,460</u>
Health Care Plan Liability, Beginning of 2013	€39,274
Plus Service Cost	617
Plus Interest Cost	2,004
Less Actuarial Gain	(9,485)
Less Benefits Paid	<u>(1,547)</u>
Health Care Plan Liability, End of 2013	<u>€30,863</u>
Service Cost	€ 617
Interest Cost	2,004
Expected Return on Health Care Plan Investments	(479)
Amortization of Actuarial Losses	<u>41</u>
Net Health Care Benefits Expense	<u>€ 2,183</u>

Give a single journal entry for Reliance to recognize health care benefits expense, the health care plan contribution, and the change in the net health care benefits asset or net health care benefits liability for 2013. Be sure to consider needed entries to Other Comprehensive Income, supporting these entries with amounts from the preceding disclosures. Ignore income taxes.

- 23. Preparing journal entries for income tax expense.** Fleet Sneaks, an athletic shoe company, reports the following information about its income taxes for three recent years (amounts in millions of euros):

Components of Income Tax Expense	2013	2012	2011
Currently Payable	€775.6	€622.8	€495.4
Deferred	(26.0)	25.4	9.0
Total Income Tax Expense.	<u>€749.6</u>	<u>€648.2</u>	<u>€504.4</u>

- a. Give the journal entries that Fleet Sneaks made to record income tax expense for 2011, 2012, and 2013.
- b. Describe the likely reasons for Fleet Sneaks's pattern of taxes currently payable and deferred for each year. Assume that the deferred taxes relate primarily to retirement benefits, and that Fleet Sneaks's effective tax rate was relatively stable over 2011–2013.
24. **Preparing journal entries for income tax expense.** Marytown Energy, an electric utility, reports the following information about its income taxes for three recent years (amounts in millions of U.S. dollars):

Components of Income Tax Expense	2013	2012	2011
Currently Payable	\$ 46	\$415	\$(96)
Deferred	344	(74)	368
Total Income Tax Expense.	<u>\$390</u>	<u>\$341</u>	<u>\$272</u>

- a. Give the journal entries that Marytown Energy made to record income tax expense for 2011, 2012, and 2013.
- b. Describe the likely reasons for Marytown Energy's pattern of taxes currently payable and deferred for each year. Assume that deferred taxes relate primarily to depreciation temporary differences, and that Marytown Energy's effective tax rate was relatively stable over 2011–2013.
25. **Deriving permanent and temporary differences from financial statement disclosures.** Pownall Company reports the following information for a year:

Book Income Before Income Taxes	\$318,000
Income Tax Expense.	156,000
Income Taxes Payable for the Year	48,000
Income Tax Rate on Taxable Income.	40%

The company has both permanent and temporary differences between book income and taxable income.

- a. What is the amount of temporary differences for the year? Give the amount, and indicate whether the effect is to make book income larger or smaller than taxable income.
- b. What is the amount of permanent differences for the year? Give the amount, and indicate whether the effect is to make book income larger or smaller than taxable income.
26. **Reconstructing information about income taxes.** Lilly Company reports the following information about its financial statements and tax return for a year (amounts in euros):

Depreciation Expense from Financial Statements	€322,800
Financial Statement Pretax Book Income.	190,800
Income Tax Expense from Financial Statements	42,000
Income Taxes Payable from Tax Returns.	27,600

The government taxes taxable income at a rate of 40%. Permanent differences result from municipal bond interest that appears as revenue in the financial statements but is exempt from income taxes. Temporary differences result from the use of accelerated depreciation for tax returns and straight-line depreciation for financial reporting.

Reconstruct the income statement for financial reporting and for tax reporting for the year, identifying temporary differences and permanent differences.

- 27. Effect of temporary differences on income taxes.** Woodward Corporation purchases a new machine for \$50,000 on January 1, 2013. The machine has a four-year estimated service life and an estimated salvage value of zero. After paying the cost of running and maintaining the machine, the firm enjoys a \$25,000-per-year excess of revenues over expenses (except depreciation and taxes). In addition to the \$25,000 from the machine, other pretax income each year is \$35,000. Woodward uses straight-line depreciation for financial reporting and depreciates the machine for tax reporting using the following percentages: 33% in the first year, 44% in the second, 15% in the third, and 8% in the fourth. Depreciation is Woodward's only temporary difference. Woodward pays combined federal and local income taxes at a rate of 40% of taxable income.
- Compute the amount of income taxes currently payable for each of the four years.
 - Compute the carrying value of the machine for financial reporting and the tax basis of the machine for tax reporting at the end of each of the four years. The tax basis is the amortized cost for income tax purposes.
 - Compute the amount of income tax expense for each of the four years.
 - Give the journal entries to record income tax expense and income tax payable for 2013 through 2016.

PROBLEMS

- 28. Interpreting disclosures regarding sales of accounts receivable.** Federal Stores owns several retail store chains. On August 30, 2013, it sold all of the credit card receivables of its department store chains to Community Bank. **Exhibit 12.16** reports the sale of these receivables.
- Using information in Exhibit 12.16, discuss why the sale of credit card accounts and receivables to Community Bank likely qualified as a sale and not as a collateralized loan.
 - What are the benefits to Federal Stores, and what are the costs, of the sale of credit card accounts and receivables?
- 29. Interpreting notes on off-balance-sheet financing.** Lewis Corporation sold certain timber assets and received cash and notes receivable from the purchaser. Lewis then engaged in a transaction to convert the notes receivable into cash without recognizing a liability on the balance sheet. **Exhibit 12.17** presents the notes from Lewis' financial statements describing this transaction. Based on the disclosures in **Exhibit 12.17**, discuss the likely reasons why this transaction qualified as a sale and not as a collateralized loan.

EXHIBIT 12.16

Federal Stores Note on Sale of Receivables (Problem 28)

Sale of Credit Card Accounts and Receivables

On August 13, 2012, Federal Stores ("the Company") sold to Community Bank certain credit card accounts owned by the Company, together with related receivables balances, for approximately \$3.6 billion cash, resulting in a pretax gain of \$480 million. The net proceeds received were used to repay debt associated with various acquisitions. In connection with the sales of credit card accounts and related receivable balances, the Company and Community Bank entered into a long-term marketing and servicing agreement ("the Agreement") with an initial term of 10 years, and, unless terminated by either party as of the expiration of the initial term, an additional renewal term of three years. The Agreement provides for, among other things, (i) the ownership by Community Bank of the accounts purchased by Community Bank from the Company, (ii) the ownership by Community Bank of new accounts opened by the Company's customers, (iii) the provision of credit by Community Bank to the holders of the credit cards whose accounts were sold to Community Bank by the Company, and (iv) the servicing of the accounts by Community Bank.

EXHIBIT 12.17

**Lewis Corporation
Note on Sale of Notes Receivable
(Problem 29)**

12. Off-Balance-Sheet Arrangement

In connection with the sale of Lewis’s southern timber and timberlands in 2013, Lewis received cash of \$26.4 million and notes receivable of \$410.0 million. In order to borrow funds in a cost-effective manner, (i) Lewis contributed the \$410.0 million of notes receivable to a special purpose entity (SPE), (ii) the SPE issued to unrelated third parties \$368.7 million of bonds supported by a bank letter of credit, which are secured by the notes receivable, and (iii) the SPE distributed to Lewis, as a return of capital, \$365.8 million of the proceeds realized by the SPE from the issuance of its bonds. The SPE has no sources of liquidity other than the notes receivable, the cash flow generated by the notes receivable will be dedicated to the payment of the bonds issued by the SPE, and the SPE’s creditors will have no recourse to Lewis for the SPE’s obligations. The principal amount of the SPE’s borrowings is approximately 90% (= \$368.7/\$410.0) of the principal amount of the notes receivable contributed by Lewis to the SPE. The SPE’s assets (the notes receivable equal to \$410 million) have been removed from Lewis’ control and are not available to satisfy claims of Lewis’ creditors. The creditors of the SPE have no recourse to Lewis’s assets.

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- 30. Interpreting retirement plan disclosures.** Exhibits 12.18 and 12.19 present selected information from the notes to the financial statements of Juicy-Juice, a U.S. based beverage company, regarding its pension and health care retirement plans.
- What is the likely reason for the actuarial gains in the pension and health care obligations during 2013?
 - Did the pension plan investments perform as expected during 2012 and 2013? Explain.
 - Why is the expected return on health care assets equal to zero in each year?
 - Prepare an analysis that explains the change in prior service cost for pension plans from \$5 million at the end of 2012 to \$13 million at the end of 2013.
 - Prepare an analysis that explains the change in the net actuarial loss for pension plans from \$2,285 million at the end of 2012 to \$1,836 million at the end of 2013.
 - Prepare an analysis that explains the change in the prior service credit for health care plans from \$114 million at the end of 2012 to \$101 million at the end of 2013.
 - Prepare an analysis that explains the change in the net actuarial loss for health care plans from \$419 million at the end of 2012 to \$364 million at the end of 2013.

EXHIBIT 12.18

**Elements of Juicy-Juice’s U.S. Pension and Health Care Expense
(amounts in millions of US\$)
(Problem 30)**

	U.S. Pension Plans			Health Care Plans		
	2013	2012	2011	2013	2012	2011
Service Cost	\$ 245	\$ 213	\$ 193	\$ 46	\$ 40	\$ 38
Interest Cost	319	296	271	72	78	72
Expected Return on Assets	(391)	(344)	(325)	—	—	—
Prior Service Cost	3	3	6	(13)	(11)	(8)
Actuarial Loss	<u>164</u>	<u>106</u>	<u>81</u>	<u>21</u>	<u>26</u>	<u>19</u>
Net Expense	<u>\$ 340</u>	<u>\$ 274</u>	<u>\$ 226</u>	<u>\$126</u>	<u>\$133</u>	<u>\$121</u>

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EXHIBIT 12.19

**Funded Status of Juicy-Juice’s U.S. Pension and Health Care Plans
(amounts in millions of US\$)
(Problem 30)**

	U.S. Pension Plans		Health Care Plans	
	2013	2012	2013	2012
Benefit Obligation, January 1	\$5,771	\$ 4,968	\$ 1,312	\$ 1,319
Service Cost	245	213	46	40
Interest Cost	319	296	72	78
Plan Amendments	11	—	—	(8)
Actuarial Loss (Gain)	(163)	517	(34)	(45)
Benefits Paid	(233)	(241)	(75)	(74)
Other	(3)	18	49	2
Benefit Obligation, December 31	<u>\$5,947</u>	<u>\$ 5,771</u>	<u>\$ 1,370</u>	<u>\$ 1,312</u>
Fair Value of Plan Assets, January 1	\$5,086	\$ 4,152	\$ —	\$ —
Actual Return on Assets	513	477	—	—
Employer Contributions	19	699	75	74
Benefits Paid	(233)	(241)	(75)	(74)
Other	(7)	(1)	—	—
Fair Value of Plan Assets, December 31	<u>\$5,378</u>	<u>\$ 5,086</u>	<u>\$ —</u>	<u>\$ —</u>
Net Funded Asset (Liability)	<u>\$ (569)</u>	<u>\$ (685)</u>	<u>\$ (1,370)</u>	<u>\$ (1,312)</u>
Recognized in:				
Noncurrent Assets	\$ 185	\$ 2,068	\$ —	\$ —
Current Liabilities	(25)	—	(100)	—
Noncurrent Liabilities	(729)	(2,753)	(1,270)	(1,312)
Net Asset (Liability) Recognized	<u>\$ (569)</u>	<u>\$ (685)</u>	<u>\$ (1,370)</u>	<u>\$ (1,312)</u>
Recognized in Shareholders’ Equity:				
Prior Service Cost (Credit)	\$ 13	\$ 5	\$ (101)	\$ (114)
Net Actuarial Loss	\$1,836	\$ 2,285	\$ 364	\$ 419
Actuarial Assumptions:				
Discount Rate	5.8%	5.7%	5.8%	5.7%
Expected Return on Assets	7.8%	7.8%	—	—
Rate of Compensation Increase	4.5%	4.4%	—	—
Initial Health Care Cost Trend Rate	—	—	9.0%	10.0%
Ultimate Health Care Cost Trend Rate	—	—	5.0%	5.0%
Number of Years to Ultimate Trend Rate	—	—	5 years	5 years

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- h. Give the journal entry that this firm would make at the end of 2013 to recognize net pension expense, pension funding, and the change in balance sheet accounts for its pension plan.
 - i. Give the journal entry that this firm would make at the end of 2013 to recognize net health care expense, health care funding, and the change in balance sheet accounts for its health care plan.
- 31. Interpreting retirement plan disclosures.** Exhibits 12.20 and 12.21 present selected information from the notes to the financial statements of Treadaway, Inc., a tire manufacturing company, regarding its U.S. pension and health care retirement plans.
- a. Refer to Exhibit 12.20. Why does the interest cost of the U.S. pension plans exceed the expected return on assets for 2011 and 2012, but these amounts are identical for 2013?

EXHIBIT 12.20**Elements of Treadaway's U.S. Pension and Health Care Expense
(amounts in millions of US\$)
(Problem 31)**

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	U.S. Pension Plans			Health Care Plans		
	2013	2012	2011	2013	2012	2011
Service Cost	\$ 103	\$ 56	\$ 41	\$ 25	\$ 23	\$ 25
Interest Cost	295	294	300	135	149	188
Expected Return on Assets	(295)	(258)	(234)	—	—	—
Prior Service Cost	59	63	71	41	43	45
Actuarial Loss	91	86	79	9	10	35
Net Expense	<u>\$ 253</u>	<u>\$ 241</u>	<u>\$ 257</u>	<u>\$210</u>	<u>\$225</u>	<u>\$293</u>

EXHIBIT 12.21**Funded Status of Treadaway's U.S. Pension and Health Care Plans
(amounts in millions of US\$)
(Problem 31)**

	U.S. Pension Plans		Health Care Plans	
	2013	2012	2013	2012
Benefit Obligation, January 1	\$ 5,407	\$ 5,191	\$ 2,629	\$ 3,218
Service Cost	103	56	25	23
Interest Cost	295	294	135	149
Plan Amendments	111	—	1	—
Actuarial Loss (Gain)	(120)	174	(110)	(532)
Participant Contributions	10	11	26	19
Benefits Paid	(409)	(334)	(255)	(260)
Other	20	15	27	12
Benefit Obligation, December 31	<u>\$ 5,417</u>	<u>\$ 5,407</u>	<u>\$ 2,478</u>	<u>\$ 2,629</u>
Fair Value of Plan Assets, January 1	\$ 3,404	\$ 3,046	\$ —	\$ —
Actual Return on Assets	478	261	—	—
Employer Contributions	567	420	233	241
Benefits Paid	10	11	26	19
Other	(409)	(334)	(255)	(260)
Fair Value of Plan Assets, December 31	<u>\$ 4,050</u>	<u>\$ 3,404</u>	<u>\$ 4</u>	<u>\$ —</u>
Net Funded Asset (Liability)	<u>\$(1,367)</u>	<u>\$(2,003)</u>	<u>\$(2,474)</u>	<u>\$(2,629)</u>
Recognized in:				
Current Liabilities	\$ (19)	\$ (736)	\$ (231)	\$ (254)
Noncurrent Liabilities	(1,348)	(1,267)	(2,243)	(2,375)
Net Asset (Liability) Recognized	<u>\$(1,367)</u>	<u>\$(2,003)</u>	<u>\$(2,474)</u>	<u>\$(2,629)</u>
Recognized in Shareholders' Equity:				
Prior Service Cost (Credit)	\$ 366	\$ 314	\$ 299	\$ 339
Net Actuarial Loss	\$ 1,252	\$ 1,646	\$ 221	\$ 340
Actuarial Assumptions:				
Discount Rate	5.75%	5.50%	5.75%	5.50%
Expected Return on Assets	8.50%	8.50%	—	—
Rate of Compensation Increase	4.04%	4.04%	—	—
Initial Health Care Cost Trend Rate	—	—	11.20%	11.50%
Ultimate Health Care Cost Trend Rate	—	—	5.00%	5.00%
Number of Years to Ultimate Trend Rate	—	—	8 years	8 years

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- b. What is the likely reason for the decline in the net expense for Treadaway's health care plans between 2011 and 2012?
 - c. Why does Treadaway show no subtraction for the expected return on investments in computing net health care expense for each year?
 - d. What are the likely reasons that Treadaway reports an actuarial gain in its pension obligation and health care obligation for 2013?
 - e. Prepare an analysis that explains the change in Treadaway's prior service cost for U.S. pension plans from \$314 at the end of 2012 to \$366 at the end of 2013.
 - f. Prepare an analysis that explains the change in Treadaway's net actuarial loss for U.S. pension plans from \$1,646 at the end of 2012 to \$1,252 at the end of 2013.
 - g. Prepare an analysis that explains the change in Treadaway's prior service cost for health care plans from \$339 at the end of 2012 to \$299 at the end of 2013.
 - h. Prepare an analysis that explains the change in Treadaway's actuarial loss for health care plans from \$340 at the end of 2012 to \$221 at the end of 2013.
 - i. Give the journal entry that Treadaway would make at the end of 2013 to recognize net pension expense, pension funding, and the change in balance sheet accounts for its pension plan.
 - j. Give the journal entry that Treadaway would make at the end of 2013 to recognize net health care expense, health care funding, and the change in balance sheet accounts for its health care plan.
- 32. Interpreting income tax disclosures. Exhibit 12.22** presents selected information from the notes to the financial statements of Catiman Limited, a manufacturer of farming equipment, for the years ending October 31, 2013, 2012, and 2011. Catiman applies U.S. GAAP.
- a. Present the journal entry to recognize Catiman's income tax expense and income taxes payable for the year ended October 31, 2012. Be sure to consider the effect on deferred tax asset and deferred tax liability accounts.
 - b. Repeat part a for the year ended October 31, 2013.
 - c. Why do state and local taxes appear as an addition in the tax reconciliation between income taxes at the statutory tax rate and income tax expense?
 - d. Catiman combines the effect of nondeductible costs and other items in its income tax reconciliation. Will nondeductible costs have the effect of increasing or decreasing the effective tax rate? Explain.
 - e. Explain why a recognized health care liability and a recognized pension liability give rise to deferred tax assets, whereas a recognized prepaid pension asset gives rise to a deferred tax liability.
 - f. Sales allowances relate to amounts that Catiman pays after the time of sale for warranty repairs, rebates, and returned equipment. Why do sales allowances give rise to a deferred tax asset?
 - g. What is the likely reason that the valuation allowance on deferred tax assets increased continually during the three years?
 - h. What is the likely explanation for the direction of the change in the deferred tax liability relating to depreciation?
 - i. Catiman leases equipment to its customers, which gives rise to a deferred tax liability. Does Catiman likely account for these leases as operating leases or as capital leases for financial reporting? Which method of accounting for these same leases does the firm likely use for tax reporting?
- 33. Interpreting income tax disclosures. Exhibit 12.23** presents information from the income tax note to the financial statements for E-Drive, a European computer manufacturer, for the years ending December 31, 2013, 2012, and 2011. E-Drive applies IFRS.
- a. Present the journal entry to recognize E-Drive's income tax expense and income taxes payable for the year ended December 31, 2012. Use a single deferred tax account instead of separate accounts for deferred tax assets and deferred tax liabilities.
 - b. Repeat part a for the year ended December 31, 2013.

EXHIBIT 12.22**Catiman's Income Tax Disclosures**
(amounts in millions of US\$)
(Problem 32)

	2013	2012	
Income Before Income Taxes	<u>\$2,174</u>	<u>\$2,107</u>	
Income Tax Expense:			
Current	\$ 736	\$ 738	
Deferred	6	(39)	
Total Income Tax Expense	<u>\$ 742</u>	<u>\$ 699</u>	
Income Taxes on Income Before Income Taxes at the Statutory Tax Rate of 35%	\$ 761	\$ 737	
State and Local Taxes (Net of Federal Tax Benefit)	22	10	
Foreign Tax Rates	8	(6)	
Nondeductible Costs and Other	(49)	(42)	
Income Tax Expense	<u>\$ 742</u>	<u>\$ 699</u>	
October 31:	2013	2012	2011
COMPONENTS OF DEFERRED TAXES			
Deferred Tax Assets:			
Health Care Liability	\$ 825	\$ 997	\$1,017
Sales Allowances	327	324	304
Pension Liability	246	250	156
Tax Loss and Tax Credit Carryforwards	132	93	55
Other	362	225	257
Valuation Allowance	(50)	(25)	(1)
Total Deferred Tax Assets	<u>\$1,842</u>	<u>\$1,864</u>	<u>\$1,788</u>
Deferred Tax Liabilities:			
Prepaid Pension Asset	\$ 845	\$ 860	\$ 778
Depreciation	214	231	263
Deferred Lease Income	144	154	159
Other	122	96	104
Total Deferred Tax Liabilities	<u>\$1,325</u>	<u>\$1,341</u>	<u>\$1,304</u>

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- Why do the amounts for deferred taxes in the entries in parts **a** and **b** not equal the change in deferred tax assets and deferred tax liabilities in **Exhibit 12.23** for each year?
- Why do local taxes appear as an addition in the reconciliation between the statutory tax rate and the effective tax rate?
- Why does E-Drive show both deferred tax assets and deferred tax liabilities for retirement benefits?
- What does the reporting of a deferred tax asset for bad debts and warranties suggest about when E-Drive recognizes expenses for these items for financial reporting and for tax reporting?
- E-Drive leases equipment to its customers, which gives rise to a deferred tax liability. Does E-Drive likely account for these leases as operating leases or as capital leases for financial reporting? Which method of accounting for these same leases does E-Drive likely use for tax reporting?
- What does the reporting of a deferred tax liability for development costs suggest about when E-Drive recognizes an expense for this item for financial reporting and for tax reporting?

EXHIBIT 12.23

**E-Drive's Income Tax Disclosures
(amounts in millions of euros)
(Problem 33)**

	2013	2012	
Income Before Income Taxes	€13,317	€12,226	
Income Tax Expense:			
Current	€ 2,177	€ 2,047	
Deferred	1,724	2,185	
Total Income Tax Expense	€ 3,901	€ 4,232	
Income Taxes at the Statutory Tax Rate of 35%	35%	35%	
Local Taxes (Net of Federal Tax Benefit)	1	1	
Foreign Tax Rates	(5)	(5)	
Other	(2)	4	
Effective Tax Rate	29%	35%	
October 31:	2013	2012	2011
COMPONENTS OF DEFERRED TAXES			
Deferred Tax Assets:			
Stock-Based and Other Compensation	€ 3,147	€ 3,022	€ 3,122
Retirement Benefits	3,002	3,039	3,908
Capitalized Development Costs	1,355	1,728	1,794
Bad Debts and Warranties	724	937	1,050
Other	3,128	3,471	4,855
Valuation Allowance	(510)	(562)	(603)
Total Deferred Tax Assets	€10,846	€11,635	€14,126
Deferred Tax Liabilities:			
Retirement Benefits	€ 2,906	€ 7,267	€ 7,057
Deferred Lease Income	1,385	964	622
Software Development Costs	505	348	381
Other	1,340	1,502	1,324
Total Deferred Tax Liabilities	€ 6,136	€10,081	€ 9,384

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- 34. Interpreting income tax disclosures.** Exhibit 12.24 presents information from the income tax note of Dime Store, a discount retailer, for its fiscal years ending January 31, 2013, 2012, and 2011. Dime Store applies U.S. GAAP.
- Present the journal entry to recognize Dime Store's income tax expense and income taxes payable for the year ended January 31, 2011. Use a single deferred tax account instead of separate accounts for deferred tax assets and deferred tax liabilities.
 - Repeat part a for the year ended January 31, 2012.
 - Repeat part a for the year ended January 31, 2013.
 - Why do the amounts for deferred taxes in the entries in parts a, b, and c not equal the changes in deferred tax assets and deferred tax liabilities in Exhibit 12.24 for each year?
 - Why do state and local taxes appear as an addition in the reconciliation between the statutory tax rate and the effective tax rate?
 - What does the reporting of a deferred tax asset for health care benefits and a deferred tax liability for pensions suggest about the funding status of Dime Store's health care and pension plans?

EXHIBIT 12.24**Dime Store's Income Tax Disclosures**
(amounts in millions of US\$)
(Problem 34)

Fiscal Year Ended January 31:	2013	2012	2011	
Income Before Income Taxes	\$4,500	\$3,862	\$3,032	
Income Tax Expense:				
Current	\$1,911	\$1,574	\$1,052	
Deferred	(201)	(122)	94	
Total Income Tax Expense	<u>\$1,710</u>	<u>\$1,452</u>	<u>\$1,146</u>	
Income Taxes at the Statutory Tax Rate of 35%	35.0%	35.0%	35.0%	
State and Local Taxes (net of federal tax benefit) . .	4.0	3.3	3.3	
Other	(1.0)	(0.7)	(0.5)	
Effective Tax Rate	<u>38.0%</u>	<u>37.6%</u>	<u>37.8%</u>	
	January 31:			
	2013	2012	2011	2010
COMPONENTS OF DEFERRED TAXES				
Deferred Tax Assets:				
Stock-Based Compensation	\$ 466	\$ 399	\$ 332	\$ 297
Self-Insured Benefits	238	217	179	143
Bad Debts	191	167	147	133
Health Care Benefits	39	39	38	42
Other	192	152	175	97
Total Deferred Tax Assets	<u>\$1,126</u>	<u>\$ 974</u>	<u>\$ 871</u>	<u>\$ 712</u>
Deferred Tax Liabilities:				
Property, Plant, and Equipment	\$1,041	\$1,080	\$1,136	\$ 806
Pensions	100	287	268	218
Other	135	114	96	84
Total Deferred Tax Liabilities	<u>\$1,276</u>	<u>\$1,481</u>	<u>\$1,500</u>	<u>\$1,108</u>

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- g. The deferred tax liability for property, plant, and equipment remained relatively steady between January 31, 2011, and January 31, 2012. What does this behavior of the deferred tax liability suggest about Dime Store's expenditures on property, plant, and equipment?
- h. What is the interpretation of the absence of a deferred tax asset valuation allowance?
35. **Behavior of deferred income tax account when a firm acquires new assets every year.** Equilibrium Company has adopted a program of purchasing a new machine each year. It uses a prescribed method of depreciation on its income tax return and straight-line depreciation on its financial statements. Each machine costs €12,000 installed and has an economic life of six years for financial reporting. Equilibrium depreciates this equipment for tax purposes using the following percentages of acquisition cost each year: 20%, 32%, 19%, 12%, 11%, and 6% of cost in each of the six years, respectively.
- Calculate the total depreciation deduction on the tax return for each of the first seven years.
 - Calculate depreciation for each year, using the straight-line method of depreciation.
 - Calculate the annual difference in depreciation charges, using the results from parts **a** and **b**.
 - Calculate the annual increase in the Deferred Tax Liability account for the balance sheet by multiplying the tax rate, 40%, by the amount found in part **c**.
 - Calculate year-end balances for the Deferred Tax Liability account on the balance sheet.
 - If Equilibrium continues to follow its policy of buying a new machine every year for €12,000, what will happen to the balance in the Deferred Tax Liability account on the balance sheet?

36. **Attempts to achieve off-balance-sheet financing.** (Adapted from materials by R. Dieter, D. Landsittel, J. Stewart, and A. Wyatt.) Shiraz Company wants to raise \$50 million cash but, for various reasons, does not want to do so in a way that results in a newly recorded liability. It is sufficiently solvent and profitable that its bank will lend up to \$50 million at the prime interest rate. Shiraz Company's financial executives have devised six different plans, described in the following paragraphs.

Plan 1: Transfer of Receivables with Recourse. Shiraz Company will transfer to Credit Company its accounts receivable, which call for payments over the next two years. These receivables pay fixed interest rates. Credit Company will pay an amount equal to the present value of the receivables, less an allowance for uncollectibles as well as a discount, because it pays now but will collect cash later. Shiraz Company must repurchase from Credit Company at face value any receivables that become uncollectible in excess of the allowance for uncollectibles. In addition, Shiraz Company may repurchase any of the receivables not yet due at face value less a discount specified by formula and based on the prime rate at the time of the initial transfer. (This option permits Shiraz Company to benefit from an unexpected drop in interest rates after the transfer.) The accounting issue is whether the transfer is a sale (Shiraz Company debits Cash, credits Accounts Receivable, and debits an expense or loss on transfer) or whether the transfer is a loan collateralized by the receivables (Shiraz Company debits Cash and credits Loan Payable at the time of transfer).

Plan 2: Product Financing Arrangement. Shiraz Company will transfer inventory to Credit Company, who will store the inventory in a public warehouse. Credit Company may use the inventory as collateral for its own borrowings, whose proceeds will be used to pay Shiraz Company. Shiraz Company will pay storage costs and will repurchase the inventory within the next four years at contractually fixed prices plus interest accrued for the time elapsed between the transfer and later repurchase. The accounting issue is whether Shiraz has sold the inventory to Credit Company, with later repurchases treated by Shiraz as new acquisitions of inventory, or whether Shiraz has borrowed from Credit Company, with the inventory remaining on Shiraz's balance sheet.

Plan 3: Purchase Contract. Shiraz Company wants a branch line of a railroad built from the main rail line to carry raw material directly to its own plant. It could borrow the funds and build the branch line itself. Instead, it will sign an agreement with the railroad to ship specified amounts of material each month for 10 years. Shiraz will pay the agreed shipping costs, even if it does not wish to take delivery of any raw material. The railroad will take the contract to its bank and, using it as collateral, borrow the funds to build the branch line. The accounting issue is whether Shiraz Company should debit an asset for future rail services and credit a liability for payments to the railroad. The alternative is to make no accounting entry except when Shiraz makes payments to the railroad.

Plan 4: Construction Joint Venture. Shiraz Company and Mission Company will jointly build a plant to manufacture chemicals that both companies need in their production processes. Each will contribute \$5 million to the project, to be named Chemical. Chemical will borrow another \$40 million from a bank, with Shiraz (but not Mission) guaranteeing the debt. Shiraz and Mission are each to contribute equally to future operating expenses and debt-service payments of Chemical. In return for guaranteeing the debt, Shiraz will have an option to purchase Mission's interest for \$20 million four years later. The accounting issue is whether Shiraz Company, which will ultimately be responsible for all debt-service payments, should recognize a liability for the funds that Chemical borrowed. Alternatively, the debt guarantee is a commitment that Shiraz Company must disclose in notes to its financial statements.

Plan 5: Research and Development Partnership. Shiraz Company will contribute a laboratory and preliminary research results about a potentially profitable gene-splicing discovery to a partnership, to be called Venture. Venture will raise funds by selling the remaining interest in the partnership to outside investors for \$2 million and by borrowing \$48 million from a bank, with Shiraz Company guaranteeing the debt. Although Venture will operate under the management of Shiraz Company, it will be free to sell the results of its further discoveries and development efforts to anyone, including Shiraz Company. Shiraz Company has no obligation to purchase any of Venture's output. The accounting issue is whether Shiraz Company should recognize a liability for the \$48 million bank loan. Would your analysis change if Shiraz Company did not guarantee the bank loan but instead had either the option to purchase or an obligation to purchase the results of Venture's work?

Plan 6: Hotel Financing. Shiraz Company owns and operates a profitable hotel. It could use the hotel as collateral for a conventional mortgage loan. Instead, it considers selling the hotel to a partnership for \$50 million cash. The partnership will sell ownership interests to outside investors for \$5 million and borrow \$45 million from a bank on a conventional mortgage loan, using the hotel as collateral. Shiraz Company guarantees the mortgage. The accounting issue is whether Shiraz Company should record a liability for the partnership's bank loan.

Discuss whether Shiraz Company should recognize any of these obligations or commitments as a liability on its balance sheet.

Marketable Securities and Derivatives

1. Understand why firms acquire securities issued by other firms and by governmental bodies and how the purpose of the investment affects the accounting for that investment.
2. Understand the accounting for short-term and long-term investments in marketable securities.
3. Understand why firms use derivative contracts to hedge the risk of changes in interest rates, exchange rates, commodity prices, and other factors.
4. Develop skills to apply hedge accounting to derivative contracts.
5. Develop the ability to apply the fair value option to marketable securities and hedging contracts.

LEARNING OBJECTIVES

Firms often acquire the **marketable securities** (bonds, preferred stock, and common stock) of other entities, including firms and governments. The following are examples of acquisitions of such securities.

Example 1 Goldman Sachs, an investment bank, has trading operations that focus on short-term price changes of securities. It acquired shares of common stock of Toyota Motor Corporation for \$45.66 per share and sold the shares three days later for \$46.25 per share.

Example 2 Southwest Airlines sells airline tickets and receives cash prior to providing transportation services. Rather than let the cash remain idle in its bank account, Southwest Airlines acquires U.S. Treasury Notes. The firm earns interest while it holds the notes. It will sell the notes when it needs the cash for operations.

Example 3 Roche Holding, a pharmaceutical company, acquires shares of common stock of several firms engaged in biotechnology research. Roche will benefit from increases in the market prices of these shares if the research efforts succeed.

Firms also enter into financial contracts with other entities to hedge various risks.

Example 4 Nestlé, a consumer foods company, purchases cocoa beans for its chocolate candy. Based on its production plan, Nestlé intends to purchase 2,000 metric tons of cocoa beans, with delivery in six months. Nestlé can either acquire the cocoa beans in the spot market six months from now or buy the beans today for delivery in six months using a *forward purchase contract*. The former arrangement exposes Nestlé to changes in cocoa bean prices, whereas the latter fixes the price today. If Nestlé locks in the price today using a forward contract, it will have saved out-of-pocket costs if cocoa bean prices increase during the next six months. It will suffer an opportunity loss if prices of cocoa beans decline.

Example 5 Siemens AG, a diversified German firm, places an order for 5,000 pumps to be manufactured in Mexico and delivered in six months. Siemens agrees to pay the supplier 64 Mexican pesos per pump. The current exchange rate between the euro and the Mexican peso is about

€0.06 = 1 peso (P1), so this implies the current price of the 5,000 pumps in euros is €19,200 (= 64 pesos \times 5,000 \times €0.06). If Siemens worries that the exchange rate will change before it takes delivery in six months, and the pumps might cost more than the current €19,200 equivalent of 320,000 pesos (P320,000) (= 64 pesos \times 5,000), Siemens could acquire a *forward currency contract* from a bank to purchase P320,000 for €25,600 in six months, implying an exchange rate of €0.08 to P1. If the euro declines in value such that the exchange rate rises above €0.08 per peso, the bank will pay Siemens the difference. If the exchange rate is €0.08 or less, the forward contract expires, and Siemens exchanges the necessary euros to purchase P320,000. Thus, Siemens benefits from the contract if the exchange rate declines below €0.08. Siemens incurs the cost for exchange rates between €0.06 and €0.08; this amount equals the return to the bank for selling the forward contract. Siemens has paid now to neutralize its risk that exchange rates exceed €0.08.

Example 6 Arcelor Mittal, a steel manufacturer, issues €50 million of variable interest rate bonds whose interest rate varies with the prime interest rate in the Netherlands, currently 6%. To fix the interest rate on its borrowing at 6%, Arcelor Mittal enters into an *interest rate swap contract* with its bank. If the variable interest rate rises above 6%, say to 8%, Arcelor Mittal must pay its bondholders interest at 8%. However, the bank will pay Arcelor Mittal 2% of the amount borrowed, fixing Arcelor Mittal's net borrowing cost at 6%. If the interest rate declines below 6%, say to 5%, Arcelor will pay its bondholders interest at 5%. However, Arcelor Mittal must pay the bank 1% of the amount borrowed, again fixing its borrowing cost at 6%.

The financial assets described in **Examples 1, 2, and 3** appear either in the current assets section or the noncurrent assets section of the balance sheet, depending on the expected holding period. These financial assets are marketable securities. The financial contracts in **Examples 4, 5, and 6** are *derivatives*, which can be either assets or liabilities, depending on movement in the financial variable (for example, interest rates or currency exchange rates) linked to the financial contract. This chapter discusses the accounting for investments in marketable securities and derivatives. The discussion proceeds as follows:

1. We begin with a general discussion of measurement issues and reporting the effects of remeasurements of marketable securities and derivatives.
2. We then describe the requirements of U.S. GAAP and IFRS to account for investments in marketable securities.
3. We next describe the requirements of U.S. GAAP and IFRS to account for derivatives.
4. We conclude by discussing and illustrating the fair value option, which provides firms with the choice to measure certain financial assets at fair value.

ISSUES IN ASSET MEASUREMENT AND INCOME RECOGNITION

As background to the accounting guidance in U.S. GAAP and IFRS for marketable securities and derivatives, we first identify the accounting issues involved in the measurement of financial assets on the balance sheet and the recognition of income on the income statement.

Example 7 To illustrate these accounting issues, assume the following:

1. **January 1, 2013.** Thames purchases 100 shares of Elseve Limited common stock for €50 per share.
2. **December 31, 2013.** The market price of Elseve's common stock is €60 per share. Thames continues to hold the shares.
3. **December 31, 2014.** The market price of Elseve's common stock is €80 per share. Thames continues to hold the shares.
4. **January 2, 2015.** Thames sells the 100 shares of Elseve Limited for €80 per share.

Setting aside requirements of U.S. GAAP and IFRS, Thames might measure the Elseve shares on its balance sheet using acquisition cost or fair value. If Thames uses fair value, it might recognize the changes in fair value either (1) in Other Comprehensive Income as the fair values change and in net income when it sells the shares or (2) in net income as fair values change. **Exhibit 13.1** illustrates the amounts on the balance sheet and in other comprehensive

EXHIBIT 13.1**Illustration of Asset Measurement and Income Recognition**

	2013	2014	2015
Method 1: Acquisition Cost			
Balance Sheet	€5,000	€5,000	€ 0
Other Comprehensive Income → Accumulated Other Comprehensive Income.	0	0	0
Net Income → Retained Earnings.	0	0	3,000
Method 2: Fair Value with Unrealized Gains and Losses in Net Income			
Balance Sheet	€6,000	€8,000	€ 0
Other Comprehensive Income → Accumulated Other Comprehensive Income.	0	0	0
Net Income → Retained Earnings.	1,000	2,000	0
Method 3: Fair Value with Unrealized Gains and Losses in Other Comprehensive Income			
Balance Sheet	€6,000	€8,000	€ 0
Other Comprehensive Income → Accumulated Other Comprehensive Income.	1,000	2,000	(3,000)
Net Income → Retained Earnings.	0	0	3,000

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income and net income under these three approaches. The arrows signify the closing of net income to Retained Earnings or the closing of Other Comprehensive Income to Accumulated Other Comprehensive Income.

METHOD 1: ACQUISITION COST MEASUREMENT

The acquisition cost method measures the investment at acquisition cost for all periods unless that investment is impaired.¹ This method results in Thames reporting marketable securities at €5,000 on the balance sheet at the end of 2013 and 2014. At the time of sale in 2015, Thames realizes a gain of €3,000 (= €8,000 – €5,000). The gain increases net income in 2015. The acquisition cost method does not *recognize* gains and losses before the time of sale. Thus, this method ignores unrealized gains and losses while a firm holds the securities. It reports only *realized* gains and losses in the income statement. The acquisition cost method does not report the fair value of securities on the balance sheet, although users of financial statements likely find fair values of marketable securities more relevant than acquisition cost.

METHOD 2: FAIR VALUE MEASUREMENT WITH UNREALIZED GAINS AND LOSSES IN NET INCOME

The second method measures and reports the securities at fair value on the balance sheet at the end of each reporting period. Thus, Thames would report the marketable securities at €6,000 on its December 31, 2013, balance sheet and at €8,000 on its December 31, 2014, balance sheet. Measuring securities at fair value provides financial statement users with information about the amount the firm would receive by selling the securities on the balance sheet date.

Changes in the fair values of the marketable securities give rise to unrealized gains (losses). The second method recognizes these unrealized gains (losses) in net income as the fair value changes and does not wait until Thames sells the shares to recognize gains (losses) in net income. Under the second method, readers of the financial statements have information about a firm's decisions to purchase, hold, and sell marketable securities reported in the income statement. Advocates of this method argue that if fair values are sufficiently reliable to measure assets, then they should be sufficiently reliable to recognize unrealized gains and losses on those assets in net income.

¹Both U.S. GAAP and IFRS require that firms assess investments in securities measured at acquisition cost for impairment. This book does not consider the details of these impairment assessments.

METHOD 3: FAIR VALUE MEASUREMENT WITH UNREALIZED GAINS AND LOSSES IN OTHER COMPREHENSIVE INCOME

The third method, like the second, reports marketable securities at fair value each period. In contrast to the second method, the third method does *not* report changes in these fair values in the income statement until the firm realizes the gain by selling the securities. Thus, net income for 2015 will include the total €3,000 realized gain on the sale of the securities.

To maintain the balance sheet equality in this illustration, the third method must have an offsetting credit for the debit to Marketable Securities arising from the increase in fair value each year. The third method increases Other Comprehensive Income, which firms close to Accumulated Other Comprehensive Income, another shareholders' equity account, at the end of each reporting period. Thus, the €1,000 increase in fair value during 2013 increases Other Comprehensive Income by €1,000 and results in a balance in Accumulated Other Comprehensive Income of €1,000 at the end of 2013. The €2,000 increase in fair value during 2014 increases Other Comprehensive Income by €2,000 and results in a balance in Accumulated Other Comprehensive Income of €3,000 (= €1,000 + €2,000) at the end of 2014. When the firm sells the securities in 2015 for €8,000, it makes the following entry:

January 2, 2015

Cash	8,000	
Other Comprehensive Income	3,000	
Marketable Securities		8,000
Realized Gain on Sale of Marketable Securities		3,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+8,000				-3,000	OCI → AOCI
-8,000				+3,000	NI → RE

To record the sale for €8,000 of marketable securities with a carrying value of €8,000 and reverse the previously recognized unrealized holding gains of €3,000 by showing a reduction in other comprehensive income, which is closed to accumulated other comprehensive income. The realized gain is €3,000. Comprehensive income (the sum of other comprehensive income and net income) shows €1,000 for 2013, €2,000 for 2014, and zero for 2015, as the realized gain and the reversal of the previously recognized holding gains net to zero for comprehensive income for 2015.

Each of these three methods has perceived advantages and disadvantages. U.S. GAAP and IFRS use a combination of these three methods in specifying the required accounting for marketable securities and for derivatives.

ACCOUNTING AND REPORTING OF MARKETABLE SECURITIES

Firms may acquire marketable securities for trading purposes, as **Example 1** describes for Goldman Sachs. Or they may acquire marketable securities as a short-term investment of excess cash, as **Example 2** describes for Southwest Airlines. The securities in both examples will be classified as current assets on the balance sheet. Firms that acquire marketable securities as a long-term investment, as **Example 3** describes for Roche, classify the **investments in securities** as a noncurrent asset. The term *marketable securities* implies the existence of a market where the securities actively trade, permitting relatively easy and reliable measurement of fair values. We discuss and illustrate the provisions of U.S. GAAP and IFRS next.²

²FASB, *Statement of Financial Accounting Standards No. 115*, "Accounting for Certain Investments in Debt and Equity Securities," 1993 (**Codification Topic 320**); IASB, *International Accounting Standard 39*, "Financial Instruments: Recognition and Measurement," revised 2003. In November 2009, the International Accounting Standards Board issued *International Financial Reporting Standard 9*, "Financial Instruments" (IFRS 9). In December 2011, the IASB deferred the effective date of IFRS 9 to January 1, 2015, with early adoption permitted. The **Appendix** to this chapter summarizes some of the changes that would be required by IFRS 9.

CLASSIFICATION OF MARKETABLE SECURITIES

U.S. GAAP and IFRS require firms to classify marketable securities into three categories:

1. **Debt securities held to maturity** (U.S. GAAP) or **held-to-maturity investments** (IFRS) are debt securities for which a firm has both the intent and the ability to hold to maturity. Held-to-maturity securities are shown on the balance sheet at their acquisition cost, subject to impairment. The accounting for held-to-maturity securities follows the first method illustrated in **Exhibit 13.1**.
2. Debt and equity securities held as **trading securities** (U.S. GAAP) or as **financial assets at fair value through profit or loss** (IFRS) are securities that the firm intends to trade for the purpose of obtaining a profit. We use the term *trading securities* to refer to these securities. Trading securities are shown on the balance sheet at fair value. Changes in the fair values of trading securities are reported each period in net income. The accounting for trading securities follows the second method illustrated in **Exhibit 13.1**.
3. Debt and equity securities held as **available-for-sale securities** (U.S. GAAP) or as **available-for-sale financial assets** (IFRS) are securities other than held-to-maturity and trading securities. Available-for-sale securities are shown on the balance sheet at fair value. Unrealized changes in the fair values of available-for-sale securities are included in other comprehensive income. Realized changes in the fair values of available-for-sale securities are included in net income when a firm sells the securities. The accounting for available-for-sale securities follows the third method illustrated in **Exhibit 13.1**.

MEASUREMENT OF SECURITIES AT ACQUISITION

A firm initially records the purchase of marketable securities at acquisition cost. Acquisition cost includes the purchase price plus any commissions, taxes, and other costs incurred.³ For example, if a firm acquires securities classified as marketable securities for \$10,000, the entry is as follows:

Marketable Securities	10,000	
Cash		10,000
To record the acquisition of marketable securities costing \$10,000.		

The investor recognizes dividends on equity securities as revenue when the firm's board of directors declares dividends. The investor recognizes interest income on debt securities when interest accrues over time. Assume that a firm holds equity securities earning \$250 through dividend declarations and debt securities earning \$300 from interest earned and that it has not yet received these amounts in cash. The entry is as follows:

Dividends and Interest Receivable	550	
Dividend Revenue		250
Interest Revenue		300
To record dividends and interest revenue from Marketable Securities.		

The measurement of marketable securities at the date of acquisition and the recording of dividends and interest present no new issues. Measuring securities after acquisition, however, departs from acquisition cost accounting.

MEASUREMENT OF SECURITIES AFTER ACQUISITION

Held-to-Maturity Debt Securities Firms sometimes acquire debt securities with the intention of holding these securities until maturity, as in the next example.

³U.S. GAAP and IFRS exclude transactions costs from the acquisition cost of trading securities, treating such costs as expenses of the period.

Example 8 Consolidated Edison (ConEd), an electric utility, has \$100 million of bonds payable outstanding that mature in five years. The utility acquires U.S. government securities whose periodic interest payments and maturity value exactly equal those on the utility's outstanding bonds. The firm intends to use the cash received from the government bonds to make required interest and principal payments on its own bonds.

U.S. GAAP and IFRS require firms to measure marketable debt securities for which firms have an intent and ability to hold to maturity at **amortized cost**. A firm initially records these debt securities at acquisition cost. This acquisition cost will differ from the maturity value of the debt if the coupon rate on the bonds differs from the effective rate on the bonds. The firm uses the effective interest method to amortize any difference between acquisition cost and maturity value over the life of the debt as an adjustment to interest revenue.⁴ The amortization procedure involves the following steps:

1. The holder of the debt securities (the investor) records interest revenue each period. The amount of interest revenue equals to the carrying value of the debt at the start of the period multiplied by the effective rate of interest. It debits the Marketable Securities account for this amount and credits Interest Revenue. Interest Revenue is closed to Retained Earnings at the end of the period.
2. If the investor receives cash each period, it debits Cash and credits the Marketable Securities account. The result of this process is a new carrying value (called the *amortized cost*) for use in the computations during the next period.

Example 9 Refer to **Example 8**. Assume the U.S. government will pay the investor \$2,500,000 each six months, equal to 2.5% of the \$100 million face amount of the bonds (5% annual coupon rate, paid in two installments each year) and will repay the \$100 million at the end of five years. Assume that at the time ConEd purchases the bonds, the effective rate of interest is 6% compounded semiannually (3% each six months). Because the effective rate (6%, compounded semiannually) is higher than the coupon rate (5%, paid semiannually), the bonds will sell for a discount. ConEd will pay \$95,734,898⁵ for these bonds. **Exhibit 13.2** shows the amortization table for these bonds for the 10 six-month periods prior to maturity in five years.

ConEd makes the following entry at the time it purchases the U.S. government securities:

Beginning of Period 1	
Marketable Securities	95,734,898
Cash	95,734,898
To record the purchase of \$100 million face amount of bonds classified as held-to-maturity securities for \$95,734,898.	

ConEd would classify this investment as a noncurrent asset on its balance sheet because it intends to hold the securities for more than one year.

At the end of the first six-month period, ConEd makes the following entry:

End of First Six-Month Period	
Marketable Securities	2,872,047
Interest Revenue	2,872,047
To recognize interest revenue on bonds: $\$2,872,047 = 0.03 \times \$95,734,898$.	

End of First Six-Month Period	
Cash	2,500,000
Marketable Securities	2,500,000
To record cash received from investment in U.S. government bonds.	

⁴The amortization procedure involves the same compound interest computations that **Chapter 11** discussed for the issuer of debt and illustrated in **Exhibit 11.2** for a loan.

⁵The amount equals the present value of an annuity of \$2.5 million for 10 periods plus the present value of \$100 million paid at the end of 10 periods, both cash flows discounted at 3% per period.

EXHIBIT 13.2**Amortization Table for \$100 Million Bonds with a Stated Interest Rate of 5% and a Market Required Yield of 6%**

Period (1)	Marketable Security at Beginning of Period (2)	Interest Revenue at 3% per Period (3)	Cash Received for Period (4)	Increase in Carrying Value of Marketable Security (5)	Marketable Security at End of Period (6)
1	\$95,734,898	\$2,872,047	\$2,500,000	\$372,047	\$ 96,106,945
2	96,106,945	2,883,208	2,500,000	383,208	96,490,153
3	96,490,153	2,894,705	2,500,000	394,705	96,884,858
4	96,884,858	2,906,546	2,500,000	406,546	97,291,404
5	97,291,404	2,918,742	2,500,000	418,742	97,710,146
6	97,710,146	2,931,304	2,500,000	431,304	98,141,450
7	98,141,450	2,944,244	2,500,000	444,244	98,585,694
8	98,585,694	2,957,571	2,500,000	457,571	99,043,265
9	99,043,265	2,971,298	2,500,000	471,298	99,514,563
10	99,514,563	2,985,437	2,500,000	485,437	100,000,000

Notes: Column (2) equals Column (6) from the previous period, except for the first period, when it equals the purchase price of the bonds.

Column (3) = $0.03 \times$ Column (2).

Column (4) is given.

Column (5) = Column (3) – Column (4).

Column (6) = Column (2) + Column (5).

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ConEd could combine the two preceding entries into one:

End of First Six-Month Period

Cash	2,500,000	
Marketable Securities	372,047	
Interest Revenue		2,872,047

ConEd makes similar entries each six months during the five years using the amounts in the amortization table in **Exhibit 13.2**. At the end of five years, the carrying value of the bonds will be \$100 million. ConEd makes the following entry at the maturity of the bonds when it receives cash:

End of Last Six-Month Period

Cash	100,000,000	
Marketable Securities		100,000,000
To record cash received at the maturity of the bonds.		

The accounting for held-to-maturity debt securities relies on the acquisition cost method illustrated in **Exhibit 13.1**. Both the initial amount recorded and adjustments for amortization each period rely on the initial purchase price of \$95,734,898. The amount that results from the application of this measurement approach is called the *amortized cost* of the held-to-maturity security. Held-to-maturity securities are also subject to impairment. That is, firms must recognize decreases in fair value (unrealized losses).⁶

⁶If the investor deems a held-to-maturity security to be impaired, the investor recognizes (debits) an impairment loss (included in net income) and reduces (credits) the balance sheet carrying value of the investment. This book does not address the U.S. GAAP and IFRS requirements for determining if an impairment loss has occurred and, if so, how to measure it.

The argument for measuring held-to-maturity debt securities at amortized cost (and ignoring changes in fair value, except for impairment losses, during the contractual term of the debt) is that changes in fair value are not relevant if the firm has the intention and ability to hold the securities to maturity. The counterargument has two elements: (1) changes in economic circumstances (such as changes in interest rates, or the credit risk of the borrower) could change the investor's willingness or ability to hold the securities until maturity, and (2) the fair value of the security reflects the opportunity cost of continuing to hold the securities.

► PROBLEM 13.1 FOR SELF-STUDY

Accounting for an investment in bonds. General Electric Capital Services (GECS) pays \$105,346 to acquire bonds of Sapra Company. GECS classifies these bonds as held-to-maturity investments. GECS will receive \$8,000 at the end of the first year, \$8,000 at the end of the second year, and \$108,000 at the end of the third year. The market-required yield at the time GECS purchased the bonds is 6%, compounded annually.

- Prepare an amortization table, similar to that in **Exhibit 13.2**, for the life of the bonds.
- Prepare journal entries that GECS would make on the date of purchase and at the end of the first year after the date of purchase.

Trading Securities Firms sometimes buy and sell (trade) debt and equity securities for short-term profit potential. An example is Goldman Sachs in **Example 1**. The term *trading* implies active and frequent buying and selling with the objective of generating profits from short-term changes in market prices. Acquisition and disposition of trading securities are usually operating activities. Investment banks, for example, often trade securities in different capital markets worldwide to take advantage of temporary differences in market prices. Other financial firms, such as insurance companies and brokerage firms, also trade securities. Manufacturers, retailers, and other nonfinancial firms also invest funds for trading purposes, but less frequently and in relatively smaller amounts than do financial services firms. Firms include trading securities in marketable securities in the current assets section of the balance sheet.

Firms initially record trading securities at fair value, excluding transactions costs.⁷ U.S. GAAP and IFRS require firms to report trading securities at fair value on the balance sheet. For these securities, active securities markets provide objective measures of fair values. Fair values provide financial statement users with the most relevant information for assessing the success of a firm's trading activities over time. The income statement reports the debit (loss) for decreases in the fair value and the credit (gain) for increases in the fair value of trading securities in an account with a title such as *Unrealized Loss* (or *Gain* or *Gains and Losses, Net*) on *Trading Securities*.

Example 10 First Insurance acquired shares of Sun Microsystems' common stock on December 28, 2013, for \$400,000 and classified them as trading securities. The fair value of these securities on December 31, 2013, was \$402,000. First Insurance sold these shares on January 3, 2014, for \$405,000. The journal entries to record these transactions appear below.

December 28, 2013

Marketable Securities	400,000	
Cash		400,000
To record acquisition of trading securities.		

December 31, 2013

Marketable Securities	2,000	
Unrealized Gain on Trading Securities		2,000
		(continued)

⁷Transactions costs are expenses as incurred for trading securities.

To measure trading securities at fair value and recognize unrealized gain in net income.

January 3, 2014

Cash	405,000	
Marketable Securities		402,000
Realized Gain on Sale of Trading Securities		3,000
To record the sale of trading securities at a gain.		

The total income from the purchase and sale of these securities is \$5,000 (= \$405,000 of cash inflows – \$400,000 of cash outflows). Measurement of trading securities at fair value reflects this income when it occurs in the form of a change in fair value, not when the investor realizes a gain or loss at the time of sale. In 2013 the income effect is \$2,000, the change in fair value during that year, and in 2014 the income effect is \$3,000, the change in fair value during that year. This accounting follows the second method illustrated in **Exhibit 13.1**.

Available-for-Sale Securities U.S. GAAP and IFRS require firms to classify marketable securities that are neither held-to-maturity securities nor trading securities as available-for-sale securities. Available-for-sale securities that the firm intends to sell within one year appear as marketable securities in the current assets section of the balance sheet. All other available-for-sale securities appear as noncurrent investments in securities. Acquisition and disposition of available-for-sale securities are usually classified as investing activities on the statement of cash flows. U.S. GAAP and IFRS require firms to report these securities at fair value on the balance sheet.

Firms initially record investments in available-for-sale securities at acquisition cost, including transaction costs.⁸ On the date of each subsequent balance sheet, firms measure available-for-sale securities at fair value. The difference between the carrying value and the fair value of the securities is the unrealized gain or loss. The unrealized gain or holding loss increases or decreases Other Comprehensive Income (a temporary shareholders' equity account, which does not appear on the balance sheet). The firm closes Other Comprehensive Income to Accumulated Other Comprehensive Income (a permanent shareholders' equity account, which appears on the balance sheet) at the end of the period. Accumulated Other Comprehensive Income includes the sum of all increases and decreases in fair value of available-for-sale securities that have not yet appeared in net income. Changes in fair value of available-for-sale securities affect net income only when the firm sells these securities. The accounting for available-for-sale securities follows the third method illustrated in **Exhibit 13.1**.

Example 11 Nike acquires common stock of Merck for \$400,000 on November 1, 2013, and designates this investment as available for sale. The fair value of these shares is \$435,000 on December 31, 2013. Nike sells these shares on August 15, 2014, for \$480,000. The journal entries to record these transactions are as follows:

November 1, 2013

Marketable Securities	400,000	
Cash		400,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+400,000					
-400,000					

To record acquisition of available-for-sale securities.

⁸If a firm classifies debt securities as available for sale, it must amortize any difference between the purchase price and the maturity value of the debt over the remaining term to maturity. This amortization makes interest revenue on these debt securities differ from the cash receipts for debt service payments made by the borrower.

December 31, 2013

Marketable Securities	35,000	
Unrealized Holding Gain on Available-for-Sale Securities		35,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+35,000				+35,000	OCI → AOCI

To measure available-for-sale securities at fair value and recognize an unrealized holding gain in other comprehensive income.

August 15, 2014

Cash	480,000	
Unrealized Holding Gain on Available-for-Sale Securities	35,000	
Marketable Securities		435,000
Realized Gain on Sale of Available-for-Sale Securities		80,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+480,000				-35,000	OCI → AOCI
-435,000				+80,000	NI → RE

To record the sale of available-for-sale securities at a realized gain and reverse the amount previously recognized as an unrealized holding gain by showing a reduction in other comprehensive income, which is closed to accumulated other comprehensive income.

The total income from the purchase and sale of these securities is \$80,000 (= \$480,000 of cash inflows – \$400,000 of cash outflows). The entire change in fair value affects net income in the year of sale, even though the balance sheet reports changes in fair value of the assets as they occur. Over the two-year period, the total effect on Comprehensive Income is \$80,000. The statements reflect this as Other Comprehensive Income of \$35,000 in the first year; Other Comprehensive reversal of holding gain of \$35,000 in the second year, and realized Net Income of \$80,000 in the second year. Total shareholders' equity increases \$35,000 in the first year and \$45,000 (= \$80,000 – \$35,000) in the second.

Firms must test available-for-sale securities for impairment. If the investor firm deems the securities to be impaired, the firm treats the unrealized loss in Accumulated Other Comprehensive Income as if it were realized. For example, if a firm determines that an available-for-sale security with a previously recognized (in other comprehensive income) loss of \$5,000 is impaired as of December 31, 2013, the journal entry would be:

December 31, 2013

Impairment Loss	5,000	
Unrealized Holding Loss on Available-for-Sale Securities		5,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
				-5,000	OCI → AOCI
				+5,000	AOCI → NI

To record an impairment loss in net income on available-for-sale securities. There is no effect on total comprehensive income, as the loss in net income is offset by the reversal of loss in other comprehensive income. Thus, there is no effect on total shareholders' equity.

The required accounting for trading securities and available-for-sale securities differs with respect to the income statement but not with respect to the balance sheet. The unrealized gain or loss on trading securities appears in net income period by period when the fair value change occurs and the cumulative amount resides in Retained Earnings. The unrealized gain or loss on available-for-sale securities appears in Other Comprehensive Income period by period, and its cumulative amount resides in the Accumulated Other Comprehensive Income account on the

balance sheet. Management can sell available-for-sale securities with unrealized gains (or losses) and transfer through net income to Retained Earnings the entire unrealized gain (or loss); that is, the entire change in fair value since the firm acquired the securities. Management can affect the timing of gain or loss recognition in net income for available-for-sale securities but not for trading securities. This timing ability is, however, asymmetric because impairment rules preclude indefinite deferral of the recognition in income of unrealized losses, but not unrealized gains. Users of the financial statements should be alert to this accounting in evaluating the profitability of firms with both types of securities.

RECLASSIFICATION OF SECURITIES

The firm's purpose for holding securities may change, requiring it to transfer securities from one of the three categories to another. The firm transfers the securities at fair value at the time of the transfer.⁹ Note that a transfer of held-to-maturity securities to either trading securities or available-for-sale securities would call into question the original designation of that investment.

► PROBLEM 13.2 FOR SELF-STUDY

Accounting for available-for-sale and trading securities. Transactions involving Conlin Corporation's marketable securities appear in **Exhibit 13.3**.

- Give the journal entries to account for these securities during 2013 and 2014 assuming Conlin Corporation classifies them as available-for-sale securities.
- How would the journal entries in part **a** differ if Conlin Corporation classified these securities as trading securities?

DISCLOSURES ABOUT MARKETABLE SECURITIES

U.S. GAAP and IFRS require disclosures about marketable securities each period. We illustrate these disclosures next using information from the balance sheet and notes for Starling Corporation presented in **Exhibit 13.4**. These disclosures reflect U.S. GAAP requirements. IFRS requirements are similar but can result in less detailed disclosures.¹⁰

- The aggregate fair value, gross unrealized gains, gross unrealized losses, and amortized cost for held-to-maturity debt securities and for available-for-sale securities. Starling's short-term investments comprise securities available for sale and trading securities. Its long-term investments include available-for-sale securities. The available-for-sale securities comprise debt securities of various governmental entities. It reports no held-to-maturity securities.

EXHIBIT 13.3

Conlin Corporation (Problem 13.2 for Self-Study)

Security	Date Acquired	Acquisition Cost	Date Sold	Selling Price	Fair Value	
					December 31, 2013	December 31, 2014
A	2/3/2013	\$ 40,000	—	—	\$ 38,000	\$ 33,000
B	7/15/2013	75,000	9/6/2014	\$78,000	79,000	—
C	11/27/2013	90,000	—	—	93,000	94,000
		<u>\$205,000</u>			<u>\$210,000</u>	<u>\$127,000</u>

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⁹FASB *Statement No. 115* and IASB *IAS 39* prescribe the accounting for any unrealized gain or loss at the time of the transfer, a topic beyond the scope of this textbook.

¹⁰FASB, *Statement of Financial Accounting Standards No. 115*, "Accounting for Certain Investments in Debt and Equity Securities," 1993 (**Codification Topic 320**); IASB, *International Financial Reporting Standard 7*, "Financial Instruments: Disclosures," 2005.

The amortized cost column in **Exhibit 13.4** shows the carrying value of debt securities after amortizing any difference between the purchase price of these securities and their maturity value. The fair value column shows the fair value of these securities at each balance sheet date. The two middle columns show the gross unrealized gains and gross unrealized losses on available-for-sale securities. Requiring the separate disclosure of unrealized gains

EXHIBIT 13.4

Starling Corporation
Disclosures Related to Marketable Securities
 (amounts in thousands of US\$)

Balance Sheet	September 30, 2013	September 30, 2012
Current Assets:		
Available-for-Sale Securities	\$83,845	\$87,542
Securities Held as Trading Securities	73,588	53,496
Noncurrent Assets:		
Long-Term Investments—Available-for-Sale Securities	21,022	5,811
	Fiscal Year 2013	Fiscal Year 2012
Statement of Cash Flows: Investing Activities		
Purchases of Available-for-Sale Securities	\$(237,422)	\$(639,192)
Maturities of Available-for-Sale Securities	178,167	269,134
Sales of Available-for-Sale Securities	47,497	431,181

Note 3: Short-Term Investments

The Company's short-term investments consist of the following:

	Amortized Cost	Gross Unrealized Holding Gains	Gross Unrealized Holding Losses	Fair Value
September 30, 2013				
Short-Term Investments—Available-for-Sale Securities:				
State and Local Government Obligations	\$ 81,366	—	\$ (21)	\$ 81,345
U.S. Government Agency Obligations	2,500	—	—	2,500
Total	\$ 83,866	—	\$ (21)	\$ 83,845
Short-Term Investments—Trading Securities	67,837	—	—	73,588
Total Short-Term Investments	\$151,703	—	—	\$157,433
Long-Term Investments—Available-for-Sale Securities	—	—	—	—
U.S. Government Agency Obligations	\$ 21,000	\$22	—	\$ 21,022
September 30, 2012				
Short-Term Investments—Available-for-Sale Securities:				
State and Local Government Obligations	\$ 75,379	\$ 9	\$(332)	\$ 75,056
U.S. Government Agency Obligations	10,000	—	—	10,000
Corporate Debt Securities	2,488	—	(2)	2,486
Total	\$ 87,867	\$ 9	\$(334)	\$ 87,542
Short-Term Investments—Trading Securities	55,265	—	—	53,496
Total Short-Term Investments	\$143,132	—	—	\$141,038
Long-Term Investments—Available-for-Sale Securities:	—	—	—	—
State and Local Government Obligations	\$ 5,893	\$—	\$(82)	\$ 5,811

Proceeds from sales of available-for-sale securities were \$47 million and \$431 million, in fiscal years 2013 and 2012, respectively. Gross realized gains from sales were \$3.8 million and \$0.1 million in fiscal years 2013 and 2012, respectively. Gross realized losses from sales were \$0.1 million and \$1.7 million in fiscal years 2013 and 2012, respectively. For fiscal 2013, there were no realized losses and an immaterial amount of realized gains.

In fiscal years 2013 and 2012, the changes in net unrealized gains/losses in the trading portfolio included in earnings were a net gain of \$7.5 million and a net loss of \$4.2 million, respectively.

and unrealized losses provides information that would not appear if firms netted these amounts. The differences between amortized cost and fair value appear relatively small on both balance sheet dates.

2. The proceeds from sales of available-for-sale securities and the gross realized gains and gross realized losses on those sales. The statement of cash flows shows the cash expenditures to purchase available-for-sale securities and the cash receipts from maturities and sales of available-for-sale securities. For Starling, the cash receipts largely offset expenditures each year, and their amounts are larger than the balance sheet amount of available-for-sale securities at the beginning and end of the year. This implies that Starling turns over its portfolio of available-for-sale securities several times each year. The paragraph under the panel of data in **Exhibit 13.4** also discloses the proceeds from selling available-for-sale securities, as well as the gross realized gains and gross realized losses. As with disclosures about unrealized gains and losses on the balance sheet, requiring the separate disclosure of realized gains and realized losses provides information that would not appear if firms netted these amounts.
3. The change during the period in the net unrealized gain or loss on available-for-sale securities included in a separate shareholders' equity account. The statement of changes in shareholders' equity shows that Accumulated Other Comprehensive Income increased by \$1,767 thousand in fiscal 2012 and decreased by \$20,380 thousand in fiscal 2013 because of net unrealized gains and losses. Starling does not indicate how much of these changes in Accumulated Other Comprehensive Income relates to marketable securities and how much relates to cash flow hedges, a topic discussed in the next section.
4. The change during the period in the net unrealized gain or loss on trading securities included in earnings. The second paragraph under the panel of data in **Exhibit 13.4** indicates the amount of the gain in fiscal year 2013 and the amount of the net loss in fiscal year 2012 from changes in unrealized gains and losses on trading securities.

DERIVATIVE INSTRUMENTS

Firms incur risks in carrying out their business activities. A fire might destroy a warehouse of a retail chain and disrupt the flow of merchandise to stores. An automobile accident involving a member of the sales staff may injure the employee or others and damage the firm's automobile. A firm's products might injure customers and subject the firm to lawsuits. Most firms purchase property, medical, and liability insurance against such risks. The insurance shifts the risk of the loss beyond the deductible amount and up to the limits in the insurance policy to the insurance company. The firm pays insurance premiums for the right to shift the insured risk.

Firms engage in other transactions that subject them to specific financial risks. Consider the following scenarios.

Example 12 Great Deal orders inventory on June 30, 2013, for delivery on June 30, 2014, from a British supplier for £10,000 (currency is British pounds). The exchange rate between the U.S. dollar and the British pound is currently \$1.60 per £1, indicating a purchase price of \$16,000. If the value of the U.S. dollar declines between June 30, 2013, and June 30, 2014, when it must convert U.S. dollars into British pounds, Great Deal will pay more than \$16,000 to purchase the inventory.

Example 13 Thames issued a note dated January 1, 2013, for the purchase of manufacturing equipment. The note has a face value of €100,000 and bears interest at 8% each year. Interest is payable annually on December 31, and the note matures on December 31, 2015. If interest rates change, the fair value of the note will change.

Example 14 Elseve gives a note payable to a supplier on January 1, 2013, to acquire manufacturing equipment. The note has a face value of €100,000 and bears interest at the prime lending rate, which is 8% on January 1, 2013. The supplier resets the interest rate each December 31 to establish the interest charge for the next calendar year. Interest is payable on December 31 of each year, and the note matures on December 31, 2015. If interest rates rise above 8% during the term of the note, Elseve will have to pay interest at that higher rate.

Example 15 Delmar Limited holds 10,000 gallons of whiskey in inventory on October 31, 2013. Delmar expects to complete aging this whiskey by March 31, 2014, at which time it

intends to sell the whiskey. Uncertainties about the quality of the aged whiskey and future economic conditions make it difficult to predict the selling price on March 31, 2014.

Most firms face risks—that is, variability of outcomes—from changes in interest rates, currency exchange rates, and commodity prices. Firms can purchase financial instruments to reduce these business risks, that is, to reduce the volatility of certain outcomes. Some of these instruments have standardized terms and trade in relatively active markets, while others have specialized terms and do not trade at all. The general term used for the types of financial instruments that firms might buy to mitigate the risks described in **Examples 12–15** is a **derivative**. The accounting for derivative financial instruments follows the principles governing the accounting for marketable securities discussed in the previous section, with some exceptions. This section discusses the nature, use, accounting, and reporting of derivative instruments.¹¹

NATURE AND USE OF DERIVATIVE INSTRUMENTS

A derivative is a financial instrument whose value changes in response to changes in an underlying observable variable, such as a stock price, an interest rate, a currency exchange rate, or a commodity price. Unlike equity securities, which have no definite settlement date, firms settle a derivative at the date specified in the instrument. Finally, a derivative requires an investment that is small, relative to the investment in a contract that is similarly exposed to changes in market factors, or requires no investment at all.¹² An option to purchase a share of stock derives its value from movements in the market price of that stock. A commitment to purchase a certain amount of foreign currency in the future derives its value from changes in the exchange rate for that currency. Firms use derivative instruments to hedge the risks that arise from changes in interest rates, currency exchange rates, and commodity prices. The general idea behind hedging is that changes in the fair value of the derivative instrument offset changes in the fair value of an asset or liability or changes in future cash flows, thereby neutralizing, or at least reducing, the effects of those changes. Let's reconsider the previous four examples.

Example 16 Refer to **Example 12**. Great Deal desires to incur a cost now to eliminate the effect of changes in the exchange rate between the U.S. dollar and the British pound while it awaits delivery of the inventory. It purchases a **forward foreign exchange contract** from a bank on June 30, 2013, in which it promises to pay a fixed U.S. dollar amount on June 30, 2014, in exchange for £10,000 received on that date. The forward exchange rate between U.S. dollars and British pounds on June 30, 2013, for settlement on June 30, 2014, establishes the number of U.S. dollars it must deliver. If the forward rate on June 30, 2013, for settlement of the forward contract on June 30, 2014, is \$1.64 per £1, Great Deal can purchase a forward contract and thereby lock in the cost of the inventory at \$16,400 ($= £10,000 \times \1.64 per pound). By purchasing a forward foreign exchange contract, Great Deal avoids volatility in the price of the inventory due to currency movements; it forgoes the possibility of benefit if the U.S. dollar strengthens against the pound but avoids the possibility of loss if the U.S. dollar weakens.

Example 17 Refer to **Example 13**. Thames wants to neutralize the effect of changes in the fair value of the note payable caused by changes in interest rates. It engages in an **interest rate swap** with its bank. The swap allows Thames to exchange its fixed interest rate obligation for a variable interest rate obligation. The fair value of the note and the related swap contract remain at €100,000 as long as the variable interest rate in the swap is the same as the variable rate used to revalue the note while it is outstanding.

Example 18 Refer to **Example 14**. Elseve wants to neutralize the effects of changes in interest rates. It engages in an interest rate swap with its bank. The swap has the effect of allowing Elseve to exchange its variable interest rate obligation for a fixed interest rate obligation, and

¹¹FASB *Statements 133* and *138* and *IAS 39* provide accounting and disclosure guidance for derivatives. FASB, *Statement of Financial Accounting Standards No. 133*, "Accounting for Derivative Instruments and Hedging Activities," 1998 (**Codification Topic 815**); FASB, *Statement of Financial Accounting Standards No. 138*, "Accounting for Certain Derivative Instruments and Certain Hedging Activities," 2000 (**Codification Topic 815**); IASB, *International Accounting Standard 39*, "Financial Instruments: Recognition and Measurement," revised 2003.

¹²The definitions of a derivative in U.S. GAAP and IFRS are similar. The nature and complexity of financial instruments makes it difficult to discern, in certain cases, whether a given instrument is a derivative. In addition, both U.S. GAAP and IFRS contain exceptions—instruments that seem to meet the definition of a derivative are nonetheless not accounted for as derivatives.

therefore a fixed cash payment, of 8% times the €100,000 face value of the note. Elseve cannot benefit from decreases in interest rates below 8%, but it no longer bears risks—with attendant costs—if the interest rate rises above 8%.

Example 19 Refer to **Example 15**. Delmar would like to fix the price at which it can sell the whiskey in its inventory on March 31, 2014. It acquires a **forward commodity contract** in which it promises to sell 10,000 gallons of whiskey on March 31, 2014, at a fixed price. The forward price of whiskey on October 31, 2013, for delivery on March 31, 2014, is \$320 per gallon. Thus, Delmar locks in a total cash inflow of \$3,200,000 from selling the whiskey.

The forward contracts and swap contracts described in these examples illustrate two types of derivative instruments. The nature and complexity of derivatives vary widely. We use swap contracts to illustrate the accounting and reporting of derivatives.

TERMINOLOGY FOR DERIVATIVES

Consider the following elements of a derivative:

1. A derivative has one or more **underlyings**. An underlying is an observable variable such as a specified interest rate, or commodity price, or currency exchange rate. The underlying in **Example 16** is a currency exchange rate, in **Examples 17** and **18** is an interest rate, and in **Example 19** is the price of whiskey.
2. A derivative has one or more **notional amounts**. A notional amount is a number of currency units, bushels, shares, or other units specified in the contract. The notional amount in **Example 16** is £10,000, in **Examples 17** and **18** is the €100,000 face value of the note, and in **Example 19** is 10,000 gallons of whiskey.
3. A derivative sometimes requires no initial investment. No initial investment means no initial cash payment to the counterparty. The firm usually acquires a derivative by exchanging promises with a **counterparty**, such as a bank. The exchange of promises is a mutually unexecuted contract.
4. Derivatives typically require, or permit, **net settlement**, which means that when the counterparties settle the derivative contract, one of the contracting parties pays the other the fair value of the contract. For example, Great Deal in **Example 16** will not deliver \$16,400 and receive in exchange £10,000. Great Deal will actually purchase £10,000 in the market on June 20, 2014, at the exchange rate on that date, when it needs the British pounds to purchase the inventory. Then, Great Deal will receive cash from the counterparty (that is, the bank) to the extent the exchange rate on June 30, 2014, exceeds \$1.64 per £1 or will pay the counterparty on this date to the extent the exchange rate is less than \$1.64 per £1. The difference between the June 30, 2014, exchange rate and the \$1.64 per £1 determines the fair value on that date. Thames in **Example 17** will pay the supplier the 8% interest established in the fixed rate note. If the variable interest rate used in the interest rate swap contract increases to 10%, Thames will pay the counterparty an amount equal to 2% ($= 10\% - 8\%$) of the notional amount of the note, €100,000. Paying interest of 8% to the supplier and 2% to the counterparty results in interest payments of 10%. If the variable interest rate decreases to 5%, Thames still pays the supplier interest of 8% as specified in the original note but would receive from the counterparty 3% ($= 8\% - 5\%$) of the amount of the note, resulting in net payments equal to the variable rate of 5%.

Because many derivatives require no initial investment, measurement at acquisition cost makes little sense for these instruments. That is, a derivative may have zero initial cost but potentially large fair value later. Both U.S. GAAP and IFRS require that firms record derivatives at their fair values on the balance sheet.

ACCOUNTING FOR DERIVATIVES

A firm must recognize derivatives on its balance sheet as assets or liabilities, depending on the rights and obligations under the contract. The forward contract in **Example 16** is either an asset or a liability to Great Deal, depending on the exchange rate. The swap contracts in **Examples 17** and **18** may be assets or liabilities to Thames and Elseve, depending on interest rates. Whether a derivative is an asset or a liability depends on whether at the balance sheet date the derivative's holder would be entitled to receive cash from the counterparty (asset) or have to pay cash to the

counterparty (liability). Similarly, the forward contract in **Example 19** may be an asset or liability, depending on the price of whiskey.

Firms must remeasure derivatives to fair value each period. The change in fair value either increases or decreases the balance sheet carrying value of the derivative asset or liability. It also affects either (1) net income immediately (like trading securities), or (2) other comprehensive income immediately and net income later (like available-for-sale securities).

The income effect of a change in the fair value of a derivative depends on the purpose for which a firm acquires the derivative and whether the firm chooses to apply **hedge accounting**. In both U.S. GAAP and IFRS, hedge accounting is elective, and its application is subject to extensive documentation requirements and disclosure requirements. Firms need not designate any derivatives as accounting hedges, regardless of the degree to which the derivatives mitigate the volatility of outcomes of other arrangements.

U.S. GAAP and IFRS require firms to classify derivatives as (1) fair value hedges, (2) cash flow hedges, or (3) not a hedging instrument.¹³ Derivatives designated as cash flow hedges or fair value hedges receive special accounting treatment. The choice between the two designations depends on the firm's purpose in acquiring the particular derivative. If a firm does not designate a particular derivative as either a fair value hedge or a cash flow hedge, authoritative guidance requires that the firm account for the derivative as if it were a trading security (U.S. GAAP) or a security at fair value through profit and loss (IFRS). Firms measure derivatives that they do not designate as hedges at fair value each period and include the resulting gain or loss in net income. This accounting is the same as the second method illustrated in **Exhibit 13.1**.

Fair Value Hedges Derivative instruments acquired to hedge exposure to changes in the fair values of assets or liabilities are **fair value hedges**. Fair value hedges are either (1) hedges of a *recognized* asset or liability (or an identified portion of a recognized asset or liability), or (2) hedges of an *unrecognized* firm commitment (or an identified portion of that commitment). Great Deal in **Examples 12** and **16** acquired the forward foreign exchange contract to neutralize the effect of changes in exchange rates on its commitment to purchase the inventory. Thames in **Examples 13** and **17** entered into the interest swap agreement to neutralize the effect of changes in interest rates on the fair value of its notes payable. Great Deal and Thames can designate these derivatives as fair value hedges.

Cash Flow Hedges Derivative instruments acquired to hedge exposure to variability in cash flows are **cash flow hedges**. Cash flow hedges are either (1) hedges on some or all of the cash flows of a *recognized* asset or liability or (2) hedges on some or all of the cash flows of *forecasted* transactions. Elseve in **Examples 14** and **18** entered into the interest swap agreement to neutralize changes in cash flows for interest payments on its variable rate notes payable, a recognized liability. Delmar in **Examples 15** and **19** acquired the forward contract on whiskey to protect itself from changes in the selling price of whiskey on March 31, 2014, a recognized asset. Elseve and Delmar can designate these derivative instruments as cash flow hedges.

Firms might use a particular derivative either to hedge fair value or to hedge cash flows, but not both. Both the forward foreign exchange contract in **Example 16** and the forward whiskey price contract in **Example 19** fix, or lock in, cash flows, and the firm could therefore designate the derivatives as cash flow hedges for accounting purposes. Alternatively, Great Deal in **Example 16** could acquire the forward contract to fix, or lock in, the fair value of the equipment acquired and therefore designate that derivative as a fair value hedge. Delmar in **Example 19** could acquire the derivative to lock in the fair value of the inventory and therefore designate the contract as a cash flow hedge.

The four examples described thus far in this section illustrate the accounting for the following possible scenarios:

Example	Type of Hedge	Derivative Instruments Used
12 and 16	Fair Value—Firm Commitment	Forward Currency Contract
13 and 17	Fair Value—Recognized Liability	Swap Contract—Variable for Fixed Interest Rate
14 and 18	Cash Flow—Interest Payments	Swap Contract—Fixed for Variable Interest Rate
15 and 19	Cash Flow—Forecasted Transaction	Forward Commodity Contract

¹³U.S. GAAP and IFRS also allow firms to designate derivatives as hedges of a net investment in a foreign operation. We do not consider such hedges in this textbook.

TREATMENT OF HEDGING GAINS AND LOSSES

U.S. GAAP and IFRS allow firms to choose whether to designate a particular derivative as a hedge for accounting purposes. Firms remeasure derivatives not designated as an accounting hedge to fair value at every balance sheet date and include changes in fair value in net income. For a derivative designated as a hedge, firms must further designate it as hedging the risk of a change in fair value (fair value hedges) or a change in cash flows (cash flow hedges). The accounting for fair value hedges and cash flows hedges is similar under U.S. GAAP and IFRS. For fair values hedges, U.S. GAAP and IFRS require firms to remeasure both the hedged item and the related derivative (the hedging instrument) to fair value each period and to recognize gains and losses from changes in the fair value of both the hedged item and the hedging instrument in *net income*. If the hedge is fully effective, the gain (loss) on the derivative will precisely offset the loss (gain) on the asset or liability hedged. The net effect on earnings is zero. If the hedge is not fully effective, the net gain or loss increases or decreases earnings to the degree the offset is incomplete. This accounting follows the second method illustrated in **Exhibit 13.1** in the sense that *both sides* of the hedging relationship are measured at fair value, with changes in fair value recognized in earnings.

For cash flow hedges, U.S. GAAP and IFRS require firms to remeasure the derivative (the hedging instrument) to fair value each period. Firms include gains and losses from changes in fair values in other comprehensive income each period to the extent the hedging instrument is “highly effective” in neutralizing the risk of the hedged item. Firms must include the ineffective portion of gains and losses in net income currently. At the end of the period, the firm closes the Other Comprehensive Income account to the balance sheet account for Accumulated Other Comprehensive Income. The firm reverses the amount in Accumulated Other Comprehensive Income related to a particular hedging instrument and reports it in Other Comprehensive Income, removing the effect of this transaction for Accumulated Other Comprehensive Income. The amounts appear in net income either periodically during the life of the hedging instrument or at the time of settlement, depending on the type of derivative instrument used as a hedge. This accounting follows the third method illustrated in **Exhibit 13.1**.

The matching convention provides both the basis for hedge accounting and the logic for treating gains and losses from changes in fair values of fair value hedges differently from changes in fair values of cash flow hedges. In a fair value hedge of a recognized asset or liability, both the hedged item and its related derivative (hedging instrument) appear on the balance sheet. Remeasuring both the hedged item and its related derivative to fair value each period and including the gain or loss on the hedged item and the loss or gain on the derivative in net income results in a *net* gain or loss that indicates the effectiveness of the hedge in neutralizing the risk. If the hedge is completely effective, there is a zero net effect on income. That is, the gain or loss on the hedged item exactly offsets the loss or gain on the hedging instrument.

In a cash flow hedge of a forecasted transaction, the hedged cash flow commitment does not appear on the balance sheet, but the derivative instrument does appear. Recognizing a gain or loss on the derivative instrument in net income each period but not recognizing the loss or gain on the anticipated transaction each period results in poor matching. Application of the matching convention results in classifying the gain or loss on the derivative instrument in other comprehensive income until the forecasted transaction occurs, at which time net income will include the gain or loss.

ILLUSTRATIONS OF ACCOUNTING FOR DERIVATIVES

This section illustrates the accounting for the derivatives used in the two examples involving interest rate swaps. (**Problem 13.3 for Self-Study** examines the accounting for the forward foreign exchange contract in **Example 16**. **Problem 28** at the end of the chapter examines the forward commodity contract in **Example 19**.)

Fair Value Hedge: Interest Rate Swap to Convert Fixed Rate Debt to Variable Rate Debt This section illustrates the accounting for an interest rate swap designated as a fair value hedge. Refer to **Examples 13** and **17**. Assume that Thames wishes to hedge the effects of interest rate changes on the fair value of its fixed rate note payable of €100,000. Thames enters into an interest rate swap contract to convert the 8% fixed rate debt to variable rate debt and designates the swap contract as a fair value hedge. To enhance understanding of the accounting for this fair value hedge, **Exhibit 13.5** summarizes the balance sheet and income statement effects of the journal entries discussed next. You may wish to refer to **Exhibit 13.5** as you study these journal entries.

EXHIBIT 13.5**€100,000 Fixed Rate Note and Related Interest Rate Swap
Accounted for as a Fair Value Hedge**

	Cash	Equipment: at Cost	Notes Payable: at Fair Value	Swap Contract: at Fair Value	Income Statement
2013					
(1) Issue Note for Equipment	€ —	€100,000	€(100,000)	€ —	€ —
(2) Enter Swap Contract	—	—	—	—	—
(3) Record Interest on Note	(8,000)	—	—	—	8,000
(4) Remeasure Note Payable	—	—	(3,667)	—	3,667
(5) Remeasure Swap Contract	—	—	—	3,667	(3,667)
December 31, 2013	€ (8,000)	€100,000	€(103,667)	€ 3,667	€ 8,000
2014					
(6) Record Interest on Note	(8,000)	—	1,780	—	€ 6,220
(7) Record Interest on Swap Contract	—	—	—	220	(220)
(8) Record Swap Interest Received	2,000	—	—	(2,000)	—
(9) Remeasure Note Payable	—	—	3,705	—	(3,705)
(10) Remeasure Swap Contract	—	—	—	(3,705)	3,705
December 31, 2014	€ (14,000)	€100,000	€ (98,182)	€(1,818)	€ 6,000
2015					
(11) Record Interest on Note	(8,000)	—	(1,818)	—	€ 9,818
(12) Record Interest on Swap Contract	—	—	—	(182)	182
(13) Record Swap Interest Paid	(2,000)	—	—	2,000	—
(14) Repay Note Payable	(100,000)	—	100,000	—	—
December 31, 2015	€(124,000)	€100,000	€ —	€ —	€10,000

Note: Amounts in parentheses are credits to the various accounts.

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- (1) Thames issues the note to the supplier on January 1, 2013, and makes the following entry:

January 1, 2013

Equipment	100,000	
Note Payable		100,000

To record the acquisition of equipment by giving a €100,000 note payable with a fixed interest rate of 8%.

- (2) The swap contract is a mutually unexecuted contract on January 1, 2013. The variable interest rate on this date is 8%, the same as the fixed rate for the note payable. The swap contract has a fair value of zero on this date. Thus, Thames makes no entry to record the swap contract.

- (3) On December 31, 2013, Thames makes the required interest payment on the note for 2013:

December 31, 2013

Interest Expense	8,000	
Cash		8,000

To recognize interest expense and cash payment at the fixed interest rate of 8%; €8,000 = 0.08 × €100,000.

- (4) Interest rates decline during 2013. On December 31, the variable interest rate on the swap contract resets the interest rate for 2014 to 6%. Thames remeasures the note payable to fair

value and records the change in the fair value of the swap contract caused by the decline in the interest rate.

The present value of the remaining cash flows on the note payable when discounted at 6% is:

Present Value of Interest Payments: €8,000 × 1.83339	€ 14,667
Present Value of Principal: €100,000 × 0.89000	<u>89,000</u>
Total Present Value	<u>€103,667</u>

Thames makes the following entry to record the change in fair value:

December 31, 2013

Loss on Remeasurement of Note Payable	3,667	
Note Payable		3,667

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		+3,667		-3,667	IncSt → RE

To measure Note Payable at fair value with cash flows discounted at 6% with the loss included in net income.

For the most part, firms do not remeasure their liabilities, such as this note payable, to fair value when interest rates change. They continue to account for the liabilities using the interest rate at the time of the initial recording of the financial instrument in the accounts. Fair value hedge accounting, however, *requires* the recognition of changes in fair values of a financial instrument that firms have designated as a hedged item (the note payable) and *requires* recognition of changes in the fair value of the hedging instrument (the swap contract).

- (5) The decline in interest rates to 6% means that Thames will save €2,000 [= (0.08 – 0.06) × €100,000] each year in interest payments. The present value of a €2,000 annuity for two periods at 6% is €3,667 (= €2,000 × 1.83339). Thus, the fair value of the swap contract increased from zero at the beginning of 2013 to €3,667 at the end of the year. Thames makes the following entry:

December 31, 2013

Swap Contract	3,667	
Gain on Remeasurement of Swap Contract		3,667

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+3,667				+3,667	IncSt → RE

To measure the swap contract at fair value and recognize an asset on the balance sheet and a gain in net income.

The fair value loss on the note payable exactly offsets the fair value gain on the swap contract, indicating that the swap contract was fully effective. That is, the Loss on Remeasurement of Note Payable is offset by the Gain on Remeasurement of Swap Contract.

- (6) Thames follows a similar process at the end of 2014. First, it records interest expense on the note payable:

December 31, 2014

Interest Expense	6,220	
Note Payable	1,780	
Cash		8,000

(continued)

To record interest expense at 6% of the carrying value of the note payable at the beginning of the year ($€6,220 = 0.06 \times €103,667$), the cash payment at the contractual interest rate of 8% on the face amount of the note ($€8,000 = 0.08 \times €100,000$), and the reduction in the carrying value of the note payable for the difference.

Thames uses the effective interest method to compute interest expense. The effective interest rate for 2014 is 6%, and the carrying value of the note payable at the beginning of the year is €103,667. The cash payment of €8,000 is the amount specified in the original borrowing arrangement with the equipment supplier.

- (7) Second, Thames records interest revenue for the change in the present value of the swap contract for the year.

December 31, 2014

Swap Contract	220	
Interest Revenue		220
To record interest revenue for the increase in the carrying value of the swap contract for the passage of time; $€220 = 0.06 \times €3,667$.		

Interest expense (net) as a result of the two entries is €6,000 ($= €6,220 - €220$), which is the same as the variable rate for 2014 of 6% times the face value of the note.

- (8) Third, Thames receives €2,000 under the swap contract from its counterparty because interest rates decreased from 8% to 6%.

December 31, 2014

Cash	2,000	
Swap Contract		2,000
To record cash received from the counterparty because the interest rate declined from 8% to 6%.		

The €2,000 cash received from the counterparty is the benefit to Thames for 2014, because interest rates declined to 6%.

- (9) Fourth, Thames must remeasure the note payable and the swap contract for changes in fair value at the end of 2014. Assume that interest rates increased during 2014, so the interest rate in the swap agreement resets to 10% for 2015. The present value of the remaining payments on the note at 10% is:

Present Value of Interest Payment: $€8,000 \times 0.90909$	€ 7,273
Present Value of Principal: $€100,000 \times 0.90909$	<u>90,909</u>
Total Present Value	<u>€98,182</u>

The carrying value of the note payable before remeasurement is €101,887 ($= €103,667 - €1,780$). The entry to measure the note payable at fair value is:

December 31, 2014

Note Payable	3,705	
Gain on Remeasurement of Note Payable		3,705

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		-3,705		+3,705	NI → RE

To measure the note payable at fair value using an interest rate of 10% to discount the remaining cash flows to their present value; $€3,705 = €101,887 - €98,182$. The gain is included in net income.

- (10) The fair value of the swap contract decreases, and Thames now pays the counterparty €2,000 in 2015 because of the swap contract. Thus, the swap contract is a liability to Thames instead of an asset. The present value of €2,000 when discounted at 10% is €1,818 ($= €2,000 \times 0.90909$). The carrying value of the swap contract before remeasurement is an asset of €1,887 ($= €3,667 + €220 - €2,000$). The entry to remeasure the swap contract is:

December 31, 2014

Loss on Remeasurement of Swap Contract	3,705	
Swap Contract (Asset).		1,887
Swap Contract (Liability).		1,818
To measure the swap contract at fair value using a discount rate of 10% and recognize the decrease in fair value. The loss is included in net income.		

The gain on remeasurement of the note exactly offsets the loss on remeasurement of the swap contract, so the swap contract hedges the change in interest rates.

- (11) The first entry for 2015 recognizes interest expense and the cash payment for interest.

December 31, 2015

Interest Expense	9,818	
Note Payable.		1,818
Cash		8,000
To record interest expense at 10% of the carrying value of the note payable at the beginning of the year ($€9,818 = 0.10 \times €98,182$), the cash payment at the contractual interest rate of 8% on the face amount of the note ($€8,000 = 0.08 \times €100,000$), and the increase in the carrying value of the note payable for the difference.		

- (12) Thames must also recognize interest on the swap contract:

December 31, 2015

Interest Expense	182	
Swap Contract (Liability).		182
To record interest expense for the increase in the carrying value of the swap contract for the passage of time; $€182 = 0.10 \times €1,818$.		

Interest expense (net) after these two entries is €10,000 ($= €9,818 + €182$), which equals the variable interest rate of 10% times the face value of the note.

- (13) Thames pays the counterparty 2% of the face value of the note because the variable interest rate of 10% exceeds the fixed interest rate of 8%.

December 31, 2015

Swap Contract (Liability).	2,000	
Cash		2,000
To record cash paid to the counterparty because the variable interest rate of 10% exceeded the fixed interest rate of 8%.		

- (14) Thames repays the note and closes out the Swap Contract account.

December 31, 2015

Note Payable	100,000	
Cash		100,000
To record repayment of note payable at maturity.		

The Swap Contract account has a zero balance on December 31, 2015, after Thames makes the entries above ($= €1,818 + €182 - €2,000$).

Exhibit 13.5 summarizes the effects of these entries on various accounts (credit entries in parentheses). Net income reflects the variable interest rate each year, 8% for 2013, 6% for 2014, and 10% for 2015. The sum of the balance sheet carrying amounts for the note payable and the swap contract (the net value) is €100,000 at the end of each year. Thames recognizes gains and losses from changes in the fair value of both the hedged item and its derivative in net income as their fair values change.

Summary of the Accounting for a Fair Value Hedge of a Recognized Asset or Liability The following summarizes the accounting for a fair value hedge of a recognized asset or liability.

1. A firm recognizes the hedged asset or liability, even in the absence of hedge accounting. In the absence of hedge accounting, the measurement of the hedged item depends on the required accounting for that item (for example, lower of cost or market for inventories, present value of future cash flows for long-term receivables and payables).
2. On the date a firm enters the derivative contract and designates that contract as a fair value hedge, it recognizes the derivative as an asset if it makes an initial payment. It recognizes the derivative as a liability if it receives an initial payment. Otherwise, no amount appears on the balance sheet for the derivative.
3. At the end of each period, the firm remeasures the hedged asset or liability to fair value and includes the resulting gain or loss in net income.
4. At the end of each period, the firm remeasures the derivative instrument (hedging instrument) to fair value and includes the resulting loss or gain in net income.
5. The firm reports both the hedged asset or liability and its related hedging instrument separately on the balance sheet without netting.
6. When the firm settles the derivative contract and the hedged item, the firm removes the hedged asset or liability and its related derivative from the accounts.

Cash Flow Hedge: Interest Rate Swap to Convert Variable Rate Debt to Fixed Rate Debt This section illustrates the journal entries for an interest rate swap accounted for as a cash flow hedge. Refer to **Examples 14** and **18**. Elseve desires to hedge the risk of changes in interest rates on its cash payments for interest. It enters into a swap contract with a counterparty to convert its variable rate note payable (currently at 8%) to a fixed rate note. Elseve designates the swap contract as a cash flow hedge. The facts for the case resemble those for Thames. The note has a €100,000 face value, an initial variable interest rate of 8%, reset to 6% for 2014 and 10% for 2015. The note matures on December 31, 2015. **Exhibit 13.6** summarizes the effects of the journal entries discussed next on the balance sheet and income statement. You may wish to refer to **Exhibit 13.6** as you study these journal entries.

- (1) The entry to record the note payable is:

January 1, 2013

Equipment	100,000	
Note Payable		100,000
To record the acquisition of equipment by giving a €100,000 note payable with a variable interest rate of 8%.		

- (2) The swap contract has a fair value of zero on January 1, 2013, so Elseve makes no entry on this date.
- (3) Elseve records interest on the note for 2013.

December 31, 2013

Interest Expense	8,000	
Cash		8,000
To recognize interest expense and cash payment at the variable interest rate of 8%; €8,000 = 0.08 × €100,000.		

EXHIBIT 13.6

€100,000 Variable Rate Note and Related Interest Rate Swap Accounted for as a Cash Flow Hedge

	Cash	Equipment: at Cost	Notes Payable: at Carrying Value	Swap Contract: at Fair Value	Income Statement	Other Comprehensive Income
2013						
(1) Issue Note for Equipment	€ —	€100,000	€(100,000)	€ —	€ —	€ —
(2) Enter Swap Contract	—	—	—	—	—	—
(3) Record Interest on Note	(8,000)	—	—	—	8,000	—
(4) Remeasure Swap Contract	—	—	—	(3,667)	—	3,667
December 31, 2013	€ (8,000)	€100,000	€(100,000)	€(3,667)	€ 8,000	€ 3,667
2014						
(5) Record Interest on Note	(6,000)	—	—	—	6,000	—
(6) Record Interest on Swap Contract	—	—	—	(220)	—	220
(7) Record Swap Interest Paid	(2,000)	—	—	2,000	—	—
(8) Reclassify Portion of Other Comprehensive Income	—	—	—	—	2,000	(2,000)
(9) Remeasure Swap Contract	—	—	—	3,705	—	(3,705)
December 31, 2014	€ (16,000)	€100,000	€(100,000)	€ 1,818	€ 8,000	€ (1,818)
2015						
(10) Record Interest on Note	(10,000)	—	—	—	10,000	—
(11) Record Interest on Swap Contract	—	—	—	182	—	(182)
(12) Record Swap Interest Received	2,000	—	—	(2,000)	—	—
(13) Reclassify Portion of Other Comprehensive Income	—	—	—	—	(2,000)	2,000
(14) Repay Note Payable	(100,000)	—	100,000	—	—	—
(15) Close Out Swap Contract	—	—	—	—	—	—
December 31, 2015	€(124,000)	€100,000	€ —	€ —	€ 8,000	€ —

Note: Amounts in parentheses are credits to the various accounts.

- (4) The fair value of the note in this case will not change as interest rates change because the note carries a variable interest rate. The fair value of the swap contract varies with changes in interest rates. The fair value of the swap contract on December 31, 2013, after the interest rate resets to 6%, is €3,667. This amount is the present value of the €2,000 that Elseve will pay the counterparty on December 31 of 2014 and 2015 if the interest rate remains at 6%. This amount is the same as in the previous illustration of a fair value hedge. The entry, however, differs from the one made previously.

December 31, 2013

Loss from Remeasurement of Swap Contract	3,667	
Swap Contract		3,667

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		+3,667		-3,667	OCI → AOCI

To measure the swap contract at fair value and recognize a liability on the balance sheet and a loss in other comprehensive income.

The swap contract is a liability because Elseve must pay the counterparty €2,000 at the end of 2014 and 2015. In the previous illustration, the swap contract at the end of 2013 is an asset because Thames had the right to receive €2,000 at the end of 2014 and 2015 from the counterparty. The €3,667 amount decreases Elseve's other comprehensive income, whereas Thames recognized a gain in net income.

The carrying value of the note payable of €100,000 plus the carrying value of the swap contract of €3,667 is €103,667. This amount is the present value of the expected cash flows under the fixed rate note and swap contract combined, discounted at 6%.

- (5) The entry on December 31, 2014, to recognize and pay interest on the variable rate note is:

December 31, 2014		
Interest Expense	6,000	
Cash		6,000
To recognize interest expense and cash payment at the variable interest rate; €6,000 = 0.06 × €100,000.		

- (6) Elseve must also recognize interest on the swap contract due to the passage of time. The interest charge does not affect net income immediately but instead decreases other comprehensive income. Firms close other comprehensive income to accumulated other comprehensive income.
- (7) Elseve pays the counterparty the €2,000 [= €100,000 × (0.08 – 0.06)] required by the swap contract. The entry is:

December 31, 2014		
Swap Contract	2,000	
Cash		2,000
To record cash paid to the counterparty because the interest rate declined from 8% to 6%.		

- (8) Because the swap contract hedged cash flows related to interest rate risk during 2014, Elseve reclassifies a portion of other comprehensive income to net income. The entry is:

December 31, 2014		
Interest Expense	2,000	
Other Comprehensive Income		2,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
				-2,000	NI → RE
				+2,000	OCI → AOCI

To reclassify a portion of other comprehensive income to net income for the hedged portion of interest expense on the note payable.

Interest expense on the income statement includes (1) interest at 6% of the note payable paid to the holder of the note under the variable rate borrowing agreement and (2) interest at 2% arising from the swap contract for total interest expense for 2014 of €8,000. Elseve entered into the swap arrangement to fix its cash payment at 8% of the note payable, which it accomplishes with this hedging arrangement. At this point, the Swap Contract account has a credit balance of €1,887 (= €3,667 + €220 – €2,000). Accumulated other comprehensive income related to this interest rate swap has a debit balance of €1,887.

- (9) Resetting the interest rate on December 31, 2014, to 10% changes the swap contract from a liability to an asset. The present value of the €2,000 that Elseve will receive from the counterparty at the end of 2015 when discounted at 10% is €1,818. The entry to remeasure the swap contract is:

December 31, 2014

Swap Contract (Liability)	1,887	
Swap Contract (Asset)	1,818	
Gain from Remeasurement of Swap Contract		3,705

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+1,818		-1,887		+3,705	OCI → AOCI

To measure the swap contract at fair value and recognize an asset on the balance sheet and a gain in other comprehensive income.

The €3,705 gain, included in other comprehensive income, is closed to accumulated other comprehensive income. Accumulated other comprehensive income has a credit amount of €1,818, which equals the debit balance in the Swap Contract account.

- (10) The entry at the end of 2015 to recognize and pay interest on the variable rate note is:

December 31, 2015

Interest Expense	10,000	
Cash		10,000

To recognize interest expense and cash payment at the variable interest rate of 10%; €10,000 = 0.10 × €100,000.

- (11) Elseve also increases the carrying value of the swap contract for the passage of time.

December 31, 2015

Swap Contract	182	
Interest on Swap Contract		182

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+182				+182	OCI → AOCI

To record interest for the increase in the book value of the swap contract for the passage of time; €182 = 0.10 × €1,818. The interest is included in Other Comprehensive Income.

- (12) The swap contract requires the counterparty to pay the firm €2,000 under the swap contract.

December 31, 2015

Cash	2,000	
Swap Contract		2,000

To record cash received from the counterparty because the interest rate increased from 6% to 10%.

- (13) Because the swap contract hedged cash flows related to interest rate risk during 2015, Elseve reverses a portion of accumulated other comprehensive income and reports the amount in net income, as an expense. The entry is:

December 31, 2015

Other Comprehensive Income	2,000	
Interest Expense		2,000

(continued)

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
				-2,000	OCI → AOCI
				+2,000	NI → RE

To reclassify a portion of other comprehensive income to net income for the hedged portion of interest expense on the note payable.

Thus, interest expense (net) for 2015 is €8,000 (= €10,000 – €2,000), which equals the net interest cash outflow that Elseve hedged with the interest rate swap.

(14) Elseve repays the note on December 31, 2015:

December 31, 2015

Note Payable	100,000	
Cash		100,000
To record repayment of note payable at maturity.		

The Swap Contract account has a balance of zero on December 31, 2015 (= €1,818 + €182 – €2,000). If the swap contract had been highly effective, but not perfectly effective, in neutralizing the interest rate risk, then Accumulated Other Comprehensive Income would have a balance related to the swap contract, which Elseve would reclassify to net income.

Exhibit 13.6 shows that interest expense is €8,000 each year, so Elseve accomplished its objective to pay a fixed interest rate of 8%. The amounts in other comprehensive income reflect changes in the fair value of the swap contract. The Swap Contract account begins and ends with a zero value.

Summary of Accounting for a Cash Flow Hedge of a Recognized Asset or Liability The following summarizes the accounting for a cash flow hedge of an recognized asset or liability:

1. A firm recognizes the hedged asset or liability on the balance sheet. Its measurement depends on the required accounting for the particular asset or liability (for example, lower of cost or market for inventories, present value of future cash flows for long-term receivables and payables).
2. The firm recognizes the derivative as an asset on the date of acquisition to the extent it makes an initial investment or as a liability to the extent it receives cash. Otherwise, no amount appears on the balance sheet for the derivative. The firm designates the derivative as a hedging instrument.
3. At the end of each period, the firm remeasures the derivative instrument (the hedging instrument) to fair value and includes the resulting loss or gain in other comprehensive income.
4. The firm reclassifies gains and losses from other comprehensive income to net income when the gain or loss on the hedged item affects net income. If the derivative is not highly effective in neutralizing the gain or loss on the hedged item, then the firm reclassifies the ineffective portion to net income immediately. It does not wait until the gain or loss on the hedged items affects net income.
5. The firm reports the hedged asset and liability and the hedging instrument separately on the balance sheet. It reports the cumulative amount of net changes in fair value of the hedging instrument in accumulated other comprehensive income.
6. The firm removes the hedged asset or liability and its related derivative from the accounts at the time of settlement.

SUMMARY OF ACCOUNTING FOR DERIVATIVES

Derivatives appear on the balance sheet at fair value. Their effect on net income depends on whether a firm designates the derivative as a hedge and, if so, whether it is a fair value hedge or cash flow hedge.

- Gains and losses on derivatives not designated as hedges of a specific risk, gains and losses on fair value hedges, and the ineffective portion of cash flow hedges affect net income simultaneously with changes in fair value. This accounting follows the second method illustrated in **Exhibit 13.1**.
- Gains and losses on effective cash flow hedges initially affect other comprehensive income, not net income. The holder of the hedging instrument will exclude from current earnings, but include in Accumulated Other Comprehensive Income, the gains and losses used effectively to hedge cash flows. Firms reverse these gains and losses previously reported in other comprehensive to net income when the gain or loss on the hedged item affects net income. This accounting follows the third method illustrated in **Exhibit 13.1**.

DISCLOSURES RELATED TO DERIVATIVE INSTRUMENTS

U.S. GAAP and IFRS require firms to disclose the fair values of financial instruments in the notes to the financial statements. U.S. GAAP also requires firms to disclose the following information (among others) with respect to derivatives (IFRS requires similar but not identical disclosures).

1. **A description of the firm's risk management strategy and how particular derivatives help accomplish the firm's hedging objectives. The description should distinguish among derivative instruments designated as fair value hedges, cash flow hedges, and all other derivatives.**

This disclosure helps the user of the financial statements understand how a firm uses derivatives to hedge risks.

2. **For fair value and cash flow hedges, firms must disclose the net gain or loss recognized in earnings resulting from the hedge's ineffectiveness and the line on the income statement that includes this net gain or loss.**

This disclosure helps the user of the financial statements understand the effectiveness of a firm's hedging activities, including the amount of any gain or loss from hedge ineffectiveness.

3. **For cash flow hedges, firms must describe the transactions or events that will result in reclassifying gains and losses from accumulated other comprehensive income to net income and the estimated amount of such reclassifications during the next 12 months.**

Accumulated other comprehensive income includes unrealized gains and losses that will affect net income of future periods. Most derivatives do not give management discretion as to when these unrealized gains and losses will affect earnings, unlike marketable securities classified as available for sale where management has some discretion in timing earnings effects. This disclosure for derivatives requires firms to disclose their expectations as to the amount that the firm will transfer from accumulated other comprehensive income to net income within the next year to assist users of the financial statements in forecasting the next year's earnings.

4. **The net amount of gains and losses recognized in earnings because a hedged firm commitment no longer qualifies as a fair value hedge or a hedged forecasted transaction no longer qualifies as a cash flow hedge.**

A firm might use a derivative to hedge an unrecognized commitment or forecasted transaction. If events unfold so that the firm does not intend to fulfill its commitment or engage in the forecasted transaction, any unrealized gains and losses on derivatives related to those commitments and forecasted transactions affect net income. This disclosure informs users of the financial statements of the gains and losses that result because a derivative no longer qualifies as a fair value or cash flow hedge.

► PROBLEM 13.3 FOR SELF-STUDY

Accounting for a forward foreign exchange contract as a fair value hedge. Refer to **Examples 12** and **16** in the chapter. Great Deal places a firm order for the equipment on June 30, 2013. It simultaneously signs a forward currency contract for £10,000. The forward rate on June 30, 2013, for settlement on June 30, 2014, is \$1.64 per £1. Great Deal designates the forward contract as a fair value hedge of the firm commitment.

- a. U.S. GAAP and IFRS guidance does not require Great Deal to record either the purchase commitment or the forward contract on the balance sheet as a liability or an asset on June 30, 2013. What is the logic for this accounting?
- b. On December 31, 2013, the forward exchange rate for settlement on June 30, 2014, is \$1.73 per £1. Give the journal entries to record the change in the fair value of the purchase commitment and the change in the fair value of the forward contract for 2013. Assume an 8% interest rate for discounting cash flows to their present values on December 31, 2013.
- c. Give the journal entries on June 30, 2014, to record the change in the present value of the purchase commitment and the forward contract for the passage of time.
- d. On June 30, 2014, the spot exchange rate is \$1.75 per £1. Give the journal entries to record the change in the fair value of the purchase commitment and the change in the fair value of the forward contract due to changes in the exchange rate during the first six months of 2014.
- e. Give the journal entry on June 30, 2014, to purchase £10,000 with U.S. dollars and acquire the equipment.
- f. Give the journal entry on June 30, 2014, to settle the forward contract.
- g. How would the entries in parts b through f differ if Great Deal had chosen to designate the forward currency contract as a cash flow hedge of a forecasted transaction instead of a fair value hedge of a firm commitment?
- h. Suggest a scenario that would justify Great Deal treating the forward currency contract as a fair value hedge, and a scenario that would justify the firm treating the contract as a cash flow hedge.

THE FAIR VALUE OPTION APPLIED TO MARKETABLE SECURITIES AND DERIVATIVES

Both U.S. GAAP and IFRS provide for the option of reporting selected financial assets and financial liabilities at fair value and recognizing gains and losses in net income as fair values change.¹⁴ Firms can apply the **fair value option** on an instrument-by-instrument basis, when the firm first adopts the standard that provides for the fair value option, when the firm acquires an eligible instrument, and at certain remeasurement events, such as business combinations. Once elected, the fair value option is irrevocable (for the instrument to which the firm applies it). This option results in the accounting illustrated under the second method in **Exhibit 13.1**. Both U.S. GAAP and IFRS require measurement at fair value with changes included in income for three items discussed previously in this chapter:¹⁵

1. Trading securities.
2. Fair value hedges.
3. Derivatives not designated as hedges.

¹⁴The fair value option under IFRS is in IASB, *International Accounting Standard 39*, “Financial Instruments: Recognition and Measurement,” revised 2003. The fair value option under U.S. GAAP is in FASB, *Statement of Financial Accounting Standards No. 159*, “The Fair Value Option for Financial Assets and Financial Liabilities, Including an Amendment of FASB Statement No. 115,” 2007 (**Codification Topic 825**). U.S. GAAP provides guidance for fair value measurements in Accounting Standards Update No. 2011-04, “Fair Value Measurement,” 2011 (**Codification Topic 820**). IFRS provides guidance for fair value measurement in *International Financial Reporting Standard 13*, “Fair Value Measurement,” 2011. The U.S. GAAP guidance and IFRS guidance for fair value measurement is largely converged.

¹⁵U.S. GAAP and IFRS specify the items eligible for the fair value option. The qualifying criteria differ between the two sets of guidance. We do not consider all these items in this textbook.

Thus, firms can elect the fair value option for the following items discussed in this chapter:

1. Debt securities held to maturity.
2. Available-for-sale securities.
3. Cash flow hedges.

Applying the fair value option to held-to-maturity debt securities results in accounting for the investments as if they were trading securities, measured at fair value with changes in fair value recognized in income each period. Applying the fair value option to available-for-sale securities and to cash flow hedges results in reporting unrealized gains and losses in net income, instead of in other comprehensive income.

SUMMARY

Firms acquire securities issued by other entities, including firms and governments, for various reasons. Businesses also acquire derivatives or engage in arrangements with other entities to hedge risks of changes in interest rates, exchange rates, and commodity prices. U.S. GAAP and IFRS currently require the following accounting for marketable securities and derivatives if a firm does not elect the fair value option:

Accounting Method	Applicable To:
Method 1: Amortized Acquisition Cost	Held-to-Maturity Debt Securities
Method 2: Fair Value with Unrealized Gains and Losses Recognized in Net Income as Fair Values Change	Marketable Securities Classified as Trading Securities Fair Value Hedges Derivatives Not Classified as Hedges
Method 3: Fair Value with Unrealized Gains and Losses Recognized in Other Comprehensive Income as Fair Values Change, and Later in Net Income	Marketable Securities Classified as Available-for-Sale Securities Cash Flow Value Hedges

The delayed inclusion of unrealized gains and losses in net income for items in the third category results in measuring available-for-sale securities and cash flow hedges at fair value without recognizing the net income effect of changes in fair value until the firm realizes the gain or loss. Firms that adopt the fair value option will recognize changes in fair value in net income as fair values change. The accounting is the same as for items in the third category.

APPENDIX 13.1: SUMMARY OF IFRS 9, FINANCIAL INSTRUMENTS

The International Accounting Standards Board issued *International Financial Reporting Standard 9*, “Financial Instruments” (IFRS 9) in November 2009. As this book goes to press, the effective date is January 2015, with early adoption permitted.

IFRS 9 eliminates the classification of financial assets as held-to-maturity debt securities, available-for-sale securities, and financial assets at fair value through profit or loss (trading securities) and requires that firms classify all financial assets based on two criteria. The first criterion is the firm’s business model for managing the financial asset and the second is the nature of the contractual terms that govern the cash flows of the financial asset. If the firm’s objective is to hold a financial asset in order to collect its contractual cash flows (the business model criterion) *and* the contractual terms governing those cash flows specify principal and interest payments only (the contractual terms criterion), the firm measures the financial asset at amortized cost. Except for impairment losses, changes in fair value are not recognized unless the asset is sold or reclassified. All other financial assets are measured at fair value, with changes in fair

value included in net income in the period they occur, with one exception. That exception permits a firm to designate an investment in equity securities as “not held for trading,” measured at fair value with changes in fair value included in other comprehensive income. The designation is irrevocable and the unrealized gains and losses on these equity securities are not reclassified out of accumulated other comprehensive income if and when the securities are sold.

SOLUTIONS TO SELF-STUDY PROBLEMS

SUGGESTED SOLUTION TO PROBLEM 13.1 FOR SELF-STUDY

(General Electric Capital Services and Sapra Company; accounting for an investment in bonds.)

a. See Exhibit 13.7.

b.

Date of Purchase

Marketable Securities	105,346	
Cash		105,346
To record the purchase of bonds for \$105,346.		

End of First Year

Marketable Securities	6,321	
Interest Revenue		6,321
To accrue interest revenue for the first year after purchase.		

End of First Year

Cash	8,000	
Marketable Securities		8,000
To record cash received at end of the first year and the reduction in Marketable Securities.		

GECS could combine the last two entries as follows:

End of First Year

Cash	8,000	
Interest Revenue		6,321
Marketable Securities		1,679

EXHIBIT 13.7

Amortization Table for \$100,000 Bonds with a Stated Interest Rate of 8% and a Market Required Yield of 6%

Period (1)	Marketable Securities at Beginning of Period (2)	Interest Revenue at 6% per Period (3)	Cash Received (4)	Portion of Cash Received Reducing Carrying Value (5)	Marketable Securities at End of Period (6)
1	\$105,346	\$6,321	\$ 8,000	\$ (1,679)	\$103,667
2	103,667	6,220	8,000	(1,780)	101,887
3	101,887	6,113	108,000	(101,887)	0

SUGGESTED SOLUTION TO PROBLEM 13.2 FOR SELF-STUDY

(Conlin Corporation; accounting for available-for-sale and trading securities.)

a.

(1) February 2, 2013		
Marketable Securities	40,000	
Cash		40,000
To record acquisition of Security A.		

(2) July 15, 2013		
Marketable Securities	75,000	
Cash		75,000
To record acquisition of Security B.		

(3) November 27, 2013		
Marketable Securities	90,000	
Cash		90,000
To record acquisition of Security C.		

(4) December 31, 2013		
Unrealized Loss on Securities A	2,000	
Marketable Securities		2,000
To measure Security A at fair value with the unrealized loss included in other comprehensive income.		

(5) December 31, 2013		
Marketable Securities	4,000	
Unrealized Gain on Security B		4,000
To measure Security B at fair value with the unrealized gain included in other comprehensive income.		

(6) December 31, 2013		
Marketable Securities	3,000	
Unrealized Gain on Security C		3,000
To measure Security C at fair value with the unrealized gain included in other comprehensive income.		

Entries (4), (5), and (6) above could be combined as follows:

December 31, 2013		
Marketable Securities	5,000	
Net Unrealized Gain on Marketable Securities		5,000
To measure the portfolio of marketable available-for-sale securities to fair value with the net unrealized gain included in other comprehensive income.		

(7) September 6, 2014		
Cash	78,000	
Unrealized Gain on Security B (OCI)	4,000	
Marketable Securities		79,000
Realized Gain on Sale of Marketable Securities		3,000

To record the sale of Security B, reversing the previously recognized unrealized gain in other comprehensive income, which will, when closed to accumulated other comprehensive income, remove from that account the increase in shareholders' equity. The realized gain will appear in net income and will, when closed to retained earnings, increase shareholders' equity. The net effect on shareholders' equity over the entire transaction is an increase of \$3,000. Comprehensive income will have been \$4,000 in 2013 and negative \$1,000 in 2014, netting to \$3,000 over the two-year period.

(8) December 31, 2014		
Unrealized Loss on Security A	5,000	
Marketable Securities		5,000
To measure Security A at fair value with the unrealized loss included in other comprehensive income.		

(9) December 31, 2014		
Marketable Securities	1,000	
Unrealized Gain on Security C		1,000
To measure Security C at fair value with the unrealized gain included in other comprehensive income.		

Entries **(8)** and **(9)** could be combined as follows:

December 31, 2014		
Net Unrealized Loss on Marketable Securities	4,000	
Marketable Securities		4,000

- b.** The first three journal entries are identical. The unrealized gain or loss accounts in entries **(4)**, **(5)**, **(6)**, **(8)**, and **(9)** are income statement accounts when the firm classifies the securities as trading securities. Entry **(7)** is as follows:

(7) September 6, 2014		
Cash	78,000	
Realized Loss on Sale of Marketable Securities	1,000	
Marketable Securities		79,000
To record sale of trading security for less than its carrying value at the time of sale.		

SUGGESTED SOLUTION TO PROBLEM 13.3 FOR SELF-STUDY

(Accounting for a forward foreign exchange contract as a fair value hedge.)

- a.** The purchase commitment and the forward currency contract are mutually unexecuted contracts as of June 30, 2013. U.S. GAAP and IFRS do not currently require firms to recognize mutually unexecuted contracts in the accounts.
- b.** The change in the value of the undiscounted cash flows related to the purchase commitment and the forward contract is \$900 [= (10,000 × \$1.73) – (10,000 × \$1.64)]. The present value of \$900 discounted at 8% for six months is \$865 [= \$900/(1 + 0.08/2)].

December 31, 2013		
Loss on Firm Commitment	865	
Commitment to Purchase Inventory		865
To record a loss on a previously unrecognized firm commitment because the U.S. dollar decreased in value relative to the British pound. The loss is included in net income.		

December 31, 2013		
Forward Contract	865	
Gain on Forward Contract		865
To measure the forward contract (an asset) at fair value and recognize a gain in net income.		

c.

June 30, 2014

Interest Expense	35	
Commitment to Purchase Inventory		35
To recognize interest on the commitment because of the passage of time; \$35 = 0.04 × \$865.		

June 30, 2014

Forward Contract	35	
Interest Revenue		35
To record interest on the forward foreign exchange contract because of the passage of time; \$35 = 0.04 × \$865.		

d. The change in the value of the purchase commitment and the forward contract due to exchange rate changes is \$200 [= (10,000 × \$1.75) – (10,000 × \$1.73)].

June 30, 2014

Loss on Firm Commitment	200	
Commitment to Purchase Inventory		200
To record a loss on the purchase commitment because the value of the U.S. dollar declined relative to the British pound. The loss is included in net income.		

June 30, 2014

Forward Contract	200	
Gain on Forward Contract		200
To record the increase in the fair value of the forward contract (an asset) because the U.S. dollar declined in value relative to the British pound. The gain is included in net income.		

e.

June 30, 2014

Inventory	16,400	
Commitment to Purchase Inventory	1,100	
Cash		17,500
To record the amount paid in U.S. dollars to acquire £10,000 (\$17,500 = 10,000 × 1.75), to eliminate the balance in the Commitment to Purchase Inventory account of \$1,100 (= \$865 + \$35 + \$200), and to record the acquisition cost of the inventory (\$16,400).		

f.

June 30, 2014

Cash	1,100	
Forward Contract		1,100
To record cash received from the counterparty and eliminate the balance in the Forward Contract account of \$1,100 (= \$865 + \$35 + \$200).		

g. Great Deal would not recognize changes in the fair value of the purchase commitment. Each of the entries related to changes in the fair value of the derivative and involving income statement accounts in parts **b** to **d** would instead affect Other Comprehensive Income, which the firm would close to Accumulated Other Comprehensive Income. Assuming the hedge was highly effective, any balance in Accumulated Other Comprehensive Income related to the forward contract on June 30, 2014, would affect the income statement on this date.

- h. To treat this hedge as a fair value hedge, Great Deal must intend to fix the amount it pays for the inventory. Perhaps Great Deal has committed to resell the inventory to a customer on June 30, 2014, for a fixed price in U.S. dollars and wants to protect its expected profit margin from the sale. To treat this hedge as a cash flow hedge, Great Deal must intend to fix the amount of cash it pays to the British supplier.

KEY TERMS AND CONCEPTS

Marketable securities	Interest rate swap
Investments in securities	Forward commodity contract
Debt securities held to maturity or held-to-maturity investments	Underlyings
Trading securities or financial assets at fair value through profit or loss	Notional amounts
Available-for-sale securities or available-for-sale financial assets	Counterparty
Amortized cost	Net settlement
Derivative	Hedge accounting
Forward foreign exchange contract	Fair value hedge
	Cash flow hedge
	Fair value option

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

- Review the meaning of the terms and concepts listed above in Key Terms and Concepts.
- Distinguish between the following pairs of terms:
 - Debt securities classified as “held-to-maturity” versus “available for sale.”
 - Equity securities classified as “trading” versus “available for sale.”
 - Amortized cost versus fair value of debt securities.
 - Unrealized gain or loss on trading securities versus on available-for-sale securities.
 - Realized gain or loss on trading securities versus on available-for-sale securities.
- What is the reasoning for including unrealized gains and losses on trading securities in income but including unrealized gains and losses on available-for-sale securities in Other Comprehensive Income?
- “Reporting marketable available-for-sale securities at fair value on the balance sheet but not including the unrealized gains and losses in income is inconsistent and provides an opportunity for earnings management.” Do you agree? Why or why not?
- When is a derivative also an accounting hedge? When is it not also an accounting hedge?
- Distinguish between a fair value hedge and a cash flow hedge.
- “Recognizing a derivative classified as a fair value hedge of a firm commitment as an asset but not recognizing the commitment that the derivative is hedging as a liability is inconsistent.” Do you agree? Why or why not?
- Both U.S. GAAP and IFRS require the immediate recognition in net income of unrealized gains and losses on derivatives classified as fair value hedges. Both U.S. GAAP and IFRS delay recognition in net income of unrealized gains and losses on derivatives classified as cash flow hedges. What is the likely rationale for these different treatments?

9. Suggest reasons why a firm would acquire a derivative and not treat it as an accounting hedge.
10. “Adopting the fair value option for marketable securities collapses the accounting methods discussed in this chapter to a single accounting method.” Do you agree? Why or why not?

EXERCISES

11. **Classifying securities.** Firms that do not elect the fair value option classify marketable securities along two dimensions:

- Purpose of investment: held-to-maturity debt securities, trading securities, or available-for-sale securities.
- Length of expected holding period: current asset (Marketable Securities) or noncurrent asset (Investment in Securities).

Classify each of the securities below along each of these two dimensions.

- a. A forest products company plans to construct a pulp-processing plant beginning in April of next year. It issues common stock for \$200 million on December 10 of this year to help finance construction. The company invests this \$200 million in U.S. treasury bonds to generate income until it needs the cash for construction.
 - b. An electric utility has bonds payable outstanding for \$100 million that mature in five years. The electric utility acquires U.S. Treasury bonds with a maturity value of \$100 million in five years. The firm plans to use the proceeds from the Treasury bonds to repay its own outstanding bonds.
 - c. A bank acquires bonds of the state of New York to earn tax-exempt interest revenue. The bank plans to sell the bonds when it needs cash for ongoing operating needs.
 - d. A pharmaceutical company acquires common stock of a biogenetic startup company that conducts research in human growth hormones. The pharmaceutical company hopes the investment will lead to a joint venture in the future.
 - e. A bank maintains a department that regularly purchases and sells securities. This department acquires common stock of Nissan Motors because it thinks the market price does not fully reflect favorable news about Nissan.
 - f. A U.S. computer company has bonds outstanding that are payable in Swiss francs and mature in installments over the next five years. The computer company purchases a Swiss winery’s bonds, denominated in Swiss francs, that mature in seven years. The computer company will sell a portion of the bonds of the Swiss winery each year to obtain the Swiss francs needed to repay its franc-denominated bonds.
12. **Accounting principles for marketable securities and derivatives.** For each of the items **a** to **d** below, describe the accounting treatment using one of the following four approaches, assuming that the firm does not elect the fair value option:
 - (1) Measured at fair value with changes recognized in net income.
 - (2) Measured at amortized cost.
 - (3) Measured at fair value with changes recognized initially in other comprehensive income.
 - (4) Measurement depends on whether firm uses hedge accounting.
 - a. A derivative judged to be effective used to hedge forecasted sales.
 - b. Derivatives appearing as liabilities. These derivatives do not hedge assets or liabilities or forecasted transactions.
 - c. Debt securities that the firm has purchased with the ability to hold to maturity. After the current year, the firm’s intent to hold the securities until maturity is uncertain. The firm frequently buys and sells debt of this sort.
 - d. Marketable equity securities held for an indefinite period as available-for-sale securities.

- 13. Accounting for bonds held to maturity.** Murray Company acquired \$100,000 face value of the outstanding bonds of Campbell Company on January 1, 2013. The bonds pay interest semiannually on June 30 and December 31 at an annual rate of 6% and mature on December 31, 2016. The market priced these bonds on January 1, 2013, to yield 8% compounded semiannually. Murray Company classifies these bonds as held-to-maturity securities.
- Compute the amount that Murray Company paid for these bonds, excluding commissions and taxes.
 - Prepare an amortization table for these bonds similar to that in **Exhibit 13.2**.
 - Give the journal entries that Murray Company would make to account for these bonds during 2013.
 - Give the journal entries that Murray Company would make to account for these bonds on December 31, 2016.
- 14. Accounting for bonds held to maturity.** Kelly Company acquired \$500,000 face value of the outstanding bonds of Steedly Company on January 1, 2013. The bonds pay interest semiannually on June 30 and December 31 at an annual rate of 7% and mature on December 31, 2015. The bonds were priced on the market on January 1, 2013, to yield 6% compounded semiannually. Kelly Company classifies these bonds as held-to-maturity securities.
- Compute the amount that Kelly Company paid for these bonds, excluding commissions and taxes.
 - Prepare an amortization table for these bonds similar to that in **Exhibit 13.2**.
 - Give the journal entries that Kelly Company would make to account for these bonds during 2013.
 - Give the journal entries that Kelly Company would make to account for these bonds on December 31, 2015.
- 15. Accounting for available-for-sale securities.** Events related to Elston Corporation's investments of temporarily excess cash appear below. The firm classifies these investments as available-for-sale securities and does not adopt the fair value option.

Security	Date Acquired	Acquisition Cost	Fair Value on December 31		Date Sold	Selling Price
			2013	2014		
A	10/15/2013	\$28,000	\$25,000	—	2/10/2014	\$24,000
B	11/2/2013	\$49,000	\$55,000	\$53,000	7/15/2015	\$57,000

Elston received no dividends on Security A. It received dividends on Security B of \$1,000 on December 31, 2013, and \$1,200 on December 31, 2014. Give all journal entries related to these securities during 2013, 2014, and 2015, including journal entries related to the following:

- Acquisition of securities.
 - Receipt of dividends.
 - Remeasurement on December 31.
 - Sale of securities.
- 16. Accounting for available-for-sale securities.** Events related to Simmons Corporation's investments of temporarily excess cash appear below. The firm classifies these investments as available-for-sale securities and does not elect the fair value option.

Security	Date Acquired	Acquisition Cost	Fair Value on December 31		Date Sold	Selling Price
			2013	2014		
S	6/13/2013	\$12,000	\$13,500	\$15,200	2/15/2015	\$14,900
T	6/13/2013	\$29,000	\$26,200	\$31,700	8/22/2015	\$28,500
U	6/13/2013	\$43,000	—	—	10/11/2013	\$39,000

None of these three securities paid dividends. Give all journal entries related to these securities during 2013, 2014, and 2015, including journal entries related to the following:

- a. Acquisition of securities.
- b. Remeasurement on December 31.
- c. Sale of securities.

17. Working backward from data on marketable securities transaction. (Adapted from a problem by S. A. Zeff.) During 2013, Fischer/Black Company purchased equity securities classified as available-for-sale securities. On May 22, 2014, the company recorded the following correct journal entry to record the sale of the equity securities:

Cash	16,000	
Realized Loss (included in net income)	5,000	
Unrealized Holding Loss (Other Comprehensive Income)		3,000
Marketable Securities		18,000

- a. What was the acquisition cost of these securities in 2013?
- b. What was the market price of these securities at the end of 2013?
- c. What is the total amount of securities gain or loss that Fischer/Black reports on the income statement for 2014?

18. Working backward from data on marketable securities transaction. (Adapted from a problem by S. A. Zeff.) On December 12, 2013, Canning purchased 2,000 shares of Werther. By December 31, the market price of these shares had dropped by \$1,000. On March 2, 2014, Canning sold the 2,000 shares for \$18,000 and reported a realized gain on the transaction of \$4,000.

- a. What was the acquisition cost of these securities if Canning had accounted for them as trading securities?
- b. What was the acquisition cost of these securities if Canning had accounted for them as available-for-sale securities?

19. Reconstructing events from journal entries. Give the likely transaction or event that would result in making each of the independent journal entries that follow:

a.

Unrealized Loss on Available-for-Sale Securities	4,000	
Marketable Securities		4,000

b.

Cash	1,100	
Realized Loss on Sale of Available-for-Sale Securities	200	
Marketable Securities		1,300

c.

Marketable Securities	750	
Unrealized Gain on Available-for-Sale Securities		750

d.

Cash	1,800	
Marketable Securities		1,700
Realized Gain on Sale of Available-for-Sale Securities		100

20. Reconstructing transactions involving short-term available-for-sale securities. During 2013, Zeff Corporation sold marketable securities for \$14,000 that had a carrying value of

\$13,000 at the time of sale. The financial statements of Zeff Corporation reveal the following information with respect to available-for-sale securities:

	December 31	
	2013	2012
Balance Sheet		
Marketable Securities at Fair Value.	\$195,000	\$187,000
Net Unrealized Gain on Available-for-Sale Securities.	\$ 10,000	\$ 12,000
Income Statement		
Realized Gain on Sale of Available-for-Sale Securities.	\$4,000	

- a. What was the acquisition cost of the marketable securities sold?
 - b. What was the unrealized gain on the securities sold at the time of sale?
 - c. What was the unrealized gain during 2013 on securities still held by the end of 2013?
 - d. What was the cost of marketable securities purchased during 2013?
- 21. Accounting for forward currency contract as a fair value hedge.** On September 1, 2013, Turner Corporation places an order with a Japanese supplier for manufacturing equipment for delivery on June 30, 2014. The purchase is denominated in Japanese yen in the amount of ¥5,200,000. Turner Corporation purchases a forward currency contract on September 1, 2013, for the purchase of ¥5,200,000 at a forward exchange rate for settlement on June 30, 2014, of \$1 = ¥102. Turner Corporation designates the forward contract as a fair value hedge. The forward exchange rate on December 31, 2013, for settlement on June 30, 2014, is \$1 = ¥100, and the actual exchange rate on June 30, 2014, is \$1 = ¥95. The following summarizes this information:

Date	Type of Exchange Rate	Exchange Rate	Amount in Japanese Yen	Equivalent U.S. Dollar Amount
September 1, 2013 . . .	Forward Rate for June 30, 2014, Settlement	\$1 = ¥102	¥5,200,000	\$50,980
December 31, 2013 . . .	Forward Rate for June 30, 2014, Settlement	\$1 = ¥100	¥5,200,000	\$52,000
June 30, 2014	Actual	\$1 = ¥95	¥5,200,000	\$54,737

- a. Using a discount rate of 8% per year, what is the fair value of the forward contract on December 31, 2013? Is the amount an asset or a liability?
 - b. What amount would Turner Corporation report on its December 31, 2013, balance sheet related to its commitment to purchase the equipment?
 - c. What is the fair value of the forward contract on June 30, 2014, just before settling the transaction?
 - d. Give the journal entry on June 30, 2014, to purchase the equipment.
 - e. Give the journal entry on June 30, 2014, to settle the forward contract.
- 22. Accounting for forward currency contract as a cash flow hedge.** On October 1, 2013, Biddle Corporation purchases equipment from a supplier in France on account at a purchase price of €40,000 and denominates the transaction in euros. Biddle Corporation must pay the €40,000 on March 31, 2014. To protect its cash flows, Biddle Corporation purchases a forward currency contract on October 1, 2013, for €40,000 at a forward exchange rate for settlement on March 31, 2014, of €1 = \$1.32. Biddle Corporation designates the forward contract as a cash flow hedge. The forward exchange rate on December 31, 2013, for settlement on March 31, 2014, is €1 = \$1.35, and the actual exchange rate on March 31, 2014, is €1 = \$1.40. Ignore discounting of cash flows in this exercise. The following summarizes this information:

Date	Type of Exchange Rate	Exchange Rate	Amount in Euros	Equivalent U.S. Dollar Amount
October 1, 2013	Forward Rate for March 31, 2014, Settlement	€1 = \$1.32	€40,000	\$52,800
December 31, 2013 . . .	Forward Rate for March 31, 2014, Settlement	€1 = \$1.35	€40,000	\$54,000
June 30, 2014	Actual	€1 = \$1.40	€40,000	\$56,000

- What is the fair value of the forward contract on December 31, 2013? Is the amount an asset or a liability?
- What amount would Biddle Corporation report on its December 31, 2013, balance sheet for its Note Payable to the supplier?
- What is the fair value of the forward contract on March 31, 2014, just before settling the transaction?
- Give the journal entry on March 31, 2014, to pay cash to the supplier.
- Give the journal entry on March 31, 2014, to settle the forward contract.

PROBLEMS

23. Journal entries and financial statement presentation of short-term available-for-sale securities. The following information summarizes data about Dostal Corporation’s marketable securities held as current assets and classified as available-for-sale securities:

Security	Date Acquired	Acquisition Cost	Date Sold	Selling Price	Fair Value	
					Dec. 31, 2013	Dec. 31, 2014
A	2/5/2013	\$60,000	6/5/2014	\$72,000	\$66,000	—
B	8/12/2013	\$25,000	—	—	\$20,000	\$20,000
C	1/22/2014	\$82,000	—	—	—	\$79,000
D	2/25/2014	\$42,000	6/5/2014	\$39,000	—	—
E	3/25/2014	\$75,000	—	—	—	\$80,000

- Give all journal entries relating to these marketable equity securities during 2013 and 2014, assuming the accounting period is the calendar year.
- Provide a suitable presentation of marketable securities in the balance sheet and related notes on December 31, 2013.
- Provide a suitable presentation of marketable securities in the balance sheet and related notes on December 31, 2014.

24. Journal entries and financial statement presentation of long-term available-for-sale securities. The following information summarizes data about Rice Corporation’s investments in equity securities held as noncurrent assets and classified as available-for-sale securities:

Security	Date Acquired	Acquisition Cost	Date Sold	Selling Price	Fair Value	
					Dec. 31, 2013	Dec. 31, 2014
A	3/5/2013	\$40,000	10/5/2014	\$52,000	\$45,000	—
B	5/12/2013	\$80,000	—	—	\$70,000	\$83,000
C	3/22/2014	\$32,000	—	—	—	\$27,000
D	5/25/2014	\$17,000	10/5/2014	\$16,000	—	—
E	5/25/2014	\$63,000	—	—	—	\$67,000

- a. Give all journal entries relating to these equity securities during 2013 and 2014, assuming the accounting period is the calendar year.
- b. Provide a suitable presentation of investments in securities in the balance sheet and related notes on December 31, 2013.
- c. Provide a suitable presentation of investments in securities in the balance sheet and related notes on December 31, 2014.
- 25. Analysis of financial statement disclosures for available-for-sale securities. Exhibit 13.8** reproduces data about marketable equity securities classified as available-for-sale securities by Moonlight Mining Company. Assume that Moonlight held no current marketable securities at the end of 2013, sold no current marketable securities during 2014, purchased no noncurrent marketable securities during 2014, and transferred no noncurrent marketable securities to the current portfolio during 2014. The income statement for 2014 shows a realized loss on sale of noncurrent marketable securities of \$3,068,000.
- a. What amount of net unrealized gain or loss on noncurrent marketable securities appears on the balance sheet for the end of 2013?
- b. What amount of net unrealized gain or loss on noncurrent securities appears on the balance sheet for the end of 2014?
- c. What were the proceeds from the sale of noncurrent marketable securities during 2014?
- d. What amount of unrealized gain or loss on marketable securities appears on the income statement for 2014?

EXHIBIT 13.8

Moonlight Mining Company
Data on Marketable Equity Securities
 (amounts in thousands of US\$)
 (Problem 25)

Marketable Equity Securities	Acquisition Cost	Fair Value
At December 31, 2014:		
Current Marketable Securities	\$ 7,067	\$ 4,601
Noncurrent Marketable Securities.	\$ 6,158	\$ 8,807
At December 31, 2013:		
Noncurrent Marketable Securities.	\$21,685	\$11,418

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- 26. Effect of various methods of accounting for marketable equity securities.** Information related to marketable equity securities of Callahan Corporation appears on the next page.

Security	Acquisition Cost in 2013	Dividends Received During 2013	Fair Value on Dec. 31, 2013	Selling Price in 2014	Dividends Received During 2014	Fair Value on Dec. 31, 2014
G	\$18,000	\$ 800	\$16,000	\$14,500	\$ 200	—
H	25,000	1,500	24,000	26,000	500	—
I	12,000	1,000	14,000	—	1,500	\$17,000
	<u>\$55,000</u>	<u>\$3,300</u>	<u>\$54,000</u>	<u>\$40,500</u>	<u>\$2,200</u>	<u>\$17,000</u>

- a. Assume these securities are trading securities. Indicate the nature and amount of income recognized during 2013 and 2014 and the presentation of information about these securities on the balance sheet on December 31, 2013 and 2014.
- b. Repeat part a assuming these securities are available-for-sale securities held as temporary investments of excess cash by Callahan Corporation.
- c. Repeat part a assuming these securities represent long-term investments by Callahan Corporation held as available-for-sale securities.

- d. Compute the combined income for 2013 and 2014 under each of the three treatments of these securities in parts a, b, and c. Why do the combined income amounts differ? Will total shareholders' equity differ? Why or why not?
27. **Analysis of financial statement disclosures related to marketable securities and quality of earnings.** A bank reports the following information relating to its marketable securities classified as available-for-sale securities for a recent year (amounts in millions of US\$):

	December 31	
	2014	2013
Marketable Securities at Acquisition Cost	\$13,968	\$14,075
Gross Unrealized Gains	1,445	957
Gross Unrealized Losses	(218)	(510)
Marketable Securities at Fair Value	<u>\$15,195</u>	<u>\$14,522</u>

Cash proceeds from sales and maturities of marketable securities totaled \$37,600 million in 2014. Gross realized gains totaled \$443 million, and gross realized losses totaled \$113 million during 2014. The carrying value of marketable securities sold or matured totaled \$37,008 million. Interest and dividend revenue during 2014 totaled \$1,081 million. Purchases of marketable securities totaled \$37,163 million during 2014.

- a. Give the journal entries to record the sale of marketable securities during 2014.
- b. Analyze the change in the net unrealized gain from \$447 million on December 31, 2013, to \$1,227 million on December 31, 2014.
- c. Compute the total income (both realized and unrealized) *occurring during 2014* on the bank's investments in securities.
- d. How might the judicious selection of marketable securities sold during 2014 permit the bank to report an even larger net realized gain?
28. **Accounting for forward commodity contract as a cash flow hedge.** Refer to **Examples 15** and **19** in the chapter. Delmar holds 10,000 gallons of whiskey in inventory on October 31, 2013, that costs \$225 per gallon. Delmar contemplates selling the whiskey on March 31, 2014. Uncertainty about the selling price of whiskey on March 31, 2014, leads Delmar to acquire a forward contract on whiskey. The forward contract does not require an initial investment. Delmar designates the forward commodity contract as a cash flow hedge of a forecasted transaction. The forward price on October 31, 2013, for delivery on March 31, 2014, is \$320 per gallon.
- a. Give the journal entry, if any, that Delmar would make on October 31, 2013, when it acquires the forward commodity contract.
- b. On December 31, 2013, the end of the accounting period for Delmar, the forward price of whiskey for March 31, 2014, delivery is \$310 per gallon. Give the journal entry to record the change in the value of the forward commodity price contract. Ignore the discounting of cash flows in this part and for the remainder of the problem.
- c. Give the journal entry, if any, that Delmar must make on December 31, 2013, for the decline in value of the whiskey inventory.
- d. On March 31, 2014, the price of whiskey declines to \$270 per gallon. Give the journal entry that Delmar must make to remeasure the forward contract.
- e. Give the entry, if any, that Delmar must make on March 31, 2014, to reflect the decline in value of the inventory.
- f. Give the journal entry that Delmar would make on March 31, 2014, to settle the forward contract.
- g. Assume that Delmar sells the whiskey on March 31, 2014, for \$270 a gallon. Give the journal entries to record the sale and recognize cost of goods sold.
- h. How would the entries in parts b through g differ if Delmar had chosen to designate the forward commodity contract as a fair value hedge instead of a cash flow hedge?
- i. Suggest a scenario that would justify the firm treating the forward commodity contract as a fair value hedge, and a scenario that would justify treating it as a cash flow hedge.

- 29. Accounting for forward currency contract as a fair value hedge and a cash flow hedge.** On July 1, 2013, Owens Corporation places an order with a European supplier for manufacturing equipment for delivery on June 30, 2014. The purchase is denominated in euros in the amount of €60,000. Owens Corporation purchases a forward currency contract on July 1, 2013, for the purchase of €60,000 at a forward exchange rate for settlement on June 30, 2014, of €1 = \$1.32. Owens Corporation designates the forward contract as a fair value hedge. The forward exchange rate on December 31, 2013, for settlement on June 30, 2014, is €1 = \$1.35, and the actual exchange rate on June 30, 2014, is €1 = \$1.40. The following summarizes this information:

Date	Type of Exchange Rate	Exchange Rate	Amount in Euros	Equivalent U.S. Dollar Amount
July 1, 2013	Forward for June 30, 2014, Settlement	€1 = \$1.32	€60,000	\$79,200
December 31, 2013	Forward for June 30, 2014, Settlement	\$1 = €1.35	€60,000	\$81,000
June 30, 2014	Actual	€1 = \$1.40	€60,000	\$84,000

- Using a discount rate of 8% per year, give the journal entries that Owens Corporation would make on July 1, 2013, December 31, 2013, and June 30, 2014, to account for the purchase commitment and the forward contract. Owens Corporation's accounting period is the calendar year.
 - How would the journal entries in part **a** differ if Owens Corporation designates the forward contract as a cash flow hedge instead of a fair value hedge?
 - Suggest a scenario that would justify the firm treating the forward contract as a fair value hedge and a scenario that would justify treating it as a cash flow hedge.
- 30. Accounting for an interest rate swap as a fair value hedge.** Sandretto Corporation issues a note payable on January 1, 2013, to a supplier in return for equipment. The note has a face value of \$50,000 and bears interest at 6% each year. Interest is payable annually on December 31, and the note matures on December 31, 2015. Sandretto Corporation has the option of repaying the note at any time prior to maturity at its fair value. Sandretto Corporation will repay the note early only if interest rates drop. In that event, the fair value of the note would exceed \$50,000, and Sandretto Corporation will not capture the benefits of the lower interest rate. To neutralize the effects of changes in the fair value of the note payable, Sandretto enters into an interest rate swap with its bank. The swap has the effect of allowing Sandretto to exchange its fixed interest rate liability for a variable rate obligation. Assume that the variable interest rate is 6% on January 1, 2013, and the rate is reset to 8% on December 31, 2013, and to 4% on December 31, 2014.
- Give the journal entries that Sandretto Corporation will make on January 1, 2013, December 31, 2013, and December 31, 2014.
 - Sandretto Corporation decides to repay this note on January 1, 2015. Give the journal entries for the repayment of the note and to close out the swap agreement, assuming that Sandretto Corporation does not incur any additional costs for the early repayment or closing out the swap contract.
 - How would the entries in part **a** differ if Sandretto Corporation elected the fair value option for the note payable and interest rate swap?
- 31. Accounting for an interest rate swap as a cash flow hedge.** Avery Corporation issues a note payable on January 1, 2013, to a supplier in return for equipment. The note has a face value of \$50,000 and bears interest at a variable interest rate; the variable interest rate is 6% on January 1, 2013. Interest is payable annually on December 31, and the note matures on December 31, 2015. To protect its cash flows from changes in the variable interest rate, Avery Corporation enters into an interest rate swap with its bank. The swap has the effect of allowing Avery Corporation to exchange its variable interest rate liability for a 6% fixed rate obligation. Assume the variable interest rate increases to 8% on December 31, 2013, and decreases to 4% on December 31, 2014. Avery Corporation designates the interest rate swap as a cash flow hedge. Give the journal entries that Avery Corporation will make on January 1, 2013, December 31, 2013, December 31, 2014, and December 31, 2015.

Intercorporate Investments in Common Stock

1. Understand why firms invest in common stock issued by other entities and how the purpose and relative size of an investment determine the method of accounting for that investment.
2. Develop skills to apply the equity method to minority, active investments.
3. Understand the concepts underlying consolidated financial statements for majority, active investments, including the concept of control.
4. Understand consolidation policy for an entity for which the analysis of voting interests does not reveal control.

LEARNING OBJECTIVES

For various reasons, corporations often acquire common stock issued by other entities.

Example 1 Citigroup has trading operations that focus on short-term changes in the prices of securities. Citigroup purchases shares of common stock of Roche Holding, Ltd., a pharmaceutical company, on December 28, 2013, with the expectation of selling them early in 2014.

Example 2 Microsoft Corporation acquires 5% of the common shares of a technology startup company, with the intent of benefitting from increases in the value of these shares if the technology company succeeds.

Example 3 The Coca-Cola Company (Coke) owns 40% of the common stock of Coca-Cola Enterprises, a bottler of its soft drinks. This ownership percentage permits Coke to exert significant influence, perhaps even control, over the operations of Coca-Cola Enterprises. As discussed later in this chapter, the amount of Coke's holdings is not large enough to warrant consolidating Coca-Cola Enterprises by including all of the assets and liabilities of Coca-Cola Enterprises on Coke's balance sheet, under the provisions of U.S. GAAP; it is possible, however, that if Coke were to apply IFRS it might consolidate Coca-Cola Enterprises.

Example 4 The Walt Disney Company owns all the common stock of ESPN, Inc., and can therefore control both ESPN's overall policies and its day-to-day business decisions. Walt Disney will prepare consolidated financial statements that include ESPN's assets and liabilities.

OVERVIEW OF THE ACCOUNTING FOR AND REPORTING OF INVESTMENTS IN COMMON STOCK

The accounting for investments in common stock depends on two factors:

1. The expected holding period.
2. The purpose and relative size of the investment.

EXPECTED HOLDING PERIOD

The expected holding period determines whether an investment in common stock is classified as a current asset or as a noncurrent asset on the balance sheet. Equity securities with readily determinable fair values that firms expect to sell within the next year appear as **marketable securities** and are included among current assets on the balance sheet. In **Example 1**, Citigroup would classify its investment in Roche Holding, Ltd., as a current asset. Securities that firms expect to hold for more than one year from the date of the balance sheet appear in **investments in securities**, classified as a noncurrent asset on the balance sheet. Microsoft's investment in the technology startup company in **Example 2** and Coke's investment in Coca-Cola Enterprises in **Example 3** appear in investments in securities. A later section explains that Walt Disney in **Example 4** would prepare consolidated financial statements with ESPN. The consolidation procedure requires Walt Disney to replace its Investment in ESPN account with accounts showing ESPN's individual assets and liabilities, and report the two legally separate entities as a single economic entity. The Investment in ESPN account does not appear on the consolidated balance sheet.

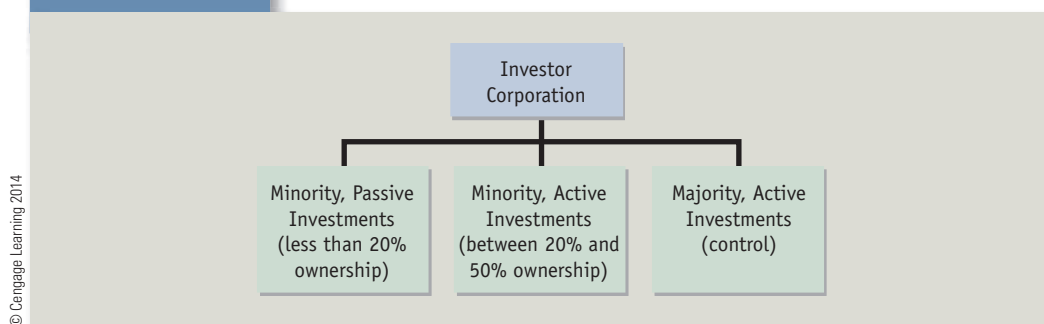
PURPOSE OF AN INVESTMENT IN COMMON STOCK

This section describes how the purpose of an investment in common stock and the percentage of common stock held combine to determine the accounting for that investment. Refer to **Figure 14.1**, which identifies three types of investments.

1. **Minority, passive investments** For these investments, an investor acquires the common stock of another entity (the investee) for the dividends and price appreciation anticipated from share ownership. The acquiring (investor) company's ownership percentage is sufficiently small that it cannot control the other company or exert **significant influence** over it. Citigroup's investment in Roche Holding, Ltd., in **Example 1** and Microsoft Corporation's 5% ownership investment in the technology startup company in **Example 2** are minority, passive investments. U.S. GAAP and IFRS view investments of less than 20% of the voting shares of another company as minority, passive investments.¹ An investor who intends to hold the shares for less than a year classifies them as current assets. If the expected holding period is longer, the investor classifies them as noncurrent assets. **Chapter 13** discusses the accounting for minority, passive investments in both debt securities and equity securities.
2. **Minority, active investments** For these investments, an investor acquires common shares of an investee with the intent of exerting significant influence over the investee. Investors who own less than a majority (less than 50%) of an investee's common shares are often able to exert significant influence over the investee because the ownership of publicly traded enterprises is diffuse.² An example of a minority, active investment is Coke's investment in the

FIGURE 14.1

Types of Intercorporate Investments in Common Stock



¹Accounting Principles Board, *Opinion No. 18*, "The Equity Method of Accounting for Investments in Common Stock," 1971 (**Codification Topic 323**); IASB, *International Accounting Standard 28*, "Investments in Associates and Joint Ventures," 2011.

²*Diffuse ownership* means there are many different owners of common shares who do not work together to align their votes.

shares of Coca-Cola Enterprises in **Example 3**. U.S. GAAP and IFRS view investments of between 20% and 50% of the voting stock of another company as minority, active investments.³ Minority, active investments are classified as noncurrent assets on the balance sheet, often called **equity method investments** or **investments in affiliates** or **investments in associates**. Firms use different terms to refer to these types of investments, so the user of financial reports should read the footnote disclosures to determine how the firm describes its minority active investments.

- 3. Majority, active investments** For these investments, an investor holds a controlling financial interest in the investee and is able to make decisions for the investee both at the broad policy-making level and at the day-to-day operational level. Refer to **Example 4**. Walt Disney acquired ESPN to add sports television broadcasting to its entertainment capabilities. U.S. GAAP and IFRS view ownership of more than 50% of an investee as implying control of the investee.⁴ As discussed later, IFRS also provides conditions in which a less-than-50% ownership interest implies control.

This chapter describes and illustrates the accounting for minority, active investments in common shares and majority, active investments in common shares. Throughout our discussion, we designate the acquiring corporation (the investor) as P, for purchaser or parent, and the acquired corporation (the investee) as S, for seller or subsidiary.

MINORITY, ACTIVE INVESTMENTS

When an investor owns less than a controlling financial interest in another corporation, the investor must determine if it can exert significant influence. Both U.S. GAAP and IFRS presume that significant influence exists at 20% ownership. That is, significant influence is presumed to exist when the investor owns 20% or more of the voting stock of the investee. Significant influence can exist at lower ownership levels, if there is a contractual or other basis to demonstrate that influence. U.S. GAAP and IFRS require firms to account for minority, active investments using the **equity method**. We describe this method and its rationale next.⁵

EQUITY METHOD: RATIONALE

To introduce the rationale for the equity method, we first review the accounting for available-for-sale marketable securities, discussed in **Chapter 13**. The investor, P, measures its investments in available-for-sale marketable securities at fair value on the balance sheet and recognizes revenue when it receives a dividend or sells some of the securities at a gain or loss. (P recognizes unrealized changes in the fair value of available-for-sale securities in other comprehensive income, not in earnings.) Suppose that the investee, S, follows a policy of financing its operations using assets generated through the retention of earnings, consistently declaring dividends less than its net income or perhaps declaring no dividends at all. The fair value of S's shares will probably increase to reflect this retention of assets. But P reports income only from the dividends it receives. Thus, the increase in the fair value of S's common stock will not appear in P's earnings until P sells the common shares and realizes the fair value increase.

Consider what would happen if this accounting treatment were permitted for ownership percentages at which P could exert significant influence over S. If P can exert significant influence over S, P can affect S's dividend policy, thus affecting P's own income. For example, if P would like to increase its own income for a particular period, P can pressure S to increase S's

³FASB, *Interpretation No. 35*, "Criteria for Applying the Equity Method of Accounting for Investments in Common Stock," 1981 (**Codification Topic 323**); IASB, *International Accounting Standard 28*, "Investments in Associates and Joint Ventures," 2011.

⁴FASB, *Statement of Financial Accounting Standards No. 94*, "Consolidation of All Majority-owned Subsidiaries," 1987 (**Codification Topic 810**); IASB, *International Financial Reporting Standard 10*, "Consolidated Financial Statements," 2011.

⁵Firms may apply the fair value option to certain equity method investments. The fair value option requires remeasuring the investment to fair value each period, with unrealized gains and losses included in net income. FASB, *Statement of Financial Accounting Standards No. 159*, "The Fair Value Option for Financial Assets and Financial Liabilities," 2007 (**Codification Topic 825**); IASB, *International Accounting Standard 39*, "Financial Instruments: Recognition and Measurements," revised 2003 and *International Financial Reporting Standard 9*, "Financial Instruments," 2010.

periodic dividend or to pay a special dividend. To avoid this outcome, accounting requires a different treatment for minority, active investments (the equity method) than for minority, passive investments.

EQUITY METHOD: PROCEDURES

The equity method records the initial purchase of an investment at acquisition cost. Each period, P treats as income (or loss) its share of the net income (or loss) of S. This income also increases P's Investment in Stock of S, an asset on P's balance sheet. Finally, P treats its share of dividends declared and paid by S as a reduction of P's Investment in Stock of S account.

Example 5 Suppose that P acquires 30% of the outstanding shares of S for \$600,000. The entry to record the acquisition on P's balance sheet is as follows:

(1)	Investment in Stock of S	600,000	
	Cash		600,000
	To record Company P's investment in 30% of the common shares of Company S.		

Between the time of the acquisition and the end of P's next accounting period, S reports earnings of \$80,000. P, using the equity method, records the following journal entry:

(2)	Investment in Stock of S	24,000	
	Equity in Earnings of Affiliate		24,000
	To record 30% of the earnings of S accounted for using the equity method; \$24,000 = 0.30 × \$80,000.		

The Equity in Earnings of Affiliate account is an income statement account.⁶ Firms that apply IFRS more commonly use the title, Equity in Earnings of Associate (or Associated Companies).

If S declares and pays a dividend of \$30,000 to holders of its common stock, P receives \$9,000 (= 0.30 × \$30,000) and records the following journal entry:

(3)	Cash	9,000	
	Investment in Stock of S		9,000
	To record 30% of the dividend declared and paid by S, accounted for using the equity method.		

P records its share of income earned by S as an increase in investment, while the dividend is a partial return of the investment and decreases P's Investment in Stock of S account. To understand journal entry (3), which shows a credit to an asset account by the investor when the investee company pays a dividend, consider a savings account at a bank. Assume you put \$600,000 in a savings account. Later the bank adds interest of 4% (or \$24,000) to the account, and still later you withdraw \$9,000 from the account. You can record journal entries (1) through (3) for these three events, with slight changes in the account titles: Investment in Stock of S changes to Savings Account, and Equity in Earnings of Affiliate changes to Interest Revenue. The cash withdrawal of \$9,000 reduces the amount invested in the savings account. Similarly, the payment of a cash dividend by an investee accounted for with the equity method reduces the investor's investment because it reduces the investee's retained earnings. The investor, P, owns a sufficiently large percentage of the voting shares that it can often influence S to pay a dividend, just as you can require the savings bank to remit cash to you whenever you choose.

⁶If instead of earnings of \$80,000, S had a loss of \$20,000, P would make an entry debiting Equity in Loss of Affiliate and crediting Investment in Stock of S for \$6,000 (= 0.30 × \$20,000). That is, just as S's earnings increase P's income, so too do S's losses decrease P's income.

Suppose S reports earnings of \$100,000 and pays dividends of \$40,000 during the next accounting period. P's entries are as follows:

(4)	Investment in Stock of S	30,000	
	Equity in Earnings of S		30,000
	To record 30% of the earnings of S, accounted for using the equity method; \$30,000 = 0.30 × \$100,000.		
(5)	Cash	12,000	
	Investment in Stock of S		12,000
	To record 30% of the dividend declared and paid by S, accounted for using the equity method; \$12,000 = 0.30 × \$40,000.		

P's Investment in Stock of S account now has a balance of \$633,000 as follows:

Investment in Stock of S			
(1)	600,000	9,000	(3)
(2)	24,000	12,000	(5)
(4)	30,000		
	Bal. 633,000		

Assume now that P sells one-fourth of its investment in S for \$165,000. The entry is as follows:

(6)	Cash	165,000	
	Investment in Stock of S		158,250
	Gain on Sale of Investment in Stock of S		6,750
	To record the sale of one-fourth of the investment in S. The balance sheet carrying value of the investment sold is \$158,250 = 1/4 × \$633,000. The Gain on Sale of Investment increases P's net income by \$6,750.		

After the sale, the balance in the Investment in Stock of S account is \$474,750, as follows:

Investment in Stock of S			
(1)	600,000	9,000	(3)
(2)	24,000	12,000	(5)
(4)	30,000		
	Bal. 633,000		
		158,250	(6)
	Bal. 474,750		

Recognizing the Investor's Share of the Investee's Other Comprehensive Income In addition to recognizing the investor's share of the investee's net income, the investor also recognizes its share of the investee's other comprehensive income.⁷ The investor can combine its share of the elements of other comprehensive income of the investee with similar items arising from its own operations. For instance, in the preceding example assume that S's other comprehensive income during the first period is as follows:

Unrealized Gains from Marketable Securities	\$ 3,000
Unrealized Losses from Cash Flow Hedges	(2,000)
Other Comprehensive Income	<u>\$ 1,000</u>

⁷FASB, *Statement of Financial Accounting Standards No. 130*, "Reporting Comprehensive Income," 1997, par. 121 (Codification Topic 220).

P would make the following entry to recognize its share of the other comprehensive income of S, based on its 30% ownership of S.

Investment in Stock of S	300	
Unrealized Losses from Cash Flow Hedges (Other Comprehensive Income)	600	
Unrealized Gains from Marketable Securities (Other Comprehensive Income)		900
To recognize P's share of S's Other Comprehensive Income. The amounts of Other Comprehensive Income are closed to P's Accumulated Other Comprehensive Income.		

Excess Purchase Price on Acquisition of Equity Method Investment P's investment in S represents a proportionate share (in the previous example, 30%) of the shareholders' equity of S. P may pay more than the carrying value for this investment. That is, P's payment for S may exceed its 30% interest in the balance sheet carrying value of S's net assets (= assets – liabilities = shareholders' equity) at the date of acquisition. For example, assume that when P acquired 30% of S's common shares for \$600,000, S's total shareholders' equity was \$1.5 million. P's acquisition cost exceeds the carrying value of its proportionate share of the net assets acquired by \$150,000 [= \$600,000 – (0.30 × \$1,500,000)]. P may pay this premium (the excess purchase price) because the fair values of S's net assets differ from their carrying values, or because of S's unrecorded assets (for example, trade secrets).

The investor's accounting for the excess purchase price embedded in the Investment in Stock of S account is similar to the treatment of an excess purchase price in a business combination. As **Chapter 10** discusses, the investor identifies any recorded assets and liabilities with fair values that differ from their carrying values, as well as any unrecorded assets and liabilities. The investor attributes the excess purchase price to these assets and liabilities, based on the investor's proportionate ownership interest, and attributes any remaining excess purchase price to goodwill. For example, assume that P attributes the \$150,000 excess purchase price in the preceding example as follows: \$100,000 to remeasure buildings and equipment to fair value and \$50,000 to goodwill. P does not reclassify this excess out of its Investment in Stock of S account to Buildings and Equipment and to Goodwill. P must, however, amortize (or depreciate) any amount attributed to assets with definite lives. Thus, P must depreciate the \$100,000 attributed to buildings and equipment over their remaining useful lives. U.S. GAAP and IFRS do not permit the investor to amortize the excess purchase price attributed to goodwill and other assets with indefinite lives. Instead, the investor must test the investment account annually for possible impairment.

EQUITY METHOD DISCLOSURES

Thames's balance sheet, shown in **Exhibit 1.6**, indicates that Thames has investments in equity affiliates. Thames refers to these investments on its balance sheet as Share of Net Assets of Equity Affiliates. The amount reported for these investments increased from €692.4 million at the end of fiscal 2012 to €711.0 million at the end of fiscal 2013. **Exhibit 14.1** presents information from Thames's footnote disclosures pertaining to these investments. Thames accounts for these investments using the equity method.

The first panel of **Exhibit 14.1** shows the investee names, ownership percentages, and balance sheet carrying values of Thames's investments in six affiliated companies. The last row of this table, labeled "Other," captures Thames's aggregate holdings of smaller enterprises that it also accounts for using the equity method. The ownership percentages indicate that at the end of fiscal 2012 Thames owned between 20% and 33% of the six named equity affiliates. The data also indicate that Thames did not increase or decrease its ownership stakes in these companies during 2013. The carrying values of these investments on Thames's balance sheet changed because of the earnings generated and dividends paid by the affiliates.

For all equity affiliates combined, the second panel shows the reasons for the change in the carrying values. The carrying value of Thames's investment in equity affiliates increased because of Thames's share of earnings generated by the affiliates. In 2013, Thames's share amounted to €48.0 million. Thames's income statement, **Exhibit 1.6**, shows this amount. The carrying value of Thames's investment in equity affiliates declined by €26.5 million to reflect

EXHIBIT 14.1

Thames's Note on Investments in Equity Affiliates

Affiliate	Ownership %		Share in Net Assets (€ million)		Share in Income (€ millions)
	2013	2012	2013	2012	2013
Plane Ltd.	30	30	54.9	57.3	4.6
Dante Plc.	20	20	50.0	48.9	6.4
LJGD.	25	25	520.2	505.5	23.5
GePix	20	20	16.4	15.7	1.3
Electronica.	33	33	30.4	28.1	6.1
IndoTechnica	33	33	16.3	16.3	1.2
Other	—	—	<u>22.8</u>	<u>20.6</u>	<u>4.9</u>
Total.			<u>711.0</u>	<u>692.4</u>	<u>48.0</u>
Share in Net Assets of Equity Affiliates, December 31, 2012			€692.4		
Share in Income (Loss) of Equity Affiliates			48.0		
Dividends Paid			(26.5)		
Effect of Exchange Rates			(2.9)		
Share in Net Assets of Equity Affiliates, December 31, 2013			€711.0		

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Thames's portion of dividends paid by equity affiliates during 2013. Finally, Thames's carrying value in the account Investment in Equity Affiliates declined by €2.9 million due to exchange rate effects.⁸

The information reported in **Exhibit 14.1** connects to the information in Thames's statement of cash flows, shown in **Exhibit 1.7**. Thames's statement of cash flows shows a subtraction from net income of €21.5 million. This amount equals Thames's portion of equity affiliate earnings included in net income of €48.0 million, net of Thames's portion of dividends paid by the equity affiliates of €26.5 million, that is, €21.5 = €48.0 – €26.5 million.

Summary of Accounting for Investments Under the Equity Method On the investor's balance sheet, an investment accounted for using the equity method appears among noncurrent assets. The amount shown equals the acquisition cost of the shares, plus P's share of S's earnings (or losses) since the date P acquired the shares, less P's share of any dividends paid by S, less any amortization or depreciation associated with an allocation of an excess purchase price to assets with definite service lives. P includes in its income each period its share of S's income (or loss) as income (or loss). P also recognizes its share of the investee's other comprehensive income (or loss). The accounting method that the investor, P, uses does not affect the separate financial statements of the investee, S.

▶ PROBLEM 14.1 FOR SELF-STUDY

Journal entries to apply the equity method. **Exhibit 14.2** summarizes data about the minority, active investments of Equigroup. Assume that any excess of acquisition cost over the carrying value of the net assets acquired (excess purchase price) relates to equipment with a 10-year remaining life on January 1, 2013. Prepare the journal entries to do the following:

- a. Record the acquisition of these securities on January 1, 2013.

(continued)

⁸We do not consider the accounting for the effects of changes in exchange rates in this textbook.

EXHIBIT 14.2

Equigroup
(Problem 14.1 for Self-Study)

Security	Date Acquired	Acquisition Cost	Ownership Percentage	Carrying Value of Net Assets on January 1, 2013	Earnings (Loss)		Dividends	
					2013	2014	2013	2014
D	1/1/2013	\$ 80,000	40%	\$200,000	\$ 40,000	\$ 50,000	\$10,000	\$12,000
E	1/1/2013	190,000	30	500,000	120,000	(40,000)	30,000	—
F	1/1/2013	200,000	20	800,000	200,000	50,000	60,000	60,000

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- b. Apply the equity method for 2013.
- c. Apply the equity method for 2014.
- d. Record the sale of Security E on January 2, 2015, for \$190,000.

MAJORITY, ACTIVE INVESTMENTS

When an investor controls an investee company, that investor can prescribe the activities of the investee in terms of both broad policy making and day-to-day operations. U.S. GAAP states that an investor controls an investee when the investor has a controlling financial interest in the investee; the usual condition for control is holding more than 50% of the voting stock of the investee, that is, majority ownership. IFRS defines control in terms of three conditions: (1) the investor has power over the investee; (2) the investor has exposure to variable returns (for example, share price changes) because of its involvement with the investee; and (3) the investor can use its power over the investee to affect the returns it will receive (for example, the investor can direct the operating, financing and investing activities of the investee). The IFRS approach to determining control is broader than the U.S. GAAP approach, and applying it can require significant judgment. The IFRS approach to control can encompass, for example, the following, in addition to majority ownership of shares:

- An investor has a large, but not majority, ownership interest; no other investor has more than a very small ownership interest; and those other investors do not work together to align their votes. Coke's 40% ownership of Coca-Cola Enterprises might place Coke in control of Coca-Cola Enterprises, under IFRS, depending on the number and nature of the other owners.
- An investor has both an ownership interest and a contractual arrangement that gives it the power to elect a majority of the investee's governing board (board of directors).

Common usage refers to the investor that controls the investee as the **parent (P)** and to the controlled (for example, majority-owned company) as the **subsidiary (S)**. U.S. GAAP and IFRS require the parent to combine the financial statements of controlled companies with those of the parent in **consolidated financial statements**.⁹ A consolidation of the financial statements of the parent and each of its subsidiaries presents the results of operations, financial position, and cash flows of an affiliated group of companies under the control of a parent as if the group of companies was arranged as a single entity. The parent and each subsidiary are legally separate entities that operate as one centrally controlled economic entity.

⁹FASB, *Statement of Financial Accounting Standards No. 94*, "Consolidation of All Majority-Owned Subsidiaries," 1987 (**Codification Topic 810**); IASB, *International Financial Reporting Standard 10*, "Consolidated Financial Statements," 2011.

REASONS FOR LEGALLY SEPARATE CORPORATIONS

Firms have several reasons for preferring to operate as a group of legally separate corporations (an affiliated group), rather than as a single entity. From the standpoint of the parent company, reasons for maintaining legally separate subsidiary companies include the following:

1. **To reduce legal or operational risk.** Separate corporations may obtain raw materials, transport them to a manufacturing plant, produce the product, and sell the finished product to the public. If any one part (subsidiary) of the total process proves to be unprofitable or inefficient, losses from insolvency will fall only on the owners and creditors of that subsidiary entity, and not fall upon the others.
2. **To reduce the costs of dealing with jurisdiction-specific differences in corporate laws and tax rules.** An organization that does business in a number of localities faces overlapping and inconsistent taxation and regulations. Organizing legally separate corporations to conduct operations in the various locales can reduce the administrative costs of dealing with location-specific rules.
3. **To expand or diversify.** A firm may enter a new line of business, or expand an existing line, by acquiring a controlling interest in another company's voting stock. This approach may be faster, less expensive, and less risky than constructing a new plant or starting a new line of business.
4. **To reduce the costs of divesting assets.** Firms generally save costs if they sell the common stock of a subsidiary rather than trying to sell each of its assets separately.

PURPOSE OF CONSOLIDATED STATEMENTS

Consolidated financial statements provide more helpful information than does the equity method. This is because consolidated statements include all the assets, liabilities, revenues, and expenses of the controlled (legally separate) subsidiaries. In contrast, the equity method shows only: (1) the investment account that represents the parent's investment in the subsidiary's common shareholders' equity; and (2) the parent's share of the subsidiary's net income (or loss).

A parent that controls a subsidiary can control the use of *all* of the subsidiary's assets. The parent does not need to own 100% of the voting shares to achieve control over all assets. For example, a parent that owns a 70% share of the investee's voting shares is able to exercise control over all of the investee's assets, not 70% of those assets. Consolidation of the individual assets, liabilities, revenues, and expenses of both the parent and the subsidiary provides a more realistic picture of the operations and financial position of the single economic entity.

The separate financial statements of the parent and its subsidiaries form the base for consolidated financial statements. In a legal sense consolidated statements supplement, and do not replace, the separate statements of the individual corporations. Published annual reports typically contain only the consolidated statements.

Example 6 Great Deal and Thames, among others, have wholly owned finance subsidiaries that make loans to customers who want to purchase products produced by the consolidated entity. The parent company consolidates the financial statements of these finance subsidiaries. Nothing prevents the separate display of the finance subsidiary's financial statements (and in some circumstances the financial report must display the subsidiary's separate financial statements).

Example 7 A mining company owns all the shares of a mining subsidiary in South America, where the government enforces stringent control over cash distributions outside that country. The parent cannot control all the assets of the subsidiary, despite owning a majority of the voting shares, so it does not prepare consolidated statements with the subsidiary.

THE PURCHASE TRANSACTION

In a business combination, one corporation either

1. Acquires the assets and assumes the liabilities of another corporation, or
2. Acquires control of another corporation by, for example, acquiring all, or a majority, of another corporation's common shares. By acquiring shares, the acquirer obtains a controlling interest in the net assets of the other corporation.

Both U.S. GAAP and IFRS require firms to account for a business combination using the **acquisition method**, also called the **purchase method**.¹⁰ The acquisition method views a business combination as conceptually identical to the purchase of any single asset (for example, inventory or a machine). Application of the acquisition method involves two steps:

1. Measure the identifiable tangible and intangible assets and liabilities of the acquired company at their fair values. In some cases, the acquired firm may not have recognized some identifiable assets or liabilities in its accounting records. For example, the acquired company may own patents and trademarks that it developed internally. Those internally developed intangible assets are not recorded as assets on the firm's balance sheet.¹¹ The consolidated balance sheet would recognize those assets at their fair values.
2. Compare the fair value of the cash, common stock, or other consideration paid in the purchase transaction with the fair value of the identifiable net assets (identifiable assets less identifiable liabilities) acquired. The excess of the fair value of the consideration over the fair value of the acquired firm's identifiable net assets is **goodwill**. If the fair value of the acquired firm's identifiable net assets exceeds the fair value of the consideration, the excess is a gain from a **bargain purchase**, which the purchaser immediately includes in net income.¹²

► PROBLEM 14.2 FOR SELF-STUDY

Financial statement effects of the acquisition method. Exhibit 14.3 presents balance sheet data for Powell Corporation and Steele Corporation as of January 1, 2013. On this date, Powell exchanges 2,700 shares of its common stock with \$1 par value, selling for \$20 per share, for all of the individual assets and liabilities of Steele.

- a. Give the journal entry on the books of Powell Corporation to record the acquisition of the assets and liabilities of Steele Corporation.
- b. Prepare a balance sheet for Powell Corporation after the acquisition of Steele Corporation on January 1, 2013, using the acquisition method.

UNDERSTANDING CONSOLIDATED FINANCIAL STATEMENTS

Recording the Acquisition In **Problem 14.2 for Self-Study**, Powell acquired the assets and liabilities of Steele and recognized them at their fair values. After the acquisition, the assets of Steele would consist of only the consideration received from Powell (that is, shares of Powell common stock). Steele might distribute this consideration to its shareholders and dissolve as a legal corporation. If it did so, Steele would no longer be a legally separate corporation.

An investor firm (parent) prepares consolidated financial statements when the investor acquires control of an investee firm, for example by purchasing all or a majority of the common stock of the investee. In this case, the acquiring firm records the acquisition in the Investment in Stock account on its separate (parent company) balance sheet in the same net amount as if it had purchased the identifiable assets net of liabilities. If Powell were to issue 2,700 shares with par value \$1 and market value \$20 for all of the shares of Steele, Powell would record its investment in Steele as follows:

January 1, 2013

Investment in Steele Corporation	54,000	
Common Stock		2,700
Additional Paid-In Capital		51,300

¹⁰FASB, *Statement of Financial Accounting Standards No. 141R (revised 2007)*, "Business Combinations," 2007 (Codification Topic 805); IASB, *International Financial Reporting Standard 3*, "Business Combinations," revised 2008.

¹¹Chapter 10 discusses the accounting for internally developed intangible assets.

¹²Paragraph 36 of FASB, *Statement of Financial Accounting Standards No. 141R (revised 2007)*, "Business Combinations," 2007 (Codification Topic 805); paragraph 34 of IASB, *International Financial Reporting Standard 3*, "Business Combinations," revised 2008.

EXHIBIT 14.3

Powell Corporation and Steele Corporation
Financial Statement Data for January 1, 2013
(Problem 14.2 for Self-Study)

	Carrying Value		Fair Value
	Powell Corp.	Steele Corp.	Steele Corp.
ASSETS			
Current Assets	\$10,000	\$ 7,000	\$ 7,000
Property, Plant, and Equipment (Net)	30,000	18,000	23,000
Goodwill	—	—	40,000
Total Assets	<u>\$40,000</u>	<u>\$25,000</u>	<u>\$70,000</u>
LIABILITIES AND SHAREHOLDERS' EQUITY			
Liabilities	\$25,000	\$16,000	\$16,000
Common Stock (\$1 Par Value)	1,000	1,000	1,000
Additional Paid-In Capital	9,000	5,000	5,000
Retained Earnings	5,000	3,000	3,000
Unrecorded Excess of Fair Value over Carrying Value	—	—	45,000
Total Liabilities and Shareholders' Equity	<u>\$40,000</u>	<u>\$25,000</u>	<u>\$70,000</u>

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Preparing a Consolidated Balance Sheet at Date of Acquisition The first two columns of **Exhibit 14.4** present the separate balance sheets of Powell and Steele on January 1, 2013, immediately after Powell's acquisition of Steele's common stock. Powell's separate company balance sheet includes the Investment in Steele account measured on January 1, 2013, at the consideration given (\$54,000). This consideration equals the fair value of the identifiable net assets of Steele plus \$40,000 of goodwill.

To prepare a consolidated balance sheet on January 1, 2013, Powell would construct a **consolidation work sheet** like that in **Exhibit 14.4**. The first two columns show the amounts from the separate balance sheets of Powell and Steele. Adding these amounts together would double-count both the net assets and the shareholders' equity of the two entities. Powell's balance sheet contains an asset for its investment in the net assets of Steele. Steele's books contain the individual net assets. Likewise, Powell's shareholders' equity provides the equity financing for its assets, one of which is its investment in Steele. Steele's balance sheet includes the shareholders' equity owned by Powell. Thus, to prepare a consolidated balance sheet that reflects assets, liabilities, and shareholders' equity as if the two companies were one economic entity, we must eliminate the double-counting. We make this elimination entry on the consolidation work sheet, not on the books of either company. This entry involves eliminating the Investment in Steele in the amount of \$54,000, eliminating the shareholders' equity accounts of Steele in the amount of \$9,000 (= \$1,000 + \$5,000 + \$3,000), and allocating the difference of \$45,000 (= \$54,000 – \$9,000) to remeasure Property, Plant, and Equipment (Net) to its fair value (the amount is \$5,000) and to Goodwill (the amount is \$40,000). The entry on the consolidation work sheet is as follows:

January 1, 2013

Common Stock	1,000	
Additional Paid-In Capital	5,000	
Retained Earnings	3,000	
Property, Plant, and Equipment (Net)	5,000	
Goodwill	40,000	
Investment in Steele Corporation		54,000
Work sheet entry to eliminate the investment account and Steele's shareholders' equity accounts, and to allocate the excess purchase price to property, plant, and equipment (net) and goodwill.		

EXHIBIT 14.4**Consolidated Work Sheet for Powell Corporation
and Steele Corporation
January 1, 2013**

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	Powell Corp.	Steele Corp.	Debit	Credit	Consolidated
ASSETS					
Current Assets	\$10,000	\$ 7,000			\$ 17,000
Property, Plant, and Equipment (Net)	30,000	18,000	5,000		53,000
Investment in Powell Corp.	54,000			54,000	—
Goodwill	—	—	40,000		40,000
Total Assets	<u>\$94,000</u>	<u>\$25,000</u>			<u>\$110,000</u>
LIABILITIES AND SHAREHOLDERS' EQUITY					
Liabilities	\$25,000	\$16,000			\$ 41,000
Common Stock (\$1 Par Value) . . .	3,700	1,000	1,000		3,700
Additional Paid-In Capital	60,300	5,000	5,000		60,300
Retained Earnings	5,000	3,000	3,000		5,000
Total Liabilities and Shareholders' Equity.	<u>\$94,000</u>	<u>\$25,000</u>			<u>\$110,000</u>

The amounts in the Consolidated column of the work sheet are identical to those in **Exhibit 14.9** in the solution to **Problem 14.2 for Self-Study**, in which Powell acquires Steele's assets and liabilities directly.

Accounting for the Investment Subsequent to the Date of Acquisition After the acquisition, Powell will account for its investment in Steele on its separate-company books using the equity method. To illustrate the subsequent accounting, assume that during 2013, Steele's net income is \$2,500 and Steele declares and pays a dividend of \$400. Also assume that the average remaining life of Steele's depreciable assets at the acquisition date is 10 years. Powell makes the following entries on its separate-company books to apply the equity method during 2013:

December 31, 2013

Investment in Steele Corporation	2,500	
Equity in Earnings of Steele Corporation		2,500
To recognize Powell's share of Steele's earnings.		

December 31, 2013

Cash	400	
Investment in Steele Corporation		400
To recognize Powell's share of Steele's dividends.		

December 31, 2013

Depreciation Expense	500	
Investment in Steele Corporation		500
To record additional depreciation expense from the excess of fair value over carrying value of Steele's property, plant, and equipment on January 1, 2013; \$500 = \$5,000/10.		

The Investment in Steele Corporation account has a balance of \$55,600 (= \$54,000 + \$2,500 - \$400 - \$500) on December 31, 2013.

Preparing Consolidated Financial Statements Subsequent to the Date of Acquisition Exhibit 14.5 presents information from the accounting records of Powell in column (1) and Steele in column (2) on December 31, 2013. Column (3) combines the amounts from the accounting records of each company. These amounts do not represent the correct amounts for consolidated statements for the reasons discussed next. Column (4) shows the correct consolidated amounts. We use Exhibit 14.5 to gain additional understanding of consolidated financial statements. We consider three topics:

1. The need for intercompany eliminations.
2. The meaning of consolidated net income.
3. The nature of noncontrolling interest.

Need for Intercompany Eliminations Corporation laws typically require each legally separate entity to maintain its own separate accounting records. During an accounting period, each corporation will record its transactions with all other entities (both affiliated and non-affiliated). At the end of the period, each corporation will prepare its own financial statements.

EXHIBIT 14.5**Illustrative Data for Preparation of Consolidated Financial Statements**

	Powell (1)	Steele (2)	Combined (3)	Consolidated (4)
CONDENSED BALANCE SHEET ON DECEMBER 31, 2013				
Assets				
Current Assets	\$ 12,000	\$ 8,200	\$ 20,200	\$ 14,200
Property, Plant, and Equipment (Net) . .	35,400	20,000	55,400	59,900
Investment in Steele Corporation	55,600	—	55,600	—
Goodwill	—	—	—	40,000
Total Assets	<u>\$103,000</u>	<u>\$28,200</u>	<u>\$131,200</u>	<u>\$114,100</u>
Liabilities and Shareholders' Equity				
Liabilities	\$ 26,500	\$17,100	\$ 43,600	\$ 37,600
Common Stock (\$1 Par Value)	3,700	1,000	4,700	3,700
Additional Paid-In Capital	60,300	5,000	65,300	60,300
Retained Earnings	12,500	5,100	17,600	12,500
Total Liabilities and Shareholders' Equity	<u>\$103,000</u>	<u>\$28,200</u>	<u>\$131,200</u>	<u>\$114,100</u>
CONDENSED INCOME STATEMENT FOR 2013				
Revenues				
Sales	\$200,000	\$50,000	\$250,000	\$230,000
Equity in Earnings of Steele Corporation	2,500	—	2,500	—
Total Revenues	<u>\$202,500</u>	<u>\$50,000</u>	<u>\$252,500</u>	<u>\$230,000</u>
Expenses				
Cost of Goods Sold	\$125,000	\$30,000	\$155,000	\$135,000
Selling and Administrative	50,000	11,800	61,800	61,800
Interest	2,000	1,500	3,500	3,500
Income Taxes	10,200	4,200	14,400	14,400
Total Expenses	<u>\$187,200</u>	<u>\$47,500</u>	<u>\$234,700</u>	<u>\$214,700</u>
Net Income	\$ 15,300	\$ 2,500	\$ 17,800	\$ 15,300
Dividend Declared	(7,800)	(400)	(8,200)	(7,800)
Increase in Retained Earnings for the Year	<u>\$ 7,500</u>	<u>\$ 2,100</u>	<u>\$ 9,600</u>	<u>\$ 7,500</u>

The consolidation of these financial statements involves summing the amounts across the separate company statements and then adjusting these sums to eliminate double-counting resulting from **intercompany transactions**. Intercompany transactions are transactions between and among affiliated companies.

The guiding principle of consolidation procedures is that consolidated financial statements reflect the results that the affiliated group would report if it were a single company. Consolidated financial statements reflect transactions between the consolidated group of entities and others *outside* the consolidated group. Thus, if one subsidiary in a consolidated group sells goods to another, the consolidation procedure must remove the effects of this intercompany transaction.

Eliminating Double-Counting of Intercompany Payables Separate company records indicate that \$6,000 of Powell's receivables represent amounts receivable from Steele. Column (3) of **Exhibit 14.5** counts the current assets underlying this transaction twice: once as a receivable on Powell's books and a second time as cash that Steele will use to pay Powell. Also, the liability shown on Steele's books appears in the combined amount for liabilities in column (3). The consolidated group does not owe this \$6,000 to an outsider. To eliminate double-counting on the asset side and to report liabilities at the amounts payable to outsiders, the consolidation process eliminates \$6,000 from the amounts for receivables and liabilities in column (3). The work sheet entry is as follows:

December 31, 2013		
Liabilities	6,000	
Current Assets		6,000
To eliminate intercompany receivable and payable.		

In column (4), consolidated Current Assets, which include receivables, and consolidated Liabilities, which include the payable to Powell, both total \$6,000 less than their sum in column (3).

If a parent or subsidiary invests in bonds or long-term notes issued by the other, the consolidation process eliminates the investment and related liability from the consolidated balance sheet. It also eliminates the borrower's interest expense and the lender's interest revenue from the consolidated income statement.

Eliminating Double-Counting of Investment Powell's balance sheet shows an asset, Investment in Steele Corporation, which represents Powell's investment in Steele's net assets. The subsidiary's balance sheet shows its individual assets and liabilities. When column (3) adds the two balance sheets, the sum shows both Powell's investment in Steele's assets and Steele's actual assets. The consolidation process eliminates the amount of Powell's investment, \$55,600, and the account Investment in Steele Corporation from the sum of the balance sheet amounts. The work sheet entry is as follows:

December 31, 2013		
Common Stock	1,000	
Additional Paid-In Capital	5,000	
Retained Earnings	3,000	
Equity in Earnings of Steele Corporation	2,500	
Property, Plant, and Equipment (Net)	4,500	
Goodwill	40,000	
Dividend Declared		400
Investment in Steele Corporation		55,600
To eliminate the Investment in Steele Corporation account and the shareholders' equity accounts of Steele, and recognize the unamortized difference between the fair values of Steele's net assets at acquisition and their carrying values.		

This elimination entry is similar to the work sheet entry made on the acquisition date (January 1, 2013), except for the following:

1. The balance in the Investment in Steele Corporation account changed during 2013 as a result of applying the equity method. We eliminate the Investment in Steele Corporation account on Powell’s books and the related shareholders’ equity accounts on Steele’s books. The latter include Common Stock, Additional Paid-In Capital, Retained Earnings, and Dividends Declared. We also eliminate the Equity in Earnings of Steele Corporation account of \$2,500. Steele’s records show individual revenues and expenses that net to \$2,500. When column (3) sums the revenues and expenses of the two companies, it counts that income twice. The consolidation process eliminates the account Equity in Earnings of Steele Corporation. Likewise, Steele paid the dividend it declared to Powell, not to an outsider, so we eliminate the intercompany dividend.
2. The amount added to Property, Plant, and Equipment (Net) equals the difference between the fair value and the carrying value of these assets on January 1, 2013, of \$5,000 less one year of amortization of \$500.
3. Because goodwill is not amortized, its carrying value on December 31, 2013, is the same as on January 1, 2013, \$40,000. Each period, Powell will test the amount of goodwill for impairment. We assume no goodwill impairment in this example.

Eliminating Intercompany Sales The consolidation process eliminates intercompany transactions from the sum of the income statements so that the consolidated income statement presents only the consolidated entity’s transactions with outsiders. Consider intercompany sales. Separate company records indicate that Powell sold merchandise at its cost of \$20,000 to Steele for \$20,000 during the year. None of this inventory remains in Steele’s inventory on December 31, 2013. Therefore, the merchandise inventory sold appears in Sales Revenue both on Powell’s books (sale to Steele) and on Steele’s books (sale to outsiders), and column (3) overstates sales of the consolidated entity to outsiders. Likewise, Cost of Goods Sold in column (3) counts twice the cost of the goods sold, first by Powell to Steele and then by Steele to outsiders. The consolidation process eliminates the effects of the intercompany sale with the following work sheet entry:

December 31, 2013		
Sales	20,000	
Cost of Goods Sold		20,000
To eliminate intercompany sale of merchandise.		

A Realistic Complication We simplified the example by having Powell sell the goods to Steele at cost, \$20,000, so that you can easily see that the consolidation process reduces both sales and cost of goods sold by \$20,000. Sales revenue, however, usually exceeds cost of goods sold. Assume now that Powell sold goods costing \$15,000 to Steele for \$20,000, and Steele later sold the goods to outsiders for \$23,000. The consolidation process eliminates the intercompany sale of \$20,000 from both the combined sales and the combined cost of goods sold. The transactions remaining in the consolidated income statement will be Steele’s sales to outsiders for \$23,000 and Powell’s cost of goods sold of \$15,000. This is exactly what would appear if Powell and Steele were a single company selling goods that cost \$15,000 at a price of \$23,000.

It is possible that Steele has not, by the end of the accounting period, sold all the goods it bought from Powell. In that case, Powell’s single-company income statement contains a profit on the goods remaining in inventory, which the consolidation must eliminate. We do not illustrate this complication.

Consolidated Income The amount of consolidated net income (or loss) for a period equals the amount the parent would show on its separate company books if it used the equity method for all its subsidiaries. That is, consolidated net income is as follows:

$$\begin{array}{rccr}
 \text{Parent Company's} & & \text{Parent Company's} & \text{Profit (or + Loss)} \\
 \text{Net Income from} & + & \text{Share of Subsidiaries'} & \text{on Intercompany} \\
 \text{Its Own Activities} & & \text{Net Income} & \text{Transactions}
 \end{array}$$

Powell used the equity method to account for its investment in Steele Corporation and reported net income for 2013 of \$15,300, including \$2,500 for Equity in Earnings of Steele Corporation. The work sheet entry to eliminate the Investment in Steele Corporation account eliminated the Equity in Earnings of Steele Corporation account in the amount of \$2,500 and replaced it in consolidation with the revenues and expenses of Steele Corporation for 2013 netting to \$2,500.

A consolidated income statement differs from a parent's income statement using the equity method only in the components presented. Some accountants describe the equity method as a *one-line consolidation* because of this feature. When a parent applies the equity method, the parent's share of the subsidiary's revenues less expenses appears in the single account Equity in Earnings of Subsidiary, and the parent's share of the (net) amount of the subsidiary's assets less its liabilities appears in the single account Investment in Subsidiary. Application of the equity method treats the investee's revenues, expenses, assets, and liabilities in such a way that the parent's income equals the amount it would report if it had consolidated the investee instead of using the equity method.

Noncontrolling Interest in Consolidated Subsidiary If the parent does not own 100% of the voting stock of a consolidated subsidiary, the owners of the remaining shares of voting stock are the **noncontrolling interest** or **minority interest**.¹³ By virtue of their ownership of shares, these shareholders have provided a portion of the subsidiary's equity financing. These noncontrolling shareholders also have a claim to this portion of the subsidiary's net assets and to this portion of the subsidiary's earnings.

The Noncontrolling Interest in Net Assets on the Consolidated Balance Sheet Assume that Powell acquired 80% of the outstanding stock of Steele instead of the 100% illustrated to this point. Therefore, the noncontrolling shareholders of Steele own 20% of Steele.

Powell, with its controlling interest, can direct the use of *all* Steele's assets and liabilities, not merely 80% (reflecting its ownership interest of Steele's shares). The consolidated balance sheet reports the ownership interest of the noncontrolling shareholders in the consolidated subsidiary as part of shareholders' equity.

The amount of the noncontrolling interest appearing in the balance sheet *at the date of acquisition* can differ between U.S. GAAP and IFRS. Under U.S. GAAP, the consolidated balance sheet shows all assets and liabilities at fair value and the noncontrolling interest at its ownership percentage times this fair value.¹⁴ Refer to the information for Steele Corporation on January 1, 2013, in **Exhibit 14.3**. The fair value of Steele's net assets is \$54,000 (= \$70,000 - \$16,000). Under U.S. GAAP, a 20% noncontrolling interest would appear on the consolidated balance sheet at \$10,800 (= 0.20 × \$54,000) on January 1, 2013. In contrast, IFRS permits firms a choice between the approach required by U. S. GAAP and an alternative approach. Under the permitted alternative, the fair value of the subsidiary's net *identifiable* assets is the basis for measuring the noncontrolling interest; goodwill is not a separately identifiable asset.¹⁵ Thus, under IFRS, the noncontrolling interest would appear on the balance sheet at either \$2,800 [= 0.20 × (\$7,000 + \$23,000 - \$16,000)] or \$10,800 as measured under U.S. GAAP.

The consolidated income statement shows all of the parent's and the subsidiary's revenues less all of the parent's and the subsidiary's expenses, plus or minus intercompany revenues, expenses, gains, and losses. This calculation yields consolidated income. The consolidated income statement shows the portion of this consolidated income to which the noncontrolling shareholders have a claim. The noncontrolling shareholders' claim on net income equals the subsidiary's net income multiplied by the noncontrolling shareholders' ownership percentage. **Exhibit 14.6** illustrates this presentation.

¹³Common practice in the United States has been to use the term *minority interest*. IFRS does not use this term, and U.S. GAAP has eliminated it; however, you may continue to encounter it in financial reports.

¹⁴FASB, *Statement of Financial Accounting Standards No. 160*, "Noncontrolling Interests in Consolidated Financial Statements," 2007 (**Codification Topic 810**).

¹⁵IASB, *International Financial Reporting Standard 3*, "Business Combinations," revised 2008.

PROBLEM 14.3 FOR SELF-STUDY

Understanding consolidation concepts. Exhibit 14.6 presents income statement data, and Exhibit 14.7 presents balance sheet data for Pomel Corporation and its 80% owned subsidiary, Static Company, for the fiscal year ended December 31, 2013. The first two columns in each exhibit show amounts taken from the separate-company accounting records of each firm. The third column sums the amounts in the first two columns. The fourth column shows consolidated amounts for Pomel and Static after making intercompany eliminations.

- Does the account Investment in Static (equity method) on Pomel's books include any excess acquisition cost relative to the fair value of the shareholders' equity of Static?
- Suggest four ways in which the data in Exhibits 14.6 and 14.7 confirm that Pomel owns 80% of Static.
- Why does the amount for accounts receivable in column (3) of Exhibit 14.7 differ from the amount in column (4)?
- Explain why the account Investment in Static does not appear on the consolidated balance sheet.
- Why does the total shareholders' equity of \$740 on the consolidated balance sheet exceed the shareholders' equity on Pomel's separate-company accounting records of \$692?
- Compute the amount of intercompany sales during the year.
- Explain why the \$80 for Equity in Earnings of Static does not appear on the consolidated income statement.
- Why does the Noncontrolling Interest in Earnings of Static account appear on the consolidated income statement but not on the income statements of either Pomel or Static?

EXHIBIT 14.6
**Pomel and Static
Income Statement Data for 2013
(Problem 14.3 for Self-Study)**

	Pomel (1)	Static (2)	Combined (3) = (1) + (2)	Consolidated (4)
REVENUE				
Sales	\$4,000	\$2,000	\$6,000	\$5,500
Equity in Earnings of Static	80	—	80	—
Total Revenues	<u>\$4,080</u>	<u>\$2,000</u>	<u>\$6,080</u>	<u>\$5,500</u>
EXPENSES				
Cost of Goods Sold	\$2,690	\$1,350	\$4,040	\$3,540
Selling and Administrative	1,080	480	1,560	1,560
Interest	30	20	50	50
Income Taxes	70	50	120	120
Total Expenses	<u>\$3,870</u>	<u>\$1,900</u>	<u>\$5,770</u>	<u>\$5,270</u>
Income Before Noncontrolling Interest	\$ 210	\$ 100	\$ 310	\$ 230
Noncontrolling Interest in Earnings of Static	—	—	—	(20)
Net Income	<u>\$ 210</u>	<u>\$ 100</u>	<u>\$ 310</u>	<u>\$ 210</u>

EXHIBIT 14.7
**Pomel and Static
Balance Sheet Data, December 31, 2013
(Problem 14.3 for Self-Study)**

	Pomel (1)	Static (2)	Combined (3) = (1) + (2)	Consolidated (4)
ASSETS				
Cash	\$ 125	\$ 60	\$ 185	\$ 185
Accounts Receivable	550	270	820	795
Inventories	460	210	670	670
Investment in Static (Equity Method) . .	192	—	192	—
Property, Plant, and Equipment (Net) . .	680	380	1,060	1,060
Total Assets	<u>\$2,007</u>	<u>\$920</u>	<u>\$2,927</u>	<u>\$2,710</u>
LIABILITIES AND SHAREHOLDERS' EQUITY				
Accounts Payable	\$ 370	\$170	\$ 540	\$ 515
Notes Payable	400	250	650	650
Other Current Liabilities	245	60	305	305
Long-Term Debt	300	200	500	500
Total Liabilities	<u>\$1,315</u>	<u>\$680</u>	<u>\$1,995</u>	<u>\$1,970</u>
Noncontrolling Interest in Net Assets of Static	\$ —	\$ —	\$ —	\$ 48
Common Stock	200	50	250	200
Retained Earnings	492	190	682	492
Total Shareholders' Equity	<u>\$ 692</u>	<u>\$240</u>	<u>\$ 932</u>	<u>\$ 740</u>
Total Liabilities and Shareholders' Equity	<u>\$2,007</u>	<u>\$920</u>	<u>\$2,927</u>	<u>\$2,710</u>

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DISCLOSURE OF CONSOLIDATION POLICY

The summary of significant accounting policies, a required part of the financial statement footnotes, must include a statement about the parent's **consolidation policy**. If an investor does not consolidate a significant majority-owned subsidiary, the notes will disclose that fact. The notes to the financial statements of Great Deal describe its accounting for the acquisition of subsidiaries and the preparation of consolidated financial statements.

CONSOLIDATED FINANCIAL STATEMENTS

The consolidated financial statements include the accounts of Great Deal, Inc., and its consolidated subsidiaries. Investments in unconsolidated entities over which we exercise significant influence but do not have control are accounted for using the equity method.

Our share of the net earnings or loss of equity method investees was not significant for any period presented. We have eliminated all intercompany accounts and transactions.

To discern whether Great Deal owns 100% of its consolidated subsidiaries, we can refer to its balance sheet, shown in **Exhibit 1.1**, and determine whether there is a noncontrolling interest. For the fiscal year ended February 27, 2013, Great Deal reports noncontrolling interest of \$644 million. Great Deal's income statement, shown in **Exhibit 1.2**, indicates that \$77 million of fiscal 2012 earnings were attributable to noncontrolling interests. Subtracting this amount from total earnings yields Great Deal's net income of \$1,317 (= \$1,394 – \$77) million in fiscal 2012.

LIMITATIONS OF CONSOLIDATED STATEMENTS

Consolidated statements, provided for the parent's shareholders, do not replace the statements of individual corporations.

- Creditors typically rely on the resources of the entity to which they lend funds and are therefore interested in the unconsolidated (single-company) financial statements of that entity.
- A corporation can declare dividends against only its own retained earnings.
- When the parent company does not own all the shares of the subsidiary, the noncontrolling shareholders can judge the dividend constraints only by inspecting the subsidiary's statements.

VARIABLE INTEREST ENTITIES

In U.S. GAAP the usual criterion for preparing consolidated financial statements is a controlling financial interest, typically evidenced by voting control in the form of majority ownership of common stock. For some entities common stock ownership does not indicate control because the common stock of the entity lacks one or more of the economic characteristics associated with equity. To see this, consider the following business arrangement of Company P, which wants to borrow to finance the acquisition of an airplane.

1. Company P pays \$100,000 to an unrelated party to induce that party to own 100% of the shares of Entity S. The unrelated party buys these shares for \$60,000 cash, contributing the cash to Entity S in return for the shares, and keeps the remaining \$40,000.
2. Entity S borrows \$50 million from a group of Lenders to buy the airplane that Company P wants to use. It agrees to repay the loan in 120 monthly installments of \$717,500 per month. The implicit interest rate is 1% per month, and the loan is fully paid after 120 payments.
3. Company P provides a written guarantee to the Lenders that it will make any debt service payment that Entity S fails to make on time. Without the guarantee, the Lenders would not lend to Entity S, as the airplane itself does not provide sufficient collateral for the loan.
4. Company P agrees to pay \$717,500 per month to Entity S to rent the airplane, plus a small additional fee to cover Entity S's transactions costs. Entity S signs a contractual agreement with Company P to use the rental payments from Company P to repay the \$50 million loan. Company P takes possession of the airplane, including responsibility for using and maintaining it. The governing documents that establish Entity S preclude it from engaging in any transactions other than the borrowing and repayment of the loan and the rental arrangement involving Company P.

Figure 14.2 depicts this structure.

In this arrangement, an unrelated party owns 100% of Entity S, but Company P controls the use of Entity S's only asset (the airplane) and has responsibility for repayment of the loan. The unrelated party that owns Entity S has no management responsibility and no opportunity for gain or loss. As described in Chapter 12, firms have used entities such as Entity S to convert receivables into cash, to finance large projects, and to finance research and development efforts. The accounting issue is: under what conditions should such an entity be consolidated, and by whom.

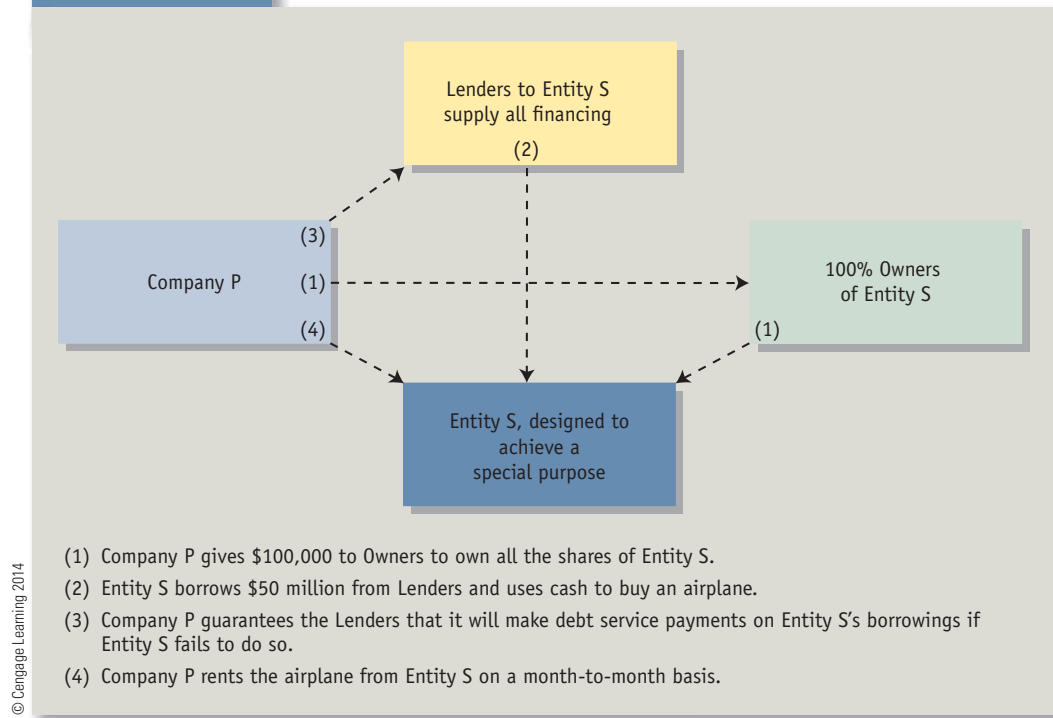
U.S. GAAP refers to entities such as Entity S in our illustration as a **variable interest entity (VIE)**.¹⁶ A variable interest entity is an entity that meets one or both of the following criteria:

1. The amount of invested equity is so small that the entity requires other financial support to sustain its activities.
2. The equity owners lack meaningful decision rights or meaningful exposure to losses or returns.

¹⁶FASB, *Interpretation No. 46R*, "Consolidation of Variable Interest Entities," 2003, amended by *Statement of Financial Accounting Standards No. 167*, "Amendments to FASB Interpretation No. 46(R)," 2009 (**Codification Topic 810**). In some cases, common terminology refers to a VIE as a special purpose entity (SPE); this term is not used in authoritative guidance.

FIGURE 14.2

To Illustrate an Entity Whose Voting Control Provides an Inadequate Test for Consolidation



If the entity qualifies as a VIE, U.S. GAAP requires the **primary beneficiary** (if one exists) of the VIE to consolidate the VIE. Entity S in our example qualifies as a VIE because its owners have no meaningful decision rights and no exposure to losses or returns. Company P in the illustration will be the primary beneficiary of Entity S if Company P has two characteristics:

1. It has the power to direct the activities of the entity that most affect how the entity performs.
2. It is exposed to potentially significant losses or returns.

Entity S's activities are determined by the governing documents Company P put in place when it created Entity S. In addition, Company P guarantees all the debt of the VIE. Therefore, Company P is the primary beneficiary of Entity S and will consolidate Entity S. The consolidated financial statements will reflect both Entity S's asset (the airplane) and its obligation (the loan); the outcome is that the financing arrangement is on-balance-sheet for P.

IFRS does not contain the concept of a VIE. Rather, IFRS contains a general consolidation policy standard that is applicable to all entities; there is no distinction, for purposes of consolidation policy, in IFRS between entities for which control is evidenced by share ownership and entities for which control is evidenced by other arrangements.¹⁷ Firms that apply IFRS would analyze any entity using the consolidation criteria described earlier in this chapter under the heading "Majority Active Investments."

SUMMARY

This chapter discusses the accounting for investments in common stock when the ownership percentage is 20% or more. The investor records the acquisition of the common stock of another entity at the cash amount paid or the fair value of other consideration given. The

¹⁷IFRS guidance for consolidation policy is in IASB, *International Financial Reporting Standard 10*, "Consolidated Financial Statements," 2011. The application guidance that is part of this standard illustrates the application of the control criterion to entities with characteristics that make them similar to a VIE in U.S. GAAP.

account debited for an investment in equity securities, either Marketable Securities or Investment in Securities, depends on the expected holding period.

The accounting for investments in equity securities subsequent to acquisition depends in part on the ownership percentage:

- The fair value method generally applies when the investor owns less than 20% and the equity securities are marketable.
- The equity method generally applies when the investor owns at least 20% but not more than 50% of the common stock of another company (the investee).
- Under U.S. GAAP, the investor generally prepares consolidated statements when it owns more than 50% of the voting shares of another company. Under IFRS, the investor prepares consolidated statements when it is in control of another company; control can be evidenced by majority share ownership and by other means.
- Under U.S. GAAP, an investor applies specialized guidance to determine whether an entity with which it is involved is a variable interest entity (VIE) and, if so, whether the investor is the primary beneficiary of the VIE and will consolidate.

Exhibit 14.8 summarizes the accounting for investments subsequent to acquisition studied in **Chapters 13 and 14**.

Consolidated statements and the equity method have the same effect on net income. The investor includes in its income its share of the investee's periodic income (or loss) since acquisition, after eliminating intercompany transactions. In the equity method, this share appears on a single line of the investor's income statement. The consolidated income statement combines the revenues and expenses of the acquired (subsidiary) company with those of the parent. Balance sheet components under consolidation will exceed those under the equity method because the consolidated balance sheet replaces the parent company's Investment in Subsidiary account with the individual assets and liabilities of the subsidiary.

EXHIBIT 14.8

Effects of Various Methods of Accounting for Short- and Long-Term Investments in Corporate Securities

Method of Accounting	Balance Sheet	Income Statement
Fair value method for marketable securities available for sale (generally used when equity ownership percentage is less than 20%) and for cash flow hedges. ^a	Investment account or derivative appears at fair value. Unrealized gains and losses appear in Other Comprehensive Income.	Dividends declared by investee included in revenue of investor. Gains and losses included in income when realized in arm's-length transactions with outsiders.
Fair value method for trading securities (generally used when ownership percentage is less than 20%) and for fair value hedges.	Investment account or derivative appears at fair value. Unrealized gains and losses appear in income statement, and the effects increase or decrease the Retained Earnings account.	Dividends declared by investee included in revenue of investor. Gains and losses (from then-current carrying values) included in income when fair values change.
Amortized cost method (used only for debt where holder has both intent and ability to hold to maturity). ^a	Acquisition cost plus accrued interest not yet received in cash.	Carrying value at start of period multiplied by historical market interest rate on the date of acquisition of debt security.
Equity method (generally used when ownership percentage is at least 20% but not more than 50%). ^a	Investment account appears at acquisition cost plus share of investee's net income less share of investee's dividends since acquisition minus amortization of excess of purchase price over fair value of identifiable assets with limited lives.	Equity in investee's net income is part of the investor's income in the period that investee earns income. Reduce (increase) by the amount, if any, of intercompany gains (losses).
Consolidation (generally used when ownership percentage exceeds 50% [U.S. GAAP] or when the investor controls the investee [IFRS]).	Eliminate investment account, and replace it with individual assets and liabilities of subsidiary. Show noncontrolling interest in shareholders' equity. Eliminate inter-company assets and liabilities.	Combine individual revenues and expenses of subsidiary with those of parent, and eliminate intercompany items. Subtract noncontrolling interest in subsidiary's net income.

^aFirms can elect the fair value option to account for these securities. The effects on the balance sheet and income statement are the same as those described for trading securities and fair value hedges.

SOLUTIONS TO SELF-STUDY PROBLEMS

SUGGESTED SOLUTION TO PROBLEM 14.1 FOR SELF-STUDY

(Equigroup; journal entries to apply the equity method.)

a.

January 1, 2013

Investment in Securities [D]	80,000	
Investment in Securities [E]	190,000	
Investment in Securities [F]	200,000	
Cash		470,000

b.

December 31, 2013

Investment in Securities [D] (0.40 × \$40,000)	16,000	
Investment in Securities [E] (0.30 × \$120,000)	36,000	
Investment in Securities [F] (0.20 × \$200,000)	40,000	
Equity in Earnings of Affiliates		92,000

December 31, 2013

Cash	25,000	
Investment in Securities [D] (0.40 × \$10,000)		4,000
Investment in Securities [E] (0.30 × \$30,000)		9,000
Investment in Securities [F] (0.20 × \$60,000)		12,000

December 31, 2013

Amortization Expense	8,000	
Investment in Securities [E]		4,000
Investment in Securities [F]		4,000

Security	Carrying Value of Investee's Net Assets on January 1, 2013	Ownership Percentage	Share of Carrying Value Acquired	Acquisition Cost of Investment	Excess Acquisition Cost	Annual Amortization for 10 Years
D	\$200,000	40%	\$ 80,000	\$ 80,000	—	—
E	500,000	30	150,000	190,000	\$40,000	\$4,000
F	800,000	20	160,000	200,000	40,000	4,000

c.

December 31, 2014

Investment in Securities [D] (0.40 × \$50,000)	20,000	
Investment in Securities [F] (0.20 × \$50,000)	10,000	
Investment in Securities [E] (0.30 × \$40,000)		12,000
Equity in Net Earnings of Affiliates		18,000

December 31, 2014

Cash	16,800	
Investment in Securities [D] (0.40 × \$12,000)		4,800
Investment in Securities [F] (0.20 × \$60,000)		12,000

December 31, 2014

Amortization Expense	8,000	
Investment in Securities [E]		4,000
Investment in Securities [F]		4,000

d.**January 2, 2015**

Cash	190,000	
Loss on Sale of Investment in Securities	7,000	
Investment in Securities [E]		197,000

$$\$197,000 = \$190,000 + \$36,000 - \$9,000 - \$4,000 - \$12,000 - \$4,000.$$

SUGGESTED SOLUTION TO PROBLEM 14.2 FOR SELF-STUDY

(Powell and Steele; financial statement effects of the acquisition method.)

a.**January 1, 2013**

Current Assets	7,000	
Property, Plant, and Equipment (Net)	23,000	
Goodwill	40,000	
Liabilities		16,000
Common Stock (2,700 × \$1)		2,700
Additional Paid-In Capital (2,700 × \$19)		51,300

b. Exhibit 14.9 presents the consolidated balance sheet as of January 1, 2013, using the acquisition method.

EXHIBIT 14.9

**Powell Corporation and Steele Corporation
Consolidated Balance Sheet, January 1, 2013
(Problem 14.2 for Self-Study)**

ASSETS	
Current Assets	\$ 17,000
Property, Plant, and Equipment (Net)	53,000
Goodwill	40,000
Total Assets	<u>\$110,000</u>
LIABILITIES AND SHAREHOLDERS' EQUITY	
Liabilities	\$ 41,000
Common Stock	3,700 ^a
Additional Paid-In Capital	60,300 ^b
Retained Earnings	5,000
Total Equities	<u>\$110,000</u>

^a\$3,700 = \$1,000 + (2,700 × \$1).

^b\$60,300 = \$9,000 + (2,700 × \$19).

SUGGESTED SOLUTION TO PROBLEM 14.3 FOR SELF-STUDY

(Pomel and Static; understanding consolidation concepts.)

- a. No. The investment account shows a balance of \$192, which equals 80% of Static's shareholders' equity ($\$192 = 0.80 \times \240). If there was an excess of the fair value over the carrying value of Static's net assets on the date of acquisition, Pomel has either fully amortized the excess or recognized impairment losses, which eliminated the excess.
- b. (1) The Investment in Static account has a balance of \$192, which equals 80% of Static's shareholders' equity. This clue supports the 80% ownership only because no unamortized excess acquisition cost exists (see the response to part a).
 - (2) The noncontrolling interest in the net assets of Static is \$48, which equals 20% of Static's shareholders' equity ($\$48 = 0.20 \times \240).
 - (3) The Equity in Earnings of Static account on Pomel's books has a balance of \$80 for 2013, which equals 80% of Static's net income for 2013 ($\$80 = 0.80 \times \100).
 - (4) The Noncontrolling Interest in Earnings account of Static has a balance of \$20 for 2013 ($\$20 = 0.20 \times \100).
- c. Pomel and Static have intercompany accounts receivable and accounts payable. Combined accounts receivable exceed consolidated accounts receivable by \$25 ($= \$820 - \795), the same as the excess of combined accounts payable over consolidated accounts payable ($\$25 = \$540 - \$515$).
- d. Double-counting results if both the investment account and the individual assets and liabilities of Static appear on the consolidated balance sheet.
- e. Consolidated shareholders' equity includes the shareholders' equity of Pomel plus the 20% noncontrolling interest in Static.
- f. \$500 ($= \$6,000 - \$5,500$ or $\$4,040 - \$3,540$).
- g. Consolidated amounts include individual revenues, expenses, and noncontrolling interest in earnings, which net to \$80. Double-counting this earnings results if the accountant does not eliminate the equity in earnings account.
- h. The separate-company income statements report the total revenues and expenses of each entity without regard to who owns the common stock of each company. The consolidated income statement shows the earnings allocable to the noncontrolling shareholders and to the shareholders of Pomel. The shareholders of Pomel have a claim on all of the earnings of Pomel and 80% of the earnings of Static. Consolidated revenues and expenses include the combined amounts for both companies, adjusted for intercompany transactions. The noncontrolling interest in net income of Static shows the portion of Static's net income not subject to a claim by Pomel's shareholders.

KEY TERMS AND CONCEPTS

Marketable securities	Consolidated financial statements
Investments in securities	Acquisition, or purchase, method
Minority, passive investments	Goodwill
Significant influence	Bargain purchase
Minority, active investments	Consolidation work sheet
Equity method investments, investments in affiliates, investments in associates	Intercompany transactions
Majority, active investments	Noncontrolling interest, minority interest
Equity method	Consolidation policy
Parent	Variable interest entity (VIE)
Subsidiary	Primary beneficiary

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

1. Review the meaning of the terms and concepts listed above in Key Terms and Concepts.
2. Distinguish between *significant influence* and *control*, and describe how these concepts relate to the method of accounting for intercorporate investments.
3. “Dividends received or receivable from another company are revenue in calculating net income, a return of investment, or eliminated, depending on the method of accounting the investor uses.” Explain.
4. Describe the rationale for why an investor using the equity method must amortize any excess purchase price attributable to assets with a definite service life.
5. Describe the rationale for why an investor using the equity method must eliminate any intercompany profit or loss on transactions between the investor and the investee.
6. Describe the rationale for why an investor using the equity method must recognize its share of Other Comprehensive Income of the investee.
7. Why is the outcome of applying the equity method sometimes described as a *one-line consolidation*? Consider both the balance sheet and the income statement in your response.
8. “Accounting for an investment in a subsidiary using the equity method and not consolidating it yields the same net income as consolidating the subsidiary. Total assets will differ depending on whether the investor consolidates the subsidiary.” Explain.
9. Distinguish between minority investments in other companies and the noncontrolling, or minority, interest in a consolidated subsidiary.
10. Define the concept of an *economic entity* and explain its importance in preparing consolidated financial statements of a parent company with its controlled subsidiaries.
11. The Investment in Subsidiary account is an asset. Why must an investor eliminate this account when preparing consolidated financial statements with the subsidiary?
12. Distinguish between the noncontrolling, or minority, interest in net income of a consolidated subsidiary and the noncontrolling, or minority, interest in net assets of a consolidated subsidiary.
13. Why must we eliminate intercompany transactions when preparing consolidated financial statements?
14. Under what circumstances might majority share ownership of another entity not serve as an indicator of control?

EXERCISES

15. **Equity method entries.** Cayman Company purchased 100% of the common stock of Denver Company on January 2 for \$550,000. The common stock of Denver at this date was \$200,000, and the retained earnings balance was \$350,000. During the year, net income of Denver was \$120,000 and dividends declared were \$30,000. Cayman uses the equity method to account for the investment. Give the journal entries Cayman made during the year to account for its investment in Denver.
16. **Equity method entries.** Weber Corporation acquired significant influence over Albee Computer Company on January 2 by purchasing 20% of its outstanding stock for \$100 million. Weber Corporation attributes the entire excess of acquisition cost over the carrying value of Albee Computer Company’s net assets to a patent, which it amortizes over 10 years. The shareholders’ equity accounts of Albee Computer Company appeared as follows on January 2 and December 31 of the current year (amounts in millions):

	Jan. 2	Dec. 31
Common Stock	\$300	\$300
Retained Earnings	120	190

Albee Computer Company had earnings of \$100 million and declared dividends of \$30 million during the year. The accounts receivable of Weber Corporation at December 31 included \$600,000 due from Albee Computer Company. Weber Corporation accounts for its investment in Albee Computer Company using the equity method. Give the journal entries to record the acquisition of the shares of Albee Computer Company and to apply the equity method during the year on the books of Weber Corporation.

17. **Journal entries to apply the equity method of accounting for investments in securities.** Wood Corporation made three long-term intercorporate investments on January 2. Data relating to these investments for the year appear next.

Company	Percentage Acquired	Carrying Value and Fair Value of Identifiable Net Assets on January 2	Acquisition Cost	Net Income (Loss) for the Year	Dividends Declared During the Year
Knox Corporation	50%	\$700,000	\$350,000	\$ 70,000	\$30,000
Vachi Corporation	30	520,000	196,000	40,000	15,000
Snow Corporation	20	400,000	100,000	(24,000)	—

Give the journal entries to record the acquisition of these investments and to apply the equity method during the year. There are no goodwill impairments.

18. **Journal entries to apply the equity method of accounting for investments in securities.** The following information summarizes data about the minority, active investments of Stebbins Corporation.

Security	Date Acquired	Acquisition Cost	Ownership Percentage	Carrying Value of Identifiable Net Assets on January 1, 2013
R	1/1/2013	\$250,000	25%	\$800,000
S	1/1/2013	325,000	40	750,000
T	1/1/2013	475,000	50	950,000

Security	Earnings (Loss)		Dividends	
	2013	2014	2013	2014
R	\$ 200,000	\$225,000	\$125,000	\$130,000
S	120,000	75,000	80,000	80,000
T	(150,000)	50,000	—	—

Company R owns a building with 10 years of remaining life and with a fair value exceeding its carrying value by \$160,000. \$40,000 of this amount applies to the share Stebbins owns. Stebbins attributes the rest of any excess of acquisition cost over carrying value acquired to goodwill. The building has a 10-year remaining life. The fair values of the recorded net assets of Company S and Company T equal their carrying values. There are no goodwill impairments.

- Give the journal entries to record the acquisition of these investments and to apply the equity method during 2013 and 2014.
 - Stebbins sells Security R on January 1, 2015, for \$275,000. Give the journal entry to record the sale.
19. **Working backward to consolidation relations.** Laesch Company, as parent, owns shares in Lily Company. Laesch has owned the shares since it formed Lily. Lily has never declared a

dividend. Laesch has retained earnings from its own operations independent of intercorporate investments of \$100,000. The consolidated balance sheet shows no goodwill and shows retained earnings of \$156,000. Consider each of the following questions independently of the others:

- a. If Laesch owns 80% of Lily, its consolidated subsidiary, what are the retained earnings of the subsidiary?
 - b. If Lily has retained earnings of \$77,000, what fraction of Lily does Laesch own?
 - c. If Laesch had not consolidated Lily but instead had accounted for it using the equity method, how much revenue would Laesch have recognized from the investment?
- 20. Working backward from consolidated income statements.** Dealco Corporation published a consolidated income statement for the year, shown in **Exhibit 14.10**. The unconsolidated affiliate retained 25% of its earnings of \$140 million during the year, having paid out the rest as dividends. The consolidated subsidiary earned \$280 million during the year and declared no dividends.
- a. What percentage of the unconsolidated affiliate does Dealco Corporation own?
 - b. What amount of dividends did Dealco Corporation receive from the unconsolidated affiliate during the year?
 - c. What percentage of the consolidated subsidiary does Dealco Corporation own?
- 21. Consolidation policy and principal consolidation concepts.** CAR Corporation manufactures computers in the United States. It owns 75% of the voting stock of Charles Electronics, 80% of the voting stock of Alexandre du France Software Systems (in France), and 90% of the voting stock of R Credit Corporation (a finance company). CAR Corporation prepares consolidated financial statements consolidating Charles Electronics, uses the equity method for R Credit Corporation, and treats its investment in Alexandre du France Software Systems as securities available for sale. Data from the annual reports of these companies appear next. There are no intercompany transactions.

EXHIBIT 14.10

Dealco Corporation Consolidated Income Statement (Exercise 20)

REVENUES		
Sales		\$1,400,000
Equity in Earnings of Unconsolidated Affiliate		<u>56,000</u>
Total Revenues		<u>\$1,456,000</u>
EXPENSES		
Cost of Goods Sold (Excluding Depreciation)		\$ 910,000
Administrative Expense		140,000
Depreciation Expense		161,000
Amortization of Goodwill		7,000
Income Tax Expenses:		
Currently Payable	\$ 58,800	
Deferred	<u>14,000</u>	<u>72,800</u>
Total Expenses		<u>\$1,290,800</u>
Income of the Consolidated Group		\$ 165,200
Less Noncontrolling Interest in Earnings of Consolidated Subsidiary		<u>(42,000)</u>
Net Income to Shareholders		<u>\$ 123,200</u>

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	Percentage Owned	Net Income	Dividends	Accounting Method
CAR Corporation Consolidated . . .	—	\$1,200,000	\$ 84,000	—
Charles Electronics	75%	120,000	48,000	Consolidated
Alexandre du France Software Systems ^a	80	96,000	60,000	Fair Value (Securities Available for Sale)
R Credit Corporation	90	144,000	120,000	Equity

^aFair value of shares exceeds acquisition cost.

- a. Which, if any, of the companies does CAR incorrectly account for according to U.S. GAAP?
Assuming the accounting methods and accounting itself for the three subsidiaries shown above are correct, answer the following questions:
- b. How much of the net income reported by CAR Corporation Consolidated results from the operations of the three subsidiaries?
- c. What is the amount of the noncontrolling, or minority, interest now shown on the consolidated income statement, and how does it affect net income of CAR Corporation Consolidated?
- d. If CAR had consolidated all three subsidiaries, what would have been the net income of CAR Corporation Consolidated?
- e. If CAR had consolidated all three subsidiaries, what noncontrolling, or minority, interest would appear on the income statement?
22. **Equity method entries.** Vogel Company is a subsidiary of Joyce Company. Joyce Company accounts for its investment in Vogel Company using the equity method on its single-company books. Present journal entries for the following selected transactions and other information. Record the set of entries on the books of Vogel Company separately from the set of entries on the books of Joyce Company.
- On January 2, Joyce Company acquired on the market, for cash, 100% of the common stock of Vogel Company. The outlay was \$420,000. The total contributed capital of Vogel Company's stock outstanding was \$300,000; the retained earnings balance was \$80,000. Joyce attributes the excess of acquisition cost over the carrying value of the net assets acquired to an internally developed patent that has a 10-year remaining useful life on January 2.
 - Vogel Company purchased materials for \$29,000 from Joyce Company on account at the latter's cost.
 - Vogel Company obtained an advance of \$6,000 from Joyce Company. Vogel Company deposited the funds in the bank.
 - Vogel Company paid \$16,000 on the purchases in (2).
 - Vogel Company repaid \$4,000 of the loan received from Joyce Company in (3).
 - Vogel Company declared and paid a dividend of \$20,000 during the year.
 - The net income of Vogel Company for the year was \$30,000.
23. **Working backward from data that has eliminated intercompany transactions.** (Adapted from a problem by S. A. Zeff.) Alpha owns 100% of Omega and consolidates Omega in an entity called Alpha/Omega. Beginning in 2013, Alpha sold merchandise to Omega at a price 50% larger than Alpha's costs. Omega sold some, but not all, of these goods to customers at a further markup. Excerpts from the single-company statements of Alpha and Omega and from the consolidated financial statements of Alpha/Omega appear next.

	Single-Company Statements		Consolidated Financial Statements
	Alpha	Omega	
Sales Revenue	\$450,000	\$250,000	\$620,000
Cost of Goods Sold	300,000	210,000	430,000
Merchandise Inventory.	60,000	50,000	100,000

- a. What was the total sales price at which Alpha sold goods to Omega during 2013?
 - b. What was Omega’s cost of the goods it had purchased from Alpha but has not yet sold by the end of 2013? What was Alpha’s cost of those goods? Which of those two numbers appears in the total Merchandise Inventory on the consolidated balance sheet?
- 24. Working backward from purchase data.** (Adapted from a problem by S. A. Zeff.) On May 1, 2013, Homer acquired the assets and agreed to take on and pay off the liabilities of Tonga in exchange for 10,000 of Homer’s common shares. Homer accounted for the acquisition of the net assets of Tonga using the purchase method. On the date of acquisition, Tonga’s carrying value of depreciable assets exceeded Homer’s estimate of their fair value, but Homer judged all other items on Tonga’s books to reflect fair value on that date so that the purchase price exceeded the fair value of the identifiable assets, generating goodwill. On the date of the acquisition, Tonga’s shareholders’ equity was \$980,000, and its liabilities totaled \$80,000. Tonga reported no goodwill on its balance sheet.

Homer made the following journal entry to record the acquisition:

Current Assets	210,000	
Depreciable Assets (net)	700,000	
Goodwill	120,000	
Liabilities		80,000
Common Stock—Par		150,000
Additional Paid-In Capital		800,000

- a. What was the carrying value on Tonga’s books of its total assets just before the acquisition?
 - b. What was the carrying value of depreciable assets of Tonga just before the acquisition?
- 25. Effect of equity method versus consolidation. Exhibit 14.11** presents a spreadsheet that we use to compare the effects of using the equity method with using consolidated financial statements. The Web site for this book contains an Excel spreadsheet that duplicates the one in **Exhibit 14.11**. Download this spreadsheet in preparing your solution to this exercise. You will change only the cell marked in yellow.
- a. For this part, assume that Parent owns 80% of Sub. Respond to the following questions:
 - (1) Why is net income the same independent of whether Parent uses the equity method or prepares consolidated financial statements with Sub?
 - (2) Why is the ratio of liabilities to assets higher if Parent prepares consolidated financial statements with Sub than when it uses the equity method?
 - b. For this part, change Parent’s ownership interest in Sub from 80% to 60%. Respond to the following questions:
 - (1) Why does net income decrease for the change in ownership percentage, independent of whether Parent uses the equity method or prepares consolidated financial statements?
 - (2) Why do total assets using the equity method decrease but total assets on the consolidated balance sheet remain the same with the decrease in the ownership percentage?
 - (3) Why do total liabilities using the equity method remain the same with the decrease in the ownership percentage?
 - (4) Why do total liabilities on the consolidated balance sheet remain the same with the decrease in the ownership percentage?
 - (5) Why does total shareholders’ equity decrease using the equity method but remain the same on the consolidated balance sheet with the decrease?
 - (6) Why does the ratio of liabilities to assets on the consolidated balance sheet remain the same with the decrease in the ownership percentage?
- 26. Effect of errors on financial statements.** Using the notation O/S (overstated), U/S (understated), or NO (no effect), indicate the effects on assets, liabilities, shareholders’ equity, and net income of each of the independent errors that follow. Ignore income tax effects.

EXHIBIT 14.11

Spreadsheet for Studying the Effects of the
Equity Method and Consolidation
(Exercise 25)

	A	B	C	D
1				
2	To see how things change, alter this number →		80.0%	[Third column not meaningful unless ownership exceeds 50%]
3		Equity Method Parent Only	Percent Owned Sub	
4	Income Statement			Consolidated
5	Revenues	\$1,000	\$ 400	\$ 1,400
6	Equity in Earnings of Sub	80		
7	Expenses	(700)	(300)	(1,000)
8	Noncontrolling Interest in Net Income of Sub [Note A]			(20)
9	Net Income	<u>\$ 380</u>	<u>\$ 100</u>	<u>\$ 380</u>
10	Note A: Noncontrolling Interest Owns (1 – Parent’s Fraction)		20.0%	
11	Balance Sheet			
12	Assets, Other Than Investment in Sub	\$3,000	\$2,000	\$ 5,000
13	Investment in Sub	400	—	—
14	Total Assets	<u>\$3,400</u>	<u>\$2,000</u>	<u>\$ 5,000</u>
15	Total Liabilities	\$1,800	\$1,500	\$ 3,300
16	Noncontrolling Interest in Net Assets of Sub	—	—	100
17	Shareholders’ Equity	<u>1,600</u>	<u>500</u>	<u>1,600</u>
18	Total Liabilities and Shareholders’ Equity	<u>\$3,400</u>	<u>\$2,000</u>	<u>\$ 5,000</u>

- In applying the equity method, P correctly accrues its share of S’s net income for the year. When receiving a dividend, P credits Dividend Revenue.
- P acquired 30% of S on January 1 of the current year for an amount in excess of the carrying value of S’s net assets. The excess relates to patents. P correctly accounted for its share of S’s net income and dividends for the year but neglected to amortize any of the excess purchase price.
- During the current year, P sold inventory items to S, its wholly owned subsidiary, at a profit. S sold these inventory items, and S paid P for them before the end of the year. The firms made no elimination entry for this intercompany sale on the consolidation work sheet.
- Refer to part c. Assume that S owes P \$10,000 for intercompany purchases at year-end. The firm made no elimination entry for this intercompany debt.
- P owns 90% of S. P treats the noncontrolling interest in consolidated subsidiaries as a liability. In preparing a consolidated work sheet, the firms made no entry to accrue the noncontrolling interest’s share of S’s net income or of S’s net assets.

PROBLEMS

27. **Preparing a consolidated balance sheet.** The first two columns of Exhibit 14.12 present information from the accounting records of Ely Company and Sims Company at the end of the current year. Ely Company acquired 100% of the common stock of Sims Company

EXHIBIT 14.12

Ely Company and Sims Company Information from the Accounting Records on December 31 of the Current Year (Problem 27)

	Ely Company	Sims Company	Consolidated
ASSETS			
Cash	\$ 12,000	\$ 5,000	
Receivables	25,000	15,000	
Investment in Sims Company	78,000	—	
Other Assets	85,000	80,000	
Total Assets	<u>\$200,000</u>	<u>\$100,000</u>	
LIABILITIES AND SHAREHOLDERS' EQUITY			
Current Liabilities	\$ 45,000	\$ 40,000	
Common Stock	50,000	10,000	
Retained Earnings	105,000	50,000	
Total Liabilities and Shareholders' Equity	<u>\$200,000</u>	<u>\$100,000</u>	

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on January 1 of the current year for \$70,000 cash. On this date, the balance in the Retained Earnings account of Sims Company was \$42,000. Any excess purchase price relates to goodwill. Ely Company has not recorded a goodwill impairment. The receivables of Ely Company and the liabilities of Sims Company contain an advance from Ely Company to Sims Company of \$7,500. Enter the appropriate amounts in the Consolidated column for a consolidated balance sheet of Ely Company and Sims Company on December 31 of the current year.

28. Preparing a consolidated balance sheet. The first two columns of **Exhibit 14.13** present information from the accounting records of Company P and Company S on December 31, 2014. Company P acquired 100% of the common stock of Company S on January 1, 2013,

EXHIBIT 14.13

Company P and Company S Information from the Accounting Records on December 31, 2014 (Problem 28)

	Company P	Company S	Consolidated
ASSETS			
Cash	\$ 36,000	\$ 26,000	
Accounts and Notes Receivable	180,000	50,000	
Inventories	440,000	250,000	
Investment in Company S (Using the Equity Method)	726,000	—	
Property, Plant, and Equipment (Net)	600,000	424,000	
Total Assets	<u>\$1,982,000</u>	<u>\$750,000</u>	
LIABILITIES AND SHAREHOLDERS' EQUITY			
Accounts and Notes Payable	\$ 110,000	\$ 59,000	
Other Liabilities	286,000	21,000	
Common Stock	1,200,000	500,000	
Additional Paid-In Capital	—	100,000	
Retained Earnings	386,000	70,000	
Total Liabilities and Shareholders' Equity	<u>\$1,982,000</u>	<u>\$750,000</u>	

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when the balance in Company S's retained earnings was \$40,000. Company P attributes any excess of acquisition cost over the carrying value of the net assets of Company S to a building with a 10-year remaining life as of January 1, 2013. Company P holds a note issued by Company S in the amount of \$16,400 on December 31, 2014.

- Enter the appropriate amounts in the Consolidated column for a consolidated balance sheet of Company P and Company S on December 31, 2014.
- Compute the acquisition cost of Company P's investment in Company S on January 1, 2013.
- Prepare an analysis that explains the changes in the Investment in Company S account between January 1, 2013, and December 31, 2014.

29. Equity method and consolidated financial statements. The first two columns of **Exhibit 14.14** present information from the accounting records of Peak Company and Valley Company on December 31 of the current year. Peak Company acquired 100% of the common stock of Valley Company on January 1 of this year for \$50,000 cash. The shareholders' equity of Valley Company on January 1 comprised \$5,000 of common stock and \$45,000 of retained earnings. Valley Company earned \$10,000 and declared and paid dividends of \$4,000 during the current year. Advances from Peak Company to Valley Company on December 31 total \$8,000; Peak includes the advances in its Accounts Receivable; Valley shows the advances in its Accounts Payable.

- Give the journal entries that Peak Company made on its books on January 1 of the current year to acquire the common stock of Valley Company and to apply the equity method during the current year.
- Insert the amounts in the Consolidated column of **Exhibit 14.14** for a consolidated balance sheet and a consolidated income statement for Peak Company and Valley Company.

EXHIBIT 14.14

**Peak Company and Valley Company
Information from the Accounting Records
on December 31 of the Current Year
Acquisition Cost Is \$50,000
(Problem 29)**

	Peak Company	Valley Company	Consolidated
ASSETS			
Cash	\$ 33,000	\$ 6,000	
Accounts Receivable	42,000	20,000	
Investment in Valley Company (Using the Equity Method)	56,000	—	
Other Assets	<u>123,000</u>	<u>85,000</u>	
Total Assets	<u>\$ 254,000</u>	<u>\$111,000</u>	
LIABILITIES AND SHAREHOLDERS' EQUITY			
Accounts Payable	\$ 80,000	\$ 25,000	
Bonds Payable	50,000	30,000	
Common Stock	10,000	5,000	
Retained Earnings	<u>114,000</u>	<u>51,000</u>	
Total Liabilities and Shareholders' Equity	<u>\$ 254,000</u>	<u>\$111,000</u>	
Sales Revenue	\$ 400,000	\$125,000	
Equity in Earnings of Valley Company	10,000	—	
Cost of Goods Sold	(320,000)	(90,000)	
Selling and Administrative Expense	(44,000)	(20,000)	
Income Tax Expense	<u>(12,000)</u>	<u>(5,000)</u>	
Net Income	<u>\$ 34,000</u>	<u>\$ 10,000</u>	

- c. Assume for parts c, d, and e that Peak Company paid \$70,000, instead of \$50,000, for all of the common stock of Valley Company. The fair values of Valley Company's recorded assets and liabilities equaled their carrying values. Valley Company holds a patent that resulted from the firm's internal research and development efforts. The patent has a zero carrying value, a \$20,000 fair value, and a 10-year remaining life on the date of the acquisition. Give the journal entries that Peak Company would make on its books on January 1 of the current year to acquire the common stock of Valley Company and to apply the equity method during the year. Peak Company included amortization of the patent in Selling and Administrative Expenses. The amortization of the patent is a permanent difference between book income and taxable income. That is, for financial reporting, Peak will amortize the cost of the patent to expense, but for tax reporting, none of that cost is ever a deduction. If Peak were to sell the patent, it would compute taxable gain or loss on sale as proceeds less the fair value allocated to the patent at the time of acquisition. Thus, income tax expense will not change as a result of the patent amortization.
- d. **Exhibit 14.15** presents information for Peak Company and Valley Company at the end of the current year assuming that Peak Company paid \$70,000 for all of the common stock of Valley Company on January 1 of the current year. Enter the amounts indicated by a question mark (?) on the books of Peak Company as of December 31 of the current year. *Hint:* Refer to the amounts in the entries in part c.
- e. Insert the amounts in the Consolidated column of **Exhibit 14.15** for a consolidated balance sheet and a consolidated income statement for Peak Company and Valley Company.

EXHIBIT 14.15

**Peak Company and Valley Company
Information from the Accounting Records on
December 31 of the Current Year
Acquisition Cost Is \$70,000
(Problem 29)**

	Peak Company	Valley Company	Consolidated
ASSETS			
Cash	\$ 13,000	\$ 6,000	
Accounts Receivable	42,000	20,000	
Investment in Valley Company (Using Equity Method)	?	—	
Other Assets	<u>123,000</u>	<u>85,000</u>	
Total Assets	<u>\$?</u>	<u>\$111,000</u>	
LIABILITIES AND SHAREHOLDERS' EQUITY			
Accounts Payable	\$ 80,000	\$ 25,000	
Bonds Payable	50,000	30,000	
Common Stock	10,000	5,000	
Retained Earnings	?	<u>51,000</u>	
Total Liabilities and Shareholders' Equity	<u>\$?</u>	<u>\$111,000</u>	
Sales Revenue	\$ 400,000	\$125,000	
Equity in Earnings of Valley Company	?	—	
Cost of Goods Sold	(320,000)	(90,000)	
Selling and Administrative Expense	?	(20,000)	
Income Tax Expense	<u>(12,000)</u>	<u>(5,000)</u>	
Net Income	<u>\$?</u>	<u>\$ 10,000</u>	

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- 30. Equity method and consolidated financial statements with noncontrolling interest.** The first two columns of **Exhibit 14.16** present information from the accounting records of Parent Company and Sub Company on December 31 of the current year. Parent Company acquired 80% of the common stock of Sub Company on January 1 of the current year for \$96,000 cash. The shareholders' equity of Sub Company on January 1 comprised \$50,000 of common stock and \$70,000 of retained earnings. Sub Company earned \$20,000 and declared and paid dividends of \$8,000 during the current year. Insert the amounts in the Consolidated column of **Exhibit 14.16** for a consolidated balance sheet and a consolidated income statement for Parent Company and Sub Company.
- 31. Effect of intercorporate investment policies on financial statements.** Ganton follows a policy of holding less than a 50% ownership interest in the corporations that bottle its beverages. **Exhibit 14.17** presents selected balance sheet data for Ganton and for its bottling affiliates on December 31, 2013. The first column shows amounts for Ganton as reported, with Ganton using the equity method to account for investments in its bottlers. The second column shows amounts for Ganton's bottlers as reflected in a note to Ganton's financial statements. Ganton's investment in its bottlers exceeds its share of the carrying value of its share of the net assets of these bottlers by \$785 million on December 31, 2013.

EXHIBIT 14.16

**Parent Company and Sub Company
Information from the Accounting Records on
December 31 of the Current Year
(Problem 30)**

	Parent Company	Sub Company	Consolidated
ASSETS			
Cash	\$ 38,000	\$ 12,000	
Accounts Receivable	63,000	32,000	
Investment in Sub Company (Using Equity Method) . .	105,600	—	
Other Assets.	<u>296,400</u>	<u>160,000</u>	
Total Assets	<u>\$ 503,000</u>	<u>\$204,000</u>	
LIABILITIES AND SHAREHOLDERS' EQUITY			
Accounts Payable	\$ 85,000	\$ 32,000	
Bonds Payable	<u>150,000</u>	<u>40,000</u>	
Total Liabilities.	<u>\$ 235,000</u>	<u>\$ 72,000</u>	
Noncontrolling Interest in Net Assets of Sub Company	—	—	
Common Stock	\$ 20,000	\$ 50,000	
Retained Earnings	<u>248,000</u>	<u>82,000</u>	
Total Shareholders' Equity.	<u>\$ 268,000</u>	<u>\$132,000</u>	
Total Liabilities and Shareholders' Equity	<u>\$ 503,000</u>	<u>\$204,000</u>	
Sales Revenue	\$ 800,000	\$145,000	
Equity in Earnings of Sub Company	16,000	—	
Cost of Goods Sold	(620,000)	(85,000)	
Selling and Administrative Expense	(135,000)	(30,000)	
Income Tax Expense	<u>(24,000)</u>	<u>(10,000)</u>	
Net Income of Consolidated Entity.	\$ 37,000	\$ 20,000	
Noncontrolling Interest in Net Income of Sub Company	—	—	
Net Income	<u>\$ 37,000</u>	<u>\$ 20,000</u>	

EXHIBIT 14.17**Ganton Condensed Balance Sheet Data
(amounts in millions of US\$)
(Problem 31)**

	Ganton as Reported	Bottling Affiliates	Consolidated
ASSETS			
Current Assets	\$12,105	\$14,251	\$26,356
Investments in Bottling Affiliates	7,289	—	—
Other Noncurrent Assets.	<u>23,875</u>	<u>44,636</u>	<u>71,116</u>
Total Assets	<u>\$43,269</u>	<u>\$58,887</u>	<u>\$97,472</u>
LIABILITIES AND SHAREHOLDERS' EQUITY			
Current Liabilities	\$13,225	\$13,930	\$27,155
Noncurrent Liabilities	<u>8,300</u>	<u>23,374</u>	<u>31,674</u>
Total Liabilities.	<u>\$21,525</u>	<u>\$37,304</u>	<u>\$58,829</u>
Shareholders' Equity	\$21,744	\$21,583	\$21,744
Noncontrolling Interest in Bottling Affiliates.	—	—	16,899
Total Shareholders' Equity.	<u>\$21,744</u>	<u>\$21,583</u>	<u>38,643</u>
Total Liabilities and Shareholders' Equity	<u>\$43,269</u>	<u>\$58,887</u>	<u>\$97,472</u>

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- Suggest reasons why the amount for other noncurrent assets in the consolidated column exceeds the sum of the amounts for noncurrent assets on the accounting records of Ganton and of its bottling affiliates.
- Compute the liabilities-to-assets ratio and the debt-equity ratio for Ganton assuming Ganton (1) accounts for its investments using the equity method, and (2) consolidates its bottlers.
- Suggest reasons why Ganton might choose to own less than 50% of its bottlers.

Shareholders' Equity: Capital Contributions and Distributions

1. Understand the different priority claims of shareholders and the disclosure of those claims in the shareholders' equity section of the balance sheet.
2. Understand the accounting for the issuance of shares of stock.
3. Understand the accounting for dividends and stock splits.
4. Understand the accounting for the acquisition and reissuance of treasury stock.
5. Understand the accounting for option arrangements.

LEARNING OBJECTIVES

Chapters 8–14 discussed the accounting for assets and liabilities under U.S. GAAP and IFRS. Changes in assets and liabilities often cause shareholders' equity¹ to change. Changes in shareholders' equity result from three types of transactions:

1. **Capital contributions.** Firms issue common or preferred stock to obtain funds to finance operating and investing activities or to compensate employees.
2. **Distributions.** Firms distribute assets to shareholders as dividends or by repurchasing common stock.
3. **Earnings (or losses).** Firms use assets financed by creditors and owners to generate net income.

Exhibit 15.1 presents the shareholders' equity section of the balance sheet of Great Deal, Inc., excerpted from the balance sheet displayed in **Exhibit 1.1**.

1. Shareholders' equity is a residual interest. It represents the shareholders' claim on the assets of a firm after the firm satisfies all other claims.
2. All corporations issue common shares. Some also issue preferred shares, which have a claim that is senior to that of the common shareholders. Great Deal had no preferred shares outstanding in fiscal 2012.
3. Common stock usually has a par or stated value. Great Deal's common stock has a \$0.10 par value per share. Firms report amounts received from issuing common stock in excess of the par or stated value as Additional Paid-In Capital, or Capital in Excess of Par Value, or a similar account title. Great Deal's amount of Additional Paid-In Capital exceeds the amount in Common Stock, indicating that Great Deal issued common stock for more than \$0.10 par value, a common practice among publicly traded firms.

¹Common business practice in the United States uses the terms *shareholders' equity* and *stockholders' equity* interchangeably. Because *stock* means inventory in the United Kingdom, the IFRS usage is, primarily, *shareholders' equity*.

EXHIBIT 15.1

Great Deal, Inc.
Disclosure of Shareholders' Equity
(amounts in millions of US\$)

	February 27	
	2013	2012
Preferred Stock (\$1.00 par value; authorized shares: 400,000); issued and outstanding—none	\$ 0	\$ 0
Common Stock (\$0.10 par value; authorized shares: 1.0 billion), issued and outstanding shares: 2013 and 2012: 418,815,000 and 413,684,000 shares, respectively	42	41
Additional Paid-In Capital	441	205
Retained Earnings	5,797	4,714
Accumulated Other Comprehensive Income (Loss)	40	(317)
Noncontrolling Interests	644	513
Total Shareholders' Equity	<u>\$6,964</u>	<u>\$5,156</u>

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4. Firms accumulate information about revenues and expenses during a reporting period to prepare the income statement. Net income for a period increases retained earnings; a net loss reduces retained earnings.²
5. Retained earnings measures the cumulative net assets generated by earnings in excess of dividends declared. Great Deal's retained earnings exceeds the capital provided by issuing common stock. Thus, for Great Deal, the retention of net assets generated by operations represents the primary source of funds. This is true for most successful businesses.
6. Firms may periodically distribute net assets generated by earnings to shareholders as a dividend. Firms reduce net assets and retained earnings for the distribution. Great Deal declared dividends of \$234 million on its common stock during fiscal 2012.

This chapter explores these concepts in greater depth and expands the discussion of shareholders' equity by considering the following:

1. The reasons for issuing common and preferred stock and the differences between the two types of stock.
2. The use of options in connection with the issuance of common stock.
3. The reasons for repurchasing shares of stock and the accounting for share repurchases.

As in previous chapters, we discuss both U.S. GAAP and IFRS. We begin with capital contributions and then move to distributions. We then turn to option arrangements.

CAPITAL CONTRIBUTIONS

Most publicly traded firms operate as **corporations**. The corporate form has at least three advantages:

1. The corporate form provides the owner (shareholder) with **limited liability**. This means that, should the corporation become insolvent, creditors can claim only the assets of the corporate entity. Creditors cannot claim the assets of the individual owners. In contrast, creditors of partnerships and proprietorships have a claim on the owners' business and personal assets.³
2. The corporate form allows the firm to raise funds by issuing shares to investors.

²A debit balance in Retained Earnings is an *accumulated deficit*.

³In recent years, many partnerships and sole proprietorships have become limited liability companies (LLCs) or limited liability partnerships (LLPs). These arrangements limit the owners' personal liability for business debts and other obligations arising from negative surprises involving the business, such as lawsuits filed by customers.

TERMINOLOGY NOTE

The term *capital* can mean any of the following things:

- *Cash* (“The firm raised capital with a stock issue”).
- *Long-term assets* (“The firm’s capital assets have depreciable lives between 7 and 10 years”).
- *All sources of funding*, that is, all items on the right side of the balance sheet (“The firm’s weighted-average cost of capital is 11%”).
- *Shareholders’ equity*.
- *Contributed capital*, that part of shareholders’ equity arising from owners’ contributions of cash and other assets in exchange for shares.

We recommend that you use this word to mean only contributed capital, but the rest of the world will continue to use the word to mean whatever is convenient for the speaker at the time. You should be attuned to the various meanings and understand what a particular user means at a particular time by the word *capital*. See the discussion in the **Glossary** for *capital*.

3. The corporate form facilitates the transfer of ownership interests because owners can sell their shares without affecting the ongoing operations of the firm. The transfer is a transaction between shareholders. It does not involve the firm whose shares change hands.

The corporation has legal status separate from its owners. Investors make capital contributions under a contract between themselves and the corporation. Various laws and contracts govern the rights and obligations of a shareholder:

1. The corporation laws of the jurisdiction in which incorporation takes place.
2. The articles of incorporation or the **corporate charter**. This contract sets out the agreement between the firm and the jurisdiction in which the business incorporates. The jurisdiction grants to the firm the privileges of operating as a corporation and of obtaining capital through the issue of shares of stock.
3. The **corporate bylaws**. The board of directors adopts bylaws, which are the rules and regulations governing the internal affairs of the corporation.
4. The **capital stock contract**. Each type of **capital stock** has its own provisions on matters such as voting, sharing in earnings, distributing assets generated by earnings, and sharing in assets in case of dissolution of the firm. Both U.S. GAAP and IFRS require the disclosure of information about the rights of each type of capital stock outstanding.⁴

COMMON SHAREHOLDERS’ EQUITY

All corporations issue **common stock**. Common shareholders have a claim on the assets of a firm after creditors and preferred shareholders have received amounts promised to them. Frequently, corporations grant voting rights only to common shares. This means that common shareholders have the right to elect members of the board of directors and to decide certain corporate policies.

ISSUING CAPITAL STOCK

Firms may issue capital stock (preferred or common) for cash, or for noncash assets, or for services rendered. Some issuances of common stock result from various option arrangements. We consider option arrangements later in this chapter.

⁴FASB, *Statement of Financial Accounting Standards No. 129*, “Disclosure of Information about Capital Structure,” 1997 (**Codification Topic 505**); IASB, *International Accounting Standard 1*, “Presentation of Financial Statements,” revised 2003.

Issue for Cash Firms usually issue shares for cash at the time of their initial incorporation and at periodic intervals when they need additional shareholder funds. Firms generally issue common shares, both at the time of initial incorporation and in subsequent years, for amounts greater than **par (nominal or stated) value**.⁵ The firm credits the excess of issue proceeds over par (or stated) value to the **Additional Paid-In Capital** account.

Example 1 Assume Great Deal issues 1,000 shares of its \$0.10 par value common stock for \$100,000. The journal entry is as follows:

Cash	100,000	
Common Stock—\$0.10 Par Value		100
Additional Paid-In Capital		99,900

Issue for Noncash Assets Firms also issue common stock for assets other than cash, for example, to acquire another firm. The firm records the shares exchanged for noncash assets at the fair value of the shares given. If the firm cannot make a reasonable estimate of the fair value of the shares given, then the value of the shares exchanged is recorded as the fair value of the assets received.⁶ A firm might not be able to make a reasonable estimate of the fair value of its shares if the firm is a private company and its shares are not traded.

Example 2 Great Deal issues 1,000 shares of its \$0.10 par value common stock (and a fair value of \$100 per share) to acquire another firm's assets having the following fair values: accounts receivable, \$6,000; inventories, \$12,000; land, \$10,000; building, \$62,000; and equipment, \$10,000. The journal entry to record the exchange is as follows:

Accounts Receivable	6,000	
Inventories	12,000	
Land	10,000	
Building	62,000	
Equipment	10,000	
Common Stock—\$0.10 Par Value		100
Additional Paid-In Capital		99,900

Issue for Services Received If a firm issues common stock in return for services other than from employees (discussed later), the firm records the transaction at the fair value of the services received if it can more reliably measure this amount than the fair value of the shares issued. Otherwise, the firm records the transaction at the fair value of the shares issued.

Example 3 Great Deal issues 100 shares of its \$0.10 par value common stock to attorneys for \$10,000 of legal services. The journal entry is as follows:

Legal Expense	10,000	
Common Stock—\$10 Par Value		100
Additional Paid-In Capital		9,900

⁵Not all common shares have a par or stated value; some firms issue no-par shares. The laws of the jurisdiction in which a firm incorporates determine whether the firm issues par value or no-par value shares. Par or stated values have less relevance now than they did years ago when the par value established the lower limit on the amount for which a firm could issue shares.

⁶FASB, *Statement of Financial Accounting Standards No. 141R (revised 2007)*, "Business Combinations," 2007 (Codification Topic 805); IASB, *International Financial Reporting Standard 3, "Business Combinations,"* revised 2008.

PREFERRED SHAREHOLDERS' EQUITY

Owners of **preferred stock** have a claim on the assets of a firm that is senior to the claim of common shareholders. Preferred shares also carry special rights. The senior status and special rights reduce the risks of preferred shareholders relative to common shareholders. Preferred shareholders should therefore expect a lower return than common shareholders. The rights of preferred shareholders and the obligations of the issuing firm vary and include the following:

Dividend Rights Preferred shares often entitle their holders to dividends at a certain rate, which the firm must pay before it can pay dividends to common shareholders. Firms may sometimes postpone or omit preferred dividends. Most preferred shares, however, have **cumulative dividend rights**, which means that a firm must pay all current and previously postponed preferred dividends before it can pay any dividends on common shares.

Call Provisions **Callable preferred shares** provide the issuer with the right, but not the obligation, to repurchase preferred shares at a specified price. The price may vary according to a preset schedule. A call provision is valuable to the issuing firm. To see why, suppose that financing becomes available at a cost lower than the rate specified for the preferred shares. The issuing firm can reduce its financing costs by issuing new securities and then exercising its right to reacquire the preferred shares at a fixed price. This option to buy the shares reduces the value of those shares to potential preferred shareholders. Thus, a firm will receive a smaller amount from issuing callable shares than from issuing non-callable shares.

Convertible Feature **Convertible preferred shares** give the holder of preferred shares the right, but not the obligation, to convert the preferred shares into common shares under certain conditions. Convertible preferred shares provide the security holders with a relatively assured dividend, a claim that is senior to that of common shareholders, and the possibility of capital appreciation (by converting the preferred shares into common shares if the market price of the common shares rises). Because of the conversion option, changes in the market price of convertible preferred shares often parallel changes in the market price of common shares. The firm benefits from issuing convertible preferred shares because these shares usually have a lower dividend rate than purchasers otherwise would have required to buy the shares. We describe the accounting treatment for convertible preferred stock later in this chapter.

► PROBLEM 15.1 FOR SELF-STUDY

Journal entries for capital contributions. Prepare journal entries to record the following transactions for Healy Corporation during the current year under U.S. GAAP. The accounting period of Healy Corporation ends on December 31.

- Issued 100,000 of \$10 par value common stock for \$14 per share on January 2.
- Issued 10,000 shares of common stock on January 2 in the acquisition of a patent. The firm has no separate information about the fair value of the patent.
- Issued 5,000 shares of \$5 par value preferred shares on January 31 for \$10 per share.

CORPORATE DISTRIBUTIONS

Firms use net assets to generate more net assets through the earnings process. Firms typically retain some or all of the net assets generated by earnings, causing net assets to increase, along with retained earnings. The retention of net assets generated by earnings generally increases the market price of the firm's common shares. Some firms pay periodic dividends to the common shareholders. Each common shareholder receives the same dividend per share. This section discusses corporate dividend policies and the accounting for dividends.

Firms may also choose to use the net assets generated by earnings to repurchase common shares. Repurchases result in cash outflows for a firm, similar to paying a cash dividend. In the case of share repurchases, only those shareholders that choose to sell their shares receive cash. This section discusses business reasons for stock repurchases and the accounting for such repurchases.

DIVIDENDS

The board of directors has the legal authority to declare dividends. Directors must conclude that declaring a dividend is both legal and financially desirable.

Legal Limits on Dividends—Statutory (by Law) Jurisdiction-specific corporate laws limit directors' freedom to declare dividends. Without these limits, directors might dissipate the firm's assets for the benefit of common shareholders, harming creditors and other non-shareholding stakeholders.

One example of a limitation of the declaration of dividends provides that the board may not declare dividends "out of capital." This means that the board may not pay dividends by debiting the contributed capital accounts (which result from fund-raising transactions with owners). Rather, the board must pay dividends "out of earnings" by debiting them against the Retained Earnings account (which results from earnings transactions). Some jurisdictions allow corporations to declare dividends out of the earnings of the current period even if the Retained Earnings account has a debit (negative) balance because of accumulated losses from previous periods.

Statutory limits generally do not influence the accounting for shareholders' equity and dividends. A balance sheet does not provide the details of amounts legally available for dividends, but it should disclose information necessary for the user to apply the rules of the corporation's jurisdiction of incorporation.

Legal Limits on Dividends—Contractual Contracts with bondholders, other lenders, and preferred shareholders often limit dividend payments. For example, a bond contract may require that total liabilities not exceed the total amount of shareholders' equity. Such a provision involves curtailing dividends so that the necessary ratio is achieved. Financial statement notes must disclose significant limitations on dividend declarations.⁷

Dividends and Corporate Financial Policy Directors usually declare dividends less than the legal maximum and thereby allow retained earnings to increase for several reasons:

1. Available cash did not increase by as much as the amount of earnings, so paying the maximum legally permitted dividends would require raising more cash.
2. Restricting dividends in prosperous years may permit stable or growing dividend payments in poor years.
3. The firm may need funds for expansion of working capital or for plant and equipment.
4. Using cash to reduce the amount of borrowings, rather than pay dividends, may be prudent.

ACCOUNTING FOR DIVIDENDS

A firm may pay dividends in cash, other assets, or shares of its common stock.

Cash Dividends When the board of directors declares a **cash dividend** equal to 150,000, the entry is as follows:

Retained Earnings (Dividends Declared)	150,000	
Dividends Payable		150,000

Once the board of directors declares a dividend, the dividend becomes a legal liability of the corporation. Dividends Payable appears as a current liability on the balance sheet if the firm has not yet paid the dividends by the end of the accounting period. When the firm pays the dividends, the entry is as follows:

⁷FASB, *Statement of Financial Accounting Standards No. 5*, "Accounting for Contingencies," 1975 (**Codification Topic 450**). The required disclosure is implicit in IASB, *International Accounting Standard 1*, "Presentation of Financial Statements," revised 2003.

Dividends Payable	150,000	
Cash		150,000

Property Dividends Corporations sometimes distribute assets other than cash; such a dividend is known as a **dividend in kind** or a **property dividend**.

The accounting for property dividends resembles that for cash dividends, except that when the firm pays the dividend, it credits the asset given up, rather than Cash. The amount debited to Retained Earnings equals the fair value of the assets distributed. When this fair value differs from the carrying value of the assets distributed, the firm recognizes a gain or loss in net income.⁸

Stock Dividends The retention of earnings may lead to a substantial increase in shareholders' equity, as the firm accumulates net assets that it keeps invested in the business. To indicate such a commitment of assets generated by reinvested earnings, the board of directors may declare a **stock dividend**. The accounting involves a debit to Retained Earnings and credits to contributed capital accounts. The stock dividend does not affect total shareholders' equity. It reallocates amounts from Retained Earnings to the contributed capital accounts. When the firm declares a stock dividend, shareholders receive additional shares of stock in proportion to their existing holdings. If, for example, the firm issues a 5% stock dividend, each shareholder receives one additional share for every 20 shares held before the dividend. Both U.S. GAAP and IFRS require firms to record the shares issued in a stock dividend at their fair value.⁹

Example 4 A firm has 1,000,000 shares of no-par common stock outstanding prior to declaring a 5% stock dividend. The shares traded at a price of \$18 per share. The 5% stock dividend resulted in the issuance of 50,000 ($= 0.05 \times 1,000,000$) additional shares. The journal entry to record the stock dividend is as follows:

Retained Earnings (Dividends Declared)	900,000	
Common Stock—No Par Value		900,000

The stock dividend re-labels a portion of the retained earnings that was legally available for dividend declarations as a more permanent form of shareholders' equity. The firm does not have this cash available for dividends. The stock dividend signals to readers of the balance sheet the commitment to investment.

STOCK SPLITS

Stock splits resemble stock dividends. The corporation issues additional shares of stock to shareholders in proportion to their existing holdings. The firm receives no additional assets. Firms typically execute a stock split in one of two ways:¹⁰

- 1. Reduce the par value of the common stock in proportion to the new number of shares issued.** A corporation may, for example, have 1,000 shares of \$10 par value stock outstanding and exchange those shares for 2,000 shares of \$5 par value stock (a two-for-one split) or for 4,000 shares of \$2.50 par value stock (a four-for-one split).
- 2. Make no change in par value but issue additional shares of the same par value.** For example, a corporation executing a two-for-one stock split would issue additional shares equal to the number of shares already outstanding.

⁸FASB, *Opinion No. 29*, "Accounting for Nonmonetary Transactions," 1973 (**Codification Topic 845**). This accounting is consistent with IASB pronouncements on related topics.

⁹Committee on Accounting Procedure, *Accounting Research Bulletin No. 43*, 1953, "Restatement and Revision of Accounting Research Bulletins Nos. 1–42," 1953 (**Codification Topic 505**). This accounting is consistent with IASB pronouncements on related topics.

¹⁰Firms may also execute a *reverse stock split*. In this case, firms reduce the number of outstanding shares, either by increasing the par value of the stock or by simply cancelling outstanding shares.

A stock split accomplished by altering the par value in direct proportion to the number of new shares does not require a journal entry. If the change in par value is not proportional to the new number of shares or if the firm does not change the par value, the firm decreases Additional Paid-In Capital or Retained Earnings. The amount shown in the Common Stock account represents a different number of shares. Of course the firm must record the new number of shares held by each shareholder in the subsidiary capital stock records.

STOCK DIVIDENDS AND STOCK SPLITS: COMMONALITIES AND DIFFERENCES

Distinguishing a stock dividend from a stock split can be difficult. For example, consider a 50% increase in the number of shares. Does the firm account for this distribution as a stock dividend, using the market value of the stock, or as a 1.5-for-one stock split, using the par value of the stock? Usually firms treat small-percentage distributions, say less than a 25% increase in the number of shares, as stock dividends and larger ones as stock splits.

Stock dividends and stock splits have little economic substance for shareholders. A proportionate increase in the number of shares held by each shareholder does not change that shareholder's ownership interest or proportionate voting power. Although the book value per common share (total common shareholders' equity divided by the number of common shares outstanding) decreases, each shareholder has a proportionately larger number of shares, so the total book value of each shareholder's interest remains unchanged.

Stock splits and stock dividends reduce the market value per share in inverse proportion to the split or dividend. For example, a two-for-one split results in a 50% reduction in the market price per share. Managers and governing boards might use stock splits and dividends to keep the market price per share within some target trading range. For example, the board of directors might think that a market price of \$60 to \$80 is an effective trading range for its stock. If the share price has risen to \$150 in the market, the board of directors may declare a two-for-one split, thus reducing the share price to \$75.

► PROBLEM 15.2 FOR SELF-STUDY

Journal entries for dividends and stock splits. The shareholders' equity section of the balance sheet of Baker Corporation on January 1 of the current year appears below:

Shareholders' Equity	
Common Stock, \$10 par value, 25,000 shares issued and outstanding	\$250,000
Additional Paid-In Capital	50,000
Retained Earnings	<u>150,000</u>
Total	<u>\$450,000</u>

Prepare journal entries for each of the following transactions of Baker Corporation for the current year. Ignore income taxes.

- a. March 31: The board of directors declares a cash dividend of \$0.50 per share. The firm will pay the dividend on April 15.
- b. April 15: The firm pays the dividend declared on March 31.
- c. June 30: The board of directors declares and distributes a 10% stock dividend. The market price per share on this date is \$15.
- d. December 31: The board of directors declares a two-for-one stock split and changes the par value of the common shares from \$10 to \$5.

STOCK REPURCHASES

Treasury stock or **treasury shares** are shares a firm has previously issued and later reacquired. Treasury shares do not receive dividends, do not have voting rights, and do not enter the calculation of earnings per share. This is because corporation laws do not consider treasury shares

to be outstanding shares. Reasons for reacquiring outstanding common stock include the following:

1. **To use in option arrangements.** A firm can reacquire shares to fulfill commitments to deliver shares to its employees under employee stock option plans. Often the firm does this in order to maintain a roughly constant number of shares outstanding. Doing so avoids diluting existing shareholders' voting interest and perhaps maintaining earnings per share.
2. **To invest excess cash.** Some firms believe that their own shares provide a good investment. Evidence supports the notion that share prices often increase after a firm announces a share repurchase program.
3. **To defend against an unfriendly takeover bid.** Two different motives are possible:
 - Share repurchases reduce common shareholders' equity and increase the proportion of debt in the capital structure, making the firm more risky and therefore less attractive to an unfriendly bidder. Some firms even borrow cash to repurchase shares, which affects the debt ratios even more.
 - Share repurchases use cash and thereby reduce the attractiveness of the company to outsiders who believe that cash makes the company an attractive target.
4. **To distribute cash to shareholders in a tax-advantaged way.** Rather than pay dividends to all shareholders, many of whom will owe personal income taxes on the entire dividend amount, the firm can buy back shares from those who wish to receive cash. Some shareholders will have lower tax rates on receipts from sales of shares than on dividend receipts.

ACCOUNTING FOR TREASURY SHARES

U.S. GAAP and IFRS on accounting for repurchases and reissuances of treasury shares follow the principle that a corporation must never report a gain or loss on transactions involving its own shares.¹¹ Even though the firm may sell the treasury shares for more, or less, than their acquisition cost, accounting does not report the gain, or loss, as a component of income. The required accounting views treasury stock purchases and sales as financing, not operating, transactions. Therefore, accounting debits (for losses) or credits (for gains) the contributed capital account for these adjustments.

The two most common approaches for accounting for treasury shares under U.S. GAAP are:¹²

1. The cost method.
2. The constructive retirement method.

Both approaches reduce shareholders' equity but the specific accounts affected differ. Both approaches are consistent with IFRS. IFRS requires only that firms reduce shareholders' equity for the acquisition cost of the shares and report no gain or loss on treasury share transactions.¹³ To illustrate these two approaches, assume that a firm originally issued 1,000 shares of \$1 par value common stock for \$40 per share and later reacquired them for \$50 each.

Cost Method for Repurchasing Shares When a firm reacquires common shares under the cost method, it debits the Treasury Shares (or Treasury Stock) account with the total amount paid to reacquire the shares.

Treasury Stock	50,000	
Cash		50,000

The Treasury Stock account has a debit balance and therefore reduces total shareholders' equity.

¹¹Accounting Principles Board, *APB Opinion No. 6*, "Status of Accounting Research Bulletins," 1965 (**Codification Topic 505**); IASB, *International Accounting Standard 32*, "Financial Instruments: Presentation," revised 2003.
¹²A third approach, the par value method, is less widely used.
¹³Committee on Accounting Procedure, *Accounting Research Bulletin 43*, "Restatement and Revision of Accounting Research Bulletins 1-42," 1953 (**Codification Topic 505**); International Accounting Standards Board, *International Accounting Standard 32*, "Financial Instruments: Presentation," revised 2003.

Cost Method for Reissued Treasury Shares If the firm later reissues treasury shares for cash, it debits Cash for the amount received and credits Treasury Shares (or Treasury Stock) for the cost of the shares. The reissue price will usually differ from the amount paid to acquire the treasury shares. If the reissue price exceeds the acquisition price, the credit to make the entry balance is to Additional Paid-In Capital.¹⁴ If the firm reissued the 1,000 shares in this example for \$55 a share, the entry under the cost method is as follows:

Cash	55,000	
Treasury Stock—Common		50,000
Additional Paid-In Capital		5,000

Constructive Retirement Method for Repurchasing Shares When a firm uses the constructive retirement method to account for treasury shares, it debits Common Stock for the par value of the repurchased shares, debits Additional Paid-In Capital for the difference between the original issue price of the shares and par value, and plugs Retained Earnings for any difference between the repurchase price (\$50 in this case) and the original issue price (\$40 in this case). Firms use this method when management and the governing board do not intend to reissue shares within a reasonable amount of time or when laws define reacquired shares as retired shares. The journal entry to repurchase the shares under the constructive retirement method is as follows:

Common Stock	1,000	
Additional Paid-In Capital	39,000	
Retained Earnings	10,000	
Cash		50,000

Constructive Retirement Method for Reissued Treasury Shares Firms that use the constructive retirement method do not have treasury shares to reissue. Any subsequent issuances of shares reflect issuances of new shares. The entry to record new share issuances is the same as described earlier in this chapter: credit Common Stock for the par value of the issued shares and credit Additional Paid-In Capital for the excess of the issue price over the par value. The journal entry is as follows:

Cash	55,000	
Common Stock		1,000
Additional Paid-In Capital		54,000

► PROBLEM 15.3 FOR SELF-STUDY

Journal entries for treasury stock transactions. Prepare journal entries for the following transactions of Crissie Corporation using the cost method to account for treasury stock transactions:

- Reacquired 2,000 shares of \$10 par value common stock on January 15 for \$45 per share.
- Issued 1,200 shares of treasury stock to employees upon the exercise of stock options at a price of \$28 per share on April 26.
- Reacquired 3,000 shares of \$10 par value common stock for \$52 per share on August 15.

(continued)

¹⁴In some cases, the amount paid by the firm to reacquire the treasury shares exceeds the subsequent reissue price. Under the cost method, the firm debits the balance to Additional Paid-In Capital so long as that account has a sufficiently large credit balance. To the extent the required debit exceeds the credit balance in the Additional Paid-In Capital account, the firm reduces that account to zero and debits the excess to Retained Earnings.

- d. Issued 1,600 shares of treasury stock to holders of 800 shares of convertible preferred stock, which had a carrying value of \$80,000 on November 24. Crissie Corporation uses a first-in, first-out assumption on reissues of treasury stock and uses carrying values to record conversions of preferred stock.
- e. Sold 1,500 shares of treasury stock on the open market for \$47 per share on December 20.

OPTION ARRANGEMENTS

Corporations often sell, or exchange for goods and services, **call options** on their shares. A call option gives the holder the right to acquire shares of stock at a fixed price, called the **strike price** or **exercise price**. If the market price of the shares increases above the exercise price, the option holder benefits by exercising the option to purchase shares. The excess of the market price over the exercise price is the option's **intrinsic value**.

Stock Options Many firms pay part of employees' compensation by issuing call options on their own shares. These **employee stock options (ESOs)** permit the employees to purchase shares of the employer's stock in the future at a fixed exercise price. Firms adopt stock option plans to motivate employees to take actions that will increase the market value of the firm's common shares, to conserve cash, and, in the United States, to take advantage of the favorable tax treatment that income tax laws accord this form of compensation.

Stock Purchase Rights Firms may also grant or sell **stock purchase rights** (or **stock rights**) to current shareholders. Stock rights give the shareholders the right to purchase shares of common stock at a specified price.

Stock Warrants Firms sometimes issue bonds with **stock warrants** that have the same features as call options. The bond gives the holder the right to receive periodic interest payments and the principal amount at maturity. The stock warrant permits the holder to exchange the warrant and a specified amount of cash for shares of the firm's stock. Attaching a stock warrant permits the firm to issue bonds at a lower interest cost than the market would require for bonds without a warrant.

Arrangements such as stock options, stock rights, and stock warrants have economic value. Both U.S. GAAP and IFRS require firms to recognize the fair value of employee stock options in the accounting records,¹⁵ as discussed next.

Employee Stock Option Plans An understanding of the accounting for employee stock options (ESOs) requires several definitions. Refer to **Figure 15.1**. The *grant date* is the date a firm awards a stock option to employees. The *vesting date* is the first date employees can exercise their stock options. The *vesting period* is the period between the grant date and the vesting date. Vesting periods usually depend on one or more conditions being met, such as the following:

- A vesting period that depends only on the passage of time is a service condition;
- A vesting period that depends on achieving a specified level of profitability is an example of a performance condition;
- A vesting period that depends on the firm's stock price reaching a specified target is a market condition.

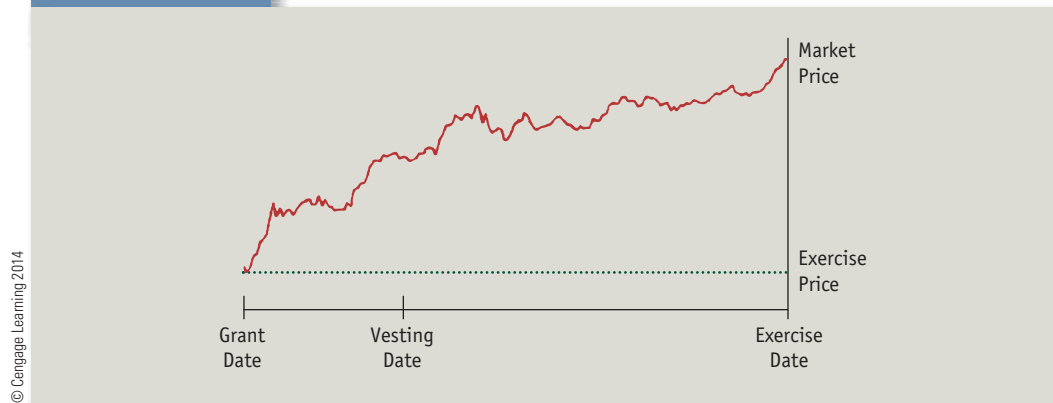
Vesting conditions serve two purposes:

1. They increase the likelihood that employees continue to work for the firm.
2. They motivate employees to take actions that increase the stock price.

¹⁵FASB, *Statement of Financial Accounting Standards No. 123R*, "Share-Based Payment," 2004 (**Codification Topic 718**); IASB, *International Financial Reporting Standard 2*, "Share-Based Payment," 2004.

FIGURE 15.1

Graphic Depiction of Stock Option Arrangement



The *exercise date* is the date employees exchange the option and cash for shares of stock. The *exercise price* is the price specified in the stock option contract for purchasing the stock. The *market price* is the price of the stock as it trades in the market.

The value of a stock option results from two elements:

1. The **benefit element** refers to the benefit realized on the exercise date because the market price of the stock exceeds the exercise price. This difference is the *intrinsic value* of the option on the exercise date.
2. The **time value element** is the length of the period during which the holder can exercise the option.

It is not possible to measure the amount of the benefit element before the exercise date. Stock options with exercise prices less than the current market price of the stock (described as *in the money*) have a higher value than stock options with exercise prices exceeding the current market price of the stock (described as *out of the money*). The time value element results from the possibility of increases in the market price of the stock during the exercise period. Time value is larger the longer the exercise period and the more volatile the market price of the stock. A stock option whose exercise price exceeds the current market price (zero intrinsic value and therefore zero value for the benefit element) has economic value because of the possibility that the market price will exceed the exercise price on the exercise date (positive value for the second element). As the expiration date of the option approaches, the value of the second element approaches zero.¹⁶

The accounting for employee stock options involves the following:

1. Measure the fair value of stock options on the date of the grant using an option-pricing model.¹⁷ Total compensation cost is the number of options the firm expects to vest times the fair value per option. Firms use their historical experience on forfeitures due to employees terminating employment prior to vesting to estimate the expected number of options that will vest.
2. Amortize the fair value of the stock options on the date of the grant over the *requisite service period*. The requisite service period is the period over which employees provide services in order to vest in the options. The firm debits Compensation Expense and credits Additional Paid-In Capital (Stock Options) for the amount amortized. The firm does not re-compute the fair value of the option at each succeeding balance sheet date to reflect new information.
3. When employees exercise their options, the firm debits Cash for the proceeds, debits Additional Paid-In Capital (Stock Options) for any amounts credited to that account in step 2 above, credits Common Stock for the par value of the shares issued, and credits Additional Paid-In Capital for any excess of the cash received plus the amount amortized in step 2 above over the par value of the shares issued.

¹⁶For an elaboration on the theory of option pricing, see Fischer Black and Myron Scholes, "The Pricing of Options and Corporate Liabilities," *Journal of Political Economy* (May–June 1973), pp. 637–654.

¹⁷To calculate the fair value of the option, option pricing models incorporate information about the current market price, exercise price, expected time between grant and exercise, expected market price volatility of the stock, expected dividends, and risk-free interest rate.

Example 5 Fulton Group awards options to employees on March 1, 2013, to acquire 1,000 shares of \$0.10 par value common stock at an exercise price of \$35 per share. The firm uses an option-pricing model to value the options at \$8,000. The requisite service period is two years. All of the options vest, and employees exercise the options on December 31, 2016, when the market price of the stock is \$50 per share. Fulton Group's fiscal year ends on December 31. Fulton Group makes the following entries:

<i>March 1, 2013</i>		
No entry		
<i>December 31, 2013</i>		
Compensation Expense	4,000	
Additional Paid-In Capital (Stock Options)		4,000
<i>December 31, 2014</i>		
Compensation Expense	4,000	
Additional Paid-In Capital (Stock Options)		4,000
<i>December 31, 2015</i>		
Cash (1,000 × \$35)	35,000	
Additional Paid-In Capital (Stock Options)	8,000	
Common Stock—Par Value (1,000 × \$0.10)		100
Additional Paid-In Capital (8,000 + [1,000 × (\$35 - \$0.10)])		42,900

This accounting recognizes an expense as the firm receives the benefits (\$4,000 each in both fiscal 2013 and 2014) and increases contributed capital for the cash equivalent value of employees' services rendered to obtain the stock (\$8,000) and the cash received when employees exercise their options (\$35,000).

Stock Rights Like stock options, stock rights give their holder the right to acquire shares of stock at a specified price. The major differences between stock options and stock rights are as follows:

- **Firms grant stock options to employees.** Employees receive them as a form of compensation and in general may not transfer or sell them to others. Therefore, employee stock options do not trade in public markets.
- **Firms grant stock rights to current shareholders.** Shareholders may exercise the stock rights or sell them to others. Stock rights usually trade in public markets.

Firms often issue stock rights to raise new capital from current shareholders. The granting of stock rights to current shareholders requires no accounting entries. U.S. GAAP and IFRS do not require recognition of the rights on the date of the grant. When holders exercise the rights, the firm records the issue of shares at the price paid.

Stock Warrants Firms issue stock warrants to the general investing public for cash or attached to bonds. Assume that a firm issues warrants for \$15,000 cash. The warrants allow holders to purchase 10,000 shares for \$20 each. The entry is as follows:

Cash	15,000	
Additional Paid-In Capital (Stock Warrants)		15,000

When warrant holders exercise their rights, the firm issues 10,000 shares of \$5 par value common stock in exchange for the warrants plus \$200,000 and makes the following entry:

Cash	200,000	
Additional Paid-In Capital (Stock Warrants)	15,000	
Common Stock—\$5 Par Value		50,000
Additional Paid-In Capital		165,000

If the warrants expire before the holders exercise them, the firm records the following entry:

Additional Paid-In Capital (Stock Warrants)	15,000	
Additional Paid-In Capital		15,000

Holders of a bond or preferred stock with common stock warrants attached can detach and redeem the warrants separately from the bond or preferred stock. The holder receives periodic interest or preferred dividends and holds a call option to purchase common shares. U.S. GAAP and IFRS require the firm to measure the fair value of the stock warrants separately from the value of the bond or preferred stock and allocate the issue price between the two securities.¹⁸

Example 6 Suppose that Great Deal issues 20-year, \$1,000,000 bonds with 7% semiannual coupons. The bonds contain stock warrants, which their holders can sell on the open market or exercise to acquire 10,000 shares of common stock for \$200,000. The issue price for the bonds and warrants is \$1,050,000. Immediately after issue, the bonds sell on the market for \$1,035,000, and the warrants sell for \$15,000. The journal entry to record the issue of the bonds is as follows:

Cash	1,050,000	
Bonds Payable		1,035,000
Additional Paid-In Capital (Stock Warrants)		15,000

The subsequent accounting for the bonds follows the procedures discussed in **Chapter 11** for bonds issued above par value. The accounting for the warrants follows the procedures illustrated above for warrants issued for cash.

Convertible Bonds or Preferred Stock **Convertible bonds** permit the bondholder to convert the bond into shares of common stock. **Convertible preferred stock** permits the preferred shareholder to convert the preferred shares into shares of common stock. The owner cannot detach and transfer the conversion option the same way that the owner can for a bond or preferred stock issued with a stock warrant. The issue price of a convertible bond is payment for both debt and the conversion option. Similarly, the issue price of convertible preferred stock is for preferred stock and the conversion option. No one, however, can observe the fair value of these separate components. U.S. GAAP and IFRS differ in their treatment of the issuance of convertible securities.

U.S. GAAP—Issue of Convertible Bonds or Convertible Preferred Stock In most cases U.S. GAAP requires firms to allocate the full issue price to the bonds or preferred stock and none of the price to the conversion feature.¹⁹

Example 7 Great Deal's credit rating would allow it to issue either \$100,000 of 10-year, 8% semiannual coupon bonds at par or \$100,000 of convertible 6% semiannual coupon bonds that permit the holder of each \$1,000 bond to convert it into 50 shares of Great Deal's \$0.10 par value common stock. (Holders in aggregate can convert the entire issue into 5,000 shares.) The conversion price, which is the exercise price on the call option embedded in the conversion feature, is \$20 per share (= \$1,000/50 shares). U.S. GAAP requires the following entry:

Cash	100,000	
Convertible Bonds Payable		100,000

This entry effectively treats convertible bonds like nonconvertible bonds, and it records the value of the conversion feature at zero.

¹⁸Accounting Principles Board, *Opinion No. 14*, "Accounting for Convertible Debt and Debt Issued with Stock Purchase Warrants," 1969 (**Codification Topic 470**); IASB, *International Accounting Standard 32*, "Financial Instruments: Presentation," revised 2003.

¹⁹Accounting Principles Board, *Opinion No. 14*, "Accounting for Convertible Debt and Debt Issued with Stock Purchase Warrants," 1969 (**Codification Topic 470**).

IFRS—Issue of Convertible Bonds or Convertible Preferred Stock IFRS²⁰ requires firms to allocate a portion of the issue price to the conversion feature. The calculation of this amount requires knowing the proceeds of an issue of nonconvertible bonds that otherwise resemble the convertible bonds.

Example 8 Refer to **Example 7**. Great Deal can borrow at 8% without a conversion feature and at 6% with a conversion feature. The present value of 6%, 10-year, semiannual (nonconvertible) coupon bonds discounted at 8% is \$86,410. For Great Deal to issue 6% convertible bonds at par, the conversion feature must be worth \$13,590 (= \$100,000 – \$86,410). That is, the bond buyers have paid \$13,590 for the conversion feature. IFRS would recognize the value of the conversion feature separately, as a credit to Additional Paid-In Capital.²¹

Conversion of Convertible Bonds and Convertible Preferred Stock Accounting for the conversion of bonds or preferred stock into common stock uses either carrying values or fair values to record the conversion, although practice is evolving.

The usual entry to record the conversion of convertible bonds or preferred stock into common shares ignores current market prices and shows the swap of common shares for bonds or preferred stock at their carrying value.²²

Example 9 Assume that the market price of Great Deal's common stock increases to \$30 a share, so that the holder of one \$1,000 bond, convertible into 50 shares, can convert it into shares with a market value of \$1,500. If holders convert all the convertible bonds into common shares at this time, Great Deal would issue 5,000 shares of \$0.10 par value stock on conversion and make the following journal entry when using carrying values of the bonds:

Convertible Bonds Payable	100,000	
Common Stock—\$0.10 Par Value		500
Additional Paid-In Capital		99,500

An allowable alternative treatment recognizes that market prices provide information useful in quantifying the value of the shares issued. Under the alternative treatment, with \$30 market price per share and \$150,000 fair market value of the 5,000 shares issued on conversion, the journal entry would be as follows:

Convertible Bonds Payable	100,000	
Loss on Conversion of Bonds	50,000	
Common Stock—\$0.10 Par Value		500
Additional Paid-In Capital		149,500

▶ PROBLEM 15.4 FOR SELF-STUDY

Journal entries for capital contributions. Refer to **Problem 15.1 for Self Study**. Prepare journal entries to record the following transactions for Healy Corporation during the current year under U.S. GAAP.

- a. Issued 2,000 shares of \$100 convertible preferred stock on March 1 for \$100 per share. Holders may convert each share of preferred stock into four shares of common stock.

(continued)

²⁰IASB, *International Accounting Standard 32*, “Financial Instruments: Presentation,” revised 2003.

²¹The FASB is reconsidering the accounting for convertible bonds. There is some possibility that the FASB could adopt the IFRS accounting treatment for convertible bonds.

²²The carrying value of the bonds under IFRS will be less than \$100,000 because a portion of the issue price was initially allocated to the conversion option. A firm following IFRS and using carrying values to record the conversion would use the carrying value of the debt at the time of conversion in this entry.

- b. Sold 10,000 common warrants on the open market on June 1 for \$5 per warrant. Holders can exchange each warrant and \$24 in cash for a share of common stock.
- c. Holders of 600 shares of convertible preferred stock (see a) exchanged their shares for common stock on September 15. The market price of the common stock on this date was \$26 per share. Record the conversion using the carrying values.
- d. Holders of 4,000 common stock warrants exchanged their warrants (see b) and \$96,000 in cash for common stock on November 20. The market price of the common stock on this date was \$32 per share.
- e. Granted options to employees to purchase 5,000 shares of common stock for \$35 per share on January 2. The fair value of these options is \$30,000 and the requisite service period is three years. The firm expects all the options to vest.

SUMMARY

The shareholders' equity section of the balance sheet reports the sources of financing provided by common and preferred shareholders. The equity of the common shareholders equals the sum of the amounts appearing in the Common Stock, Additional Paid-In Capital, Retained Earnings, Accumulated Other Comprehensive Income, Treasury Stock, and other common-share equity accounts. The user of the financial statements gains insight into capital contributions, net income, other comprehensive income, dividends, and treasury stock transactions only by studying changes in the individual accounts.

SOLUTIONS TO SELF-STUDY PROBLEMS

SUGGESTED SOLUTION TO PROBLEM 15.1 FOR SELF-STUDY

(Healy Corporation; journal entries for capital contributions.)

a. <i>January 2</i>			
Cash	.....	1,400,000	
Common Stock—\$10 Par Value	.....		1,000,000
Additional Paid-In Capital	.....		400,000
b. <i>January 2</i>			
Patent	.....	140,000	
Common Stock—\$10 Par Value	.....		100,000
Additional Paid-In Capital	.....		40,000
c. <i>January 31</i>			
Cash	.....	50,000	
Preferred Stock—\$5 Par Value	.....		25,000
Additional Paid-In Capital	.....		25,000

SUGGESTED SOLUTION TO PROBLEM 15.2 FOR SELF-STUDY

(Baker Corporation; journal entries for dividends and stock splits.)

a. March 31			
Retained Earnings	12,500		
Dividends Payable		12,500	
<hr/>			
b. April 15			
Dividends Payable	12,500		
Cash		12,500	
<hr/>			
c. June 30			
Retained Earnings	37,500		
Common Stock—\$10 Par Value		25,000	
Additional Paid-In Capital		12,500	
<hr/>			
d. December 31			
Common Stock—\$10 Par Value	275,000		
Common Stock—\$5 Par Value		275,000	

Alternatively, the firm need make no entry because the reduction in par value is directly proportional to the additional number of shares.

SUGGESTED SOLUTION TO PROBLEM 15.3 FOR SELF-STUDY

(Crissie Corporation; journal entries for treasury stock transactions.)

a. January 15			
Treasury Stock—Common	90,000		
Cash		90,000	
To record the reacquisition of 2,000 common shares at \$45 per share.			
<hr/>			
b. April 26			
Cash	33,600		
Additional Paid-In Capital	20,400		
Treasury Stock—Common		54,000	
<hr/>			
c. August 15			
Treasury Stock—Common	156,000		
Cash		156,000	
<hr/>			
d. November 24			
Preferred Stock	80,000		
Treasury Stock—Common		77,600	
Additional Paid-In Capital		2,400	
<hr/>			
e. December 20			
Cash	70,500		
Additional Paid-In Capital	7,500		
Treasury Stock—Common		78,000	

SUGGESTED SOLUTION TO PROBLEM 15.4 FOR SELF-STUDY

(Healy Corporation; journal entries for capital contributions.)

a. March 1		
Cash	200,000	
Preferred Stock		200,000
<hr/>		
b. June 1		
Cash	50,000	
Additional Paid-In Capital (Stock Warrants)		50,000
<hr/>		
c. September 15		
Preferred Stock	60,000	
Common Stock—\$10 Par Value		24,000
Additional Paid-In Capital		36,000
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d. November 20		
Cash	96,000	
Additional Paid-In Capital (Stock Warrants)	20,000	
Common Stock—\$10 Par Value		40,000
Additional Paid-In Capital		76,000
<hr/>		
e.		
Compensation Expense	10,000	
Additional Paid-In Capital (Stock Options)		10,000
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KEY TERMS AND CONCEPTS

Corporation	Dividend in kind or property dividend
Limited liability	Stock dividend
Corporate charter	Stock split
Corporate bylaws	Treasury stock, treasury shares
Capital stock contract	Call options
Capital stock	Strike price or exercise price
Common stock, common share	Intrinsic value
Par (nominal or stated) value	Employee stock options (ESOs)
Additional Paid-In Capital	Stock purchase rights, stock rights
Preferred stock, preferred shares	Stock warrants
Cumulative dividend rights	Benefit element
Callable preferred shares	Time value element
Convertible preferred shares	Convertible bonds or convertible preferred stock
Cash dividend	

QUESTIONS, EXERCISES, AND PROBLEMS**QUESTIONS**

- Review the meaning of the terms and concepts listed above in Key Terms and Concepts.
- A firm contemplates issuing 10,000 shares of \$100 par value preferred stock. The preferred stock promises a \$4 per share annual dividend. The firm considers making this preferred stock callable or convertible. Will the issue price be the same in the two cases? Explain.

3. Common shareholders have voting rights, but preferred shareholders have higher seniority. What does the difference in seniority mean?
4. Compare and contrast a stock option, a stock right, and a stock warrant. How does the accounting for these three differ?
5. Stock option valuation models indicate that the value of a stock option increases with the volatility of the stock, increases with the time between the grant date and the expected exercise date, and decreases with increases in the discount rate. Explain.
6. U.S. GAAP and IFRS require firms to amortize the fair value of stock options as an expense over the periods the firm expects to receive employee services as a result of granting the options. What is the theoretical rationale for this amortization?
7. “The accounting for stock options, stock dividends, and treasury stock clouds the distinction between capital transactions and income transactions.” Explain.
8. Compare the position of a shareholder who receives a cash dividend, a property dividend, and a stock dividend.
9. A firm that sells inventory for more than its acquisition cost realizes an economic gain that accountants include in net income, but a firm that sells treasury stock for more than its acquisition cost realizes an economic gain that accountants exclude from net income. What is the rationale for the difference in treatment of these economic gains?
10. Consider the following statement: “When a firm repurchases its shares, the shares disappear.” Do you agree?

EXERCISES

11. **Issuing common stock.** Carter, Inc., issued 100,000 shares of \$1 par value common stock on December 1, 2013. On that date, the market price of the shares was \$18 per share. What journal entry did Carter record to reflect this transaction?
12. **Issuing common stock.** On September 30, 2014, Homing Corporation issued 500,000 shares of \$0.10 par value common stock. The market price of the shares on this date was \$30 per share. What journal entry did Homing record to reflect this transaction?
13. **Journal entries for dividends.** Give journal entries, if required, for the following transactions pertaining to Grable:
 - a. Grable declares the regular quarterly dividend of \$1.50 per share on its \$100 par value preferred stock. There are 30,000 shares authorized and 15,000 shares issued, of which Grable has previously reacquired 2,000 shares and holds them as treasury shares.
 - b. Grable pays the dividend on the preferred stock (see part a).
 - c. Grable declares and issues a stock dividend of \$300,000 of no-par common stock to its common shareholders.
 - d. The shares of no-par stock of Grable sell on the market for \$200 a share. To bring the market value down to a more popular price and thereby broaden the distribution of its stockholdings, Grable’s board of directors votes to issue four extra shares to shareholders for each share they already hold. Grable issues the shares.
14. **Journal entries for dividends.** Prepare journal entries for the following transactions of Watt Corporation. Watt has 20,000 shares of \$15 par value common stock outstanding on January 1, 2013. The balance in the Additional Paid-In Capital account on this date is \$200,000.
 - a. Declares a cash dividend of \$0.50 per share on March 31, 2013.
 - b. Pays the dividend in part a on April 15, 2013.
 - c. Declares and distributes a 10% stock dividend on June 30, 2013. The market price of the stock is \$20 on this date.
 - d. Declares a cash dividend of \$0.50 per share on September 30, 2013.
 - e. Pays the dividend in part d on October 15, 2013.
 - f. Declares a three-for-two stock split on December 31, 2013, but does not alter the par value.
15. **Journal entries for treasury stock transactions.** Prepare journal entries under the cost method to record the following treasury stock transactions of Danos Corporation.

- a. Purchases 10,000 shares of its own \$10 par value common stock for \$30 per share.
 - b. Issues 6,000 treasury shares to employees under stock option plans. The exercise price is \$32 per share. Assume that the market price of the common stock on the exercise date is \$35 per share. The stock options had a value of \$6 per option when issued, which the firm has already amortized to expense.
 - c. Purchases 7,000 shares of its own common stock for \$38 per share.
 - d. Issues 8,000 treasury shares in the acquisition of land valued at \$300,000. Danos Corporation uses a FIFO assumption for reissues of treasury stock.
 - e. Sells the 3,000 remaining shares of treasury stock for \$36 per share.
- 16. Journal entries for treasury stock transactions.** Prepare journal entries under the cost method to record the following treasury stock transactions of Melissa Corporation.
- a. Purchases 10,000 shares of its own \$5 par value common stock for \$12 per share.
 - b. Issues 6,000 treasury shares upon the conversion of bonds with a carrying value of \$72,000. Melissa Corporation records bond conversions using the carrying value method.
 - c. Purchases 20,000 shares of its own \$5 par value common stock for \$15 per share.
 - d. Issues 24,000 treasury shares and 6,000 newly issued shares of common stock in the acquisition of land with a market value of \$540,000.
- 17. Accounting for stock options.** Intelliant granted stock options to employees on January 1, 2013, permitting them to purchase 24.6 million shares of Intelliant common stock for \$22.63 per share. An option-pricing model indicates that the value of each option on this date is \$5.79. Intelliant expects to receive the benefit of enhanced employee services for the next three years. On December 31, 2016, employees exercise these options when the market price of the stock is \$40 per share. Compute the pre-tax effect of this option plan on the net income of Intelliant for 2013 through 2017.
- 18. Journal entries for employee stock options.** Morrissey Corporation grants 50,000 stock options to its managerial employees on December 31, 2013, to purchase 50,000 shares of its \$1 par value common stock for \$60 per share. The market price of a share of common stock on this date is \$60 per share. Employees must wait two years before the options vest and they can exercise the options, and this two-year period is the expected period of benefit from the stock options. An option-pricing model indicates that the value of these options on the grant date is \$400,000. On June 30, 2016, holders of 30,000 options exercise their options at a time when the market price of the stock is \$65 per share. On November 15, 2016, holders of the remaining options exercise them at a time when the market price of the stock is \$72 per share.
- Present journal entries to record the effects of the transactions related to stock options during 2013, 2014, 2015, and 2016. The firm reports on a calendar-year basis. Ignore income tax effects.
- 19. Journal entries for employee stock options.** Watson Corporation grants 20,000 stock options to its managerial employees on December 31, 2013, to purchase 20,000 shares of its \$10 par value common stock for \$25 per share. The market price of a share of common stock on this date is \$25 per share. Employees must work for another three years before they can exercise the options. An option-pricing model indicates that the value of these options on the grant date is \$75,000. On April 30, 2017, holders of 15,000 options exercise their options at a time when the market price of the stock is \$30 per share. On September 15, 2017, holders of the remaining options exercise them at a time when the market price of the stock is \$38 per share.
- Present journal entries to record these transactions on December 31, 2014, 2015, and 2016; on April 30, 2017; and on September 15, 2018. Assume that the firm receives any benefits of the stock option plan during 2015, 2016, and 2017 and that the firm reports on a calendar-year basis. Ignore income tax effects.
- 20. Journal entries for convertible bonds.** Higgins Corporation issues \$1 million of 20-year, \$1,000 face value, 10% semiannual coupon bonds at par on January 2, 2013. Each \$1,000 bond is convertible into 40 shares of \$1 par value common stock. Assume that Higgins Corporation's credit rating is such that it could issue 15% semiannual, nonconvertible bonds at par. On January 2, 2017, holders convert their bonds into common stock. The common stock has a market price of \$45 per share on January 2, 2017.

Present the journal entries made under U.S. GAAP on January 2, 2013, and January 2, 2017, to record the issue and conversion of these bonds. Use the carrying value method to record the conversion.

21. **Accounting for conversion of bonds.** Symantec has convertible bonds outstanding with a face value of \$10,000,000 and a carrying value of \$10,255,000. Holders of the bonds convert them into 100,000 shares of \$10 par value common stock. The common stock sells for \$105 per share on the market. Give the journal entries to record the conversion of the bonds using (1) the carrying value method and (2) the fair value method.
22. **Journal entries for stock warrants.** Kiersten Corporation sells 60,000 common stock warrants for \$4 each on February 26, 2013. Each warrant permits its holder to purchase a share of the firm's \$10 par value common stock for \$30 per share at any time during the next two years. The market price of the common shares was \$20 per share on February 26, 2013. Holders of 40,000 warrants exercised their warrants on June 6, 2015, at a time when the market price of the stock was \$38 per share. Kiersten Corporation experienced a major uninsured loss from a fire late in 2015, and its market price fell immediately to \$22 per share. The market price remained around \$22 until the stock warrants expired on February 26, 2017. Present journal entries on February 26, 2013; June 6, 2015; and February 26, 2017, relating to these stock warrants.
23. **Journal entries for stock warrants.** On December 7, 2008, Alpharm issued shares of convertible preferred stock and warrants to purchase additional shares of preferred stock for an aggregate issue price of \$46,180,000 in a private placement of securities. Investment bankers estimated the fair value of the warrants on this date to be \$2,730,000. Alpharm therefore allocated \$43,450,000 to the preferred stock and \$2,730,000 to the warrants. Between the issue date and January 15, 2013, dividends of \$19,083,000 accrued on the preferred stock but remain unpaid. The preferred stock carries cumulative dividends rights. Because of a deficit in Retained Earnings, Alpharm debited the dividends to Additional Paid-In Capital each year and credited Convertible Preferred Stock. On January 15, 2013, Alpharm made its initial public offering of common stock. Holders of the preferred stock converted their shares into 5,269,705 shares of \$0.01 par value common stock. The warrants to purchase preferred stock became warrants to purchase common stock. Give the journal entry on December 7, 2008, to issue the preferred stock and warrants and the entry on January 15, 2013, to convert the preferred stock to common stock. Use the carrying value method to record the conversion. The warrants remain outstanding.

PROBLEMS

24. **Journal entries to record the issuance of capital stock.** Prepare journal entries under U.S. GAAP to record the issuance of capital stock in each of the following independent cases. You may omit explanations for the journal entries. A firm does the following:
 - a. Issues 50,000 shares of \$5 par value common stock for \$30 per share.
 - b. Issues 20,000 shares of \$100 par value convertible preferred stock at par.
 - c. Issues 16,000 shares of \$10 par value common stock in the acquisition of a patent. The shares of the firm traded on a stock exchange for \$15 per share on the day of the transaction. The seller listed the patent for sale at \$250,000.
 - d. Issues 25,000 shares of \$1 par value common stock in exchange for convertible preferred stock with a par and carrying value of \$400,000. The common shares traded on the market for \$18 per share on the date of the transaction. Use the carrying value method to record the conversion.
 - e. Issues 5,000 shares of \$10 par value common stock to employees as a bonus for reaching sales goals for the year. The shares traded for \$12 per share on the day of the transaction.
25. **Journal entries for the issuance of capital stock.** Prepare journal entries to record the issuance of capital stock in each of the following independent cases. You may omit explanations for the journal entries. A firm does the following:
 - a. Issues 20,000 shares of \$10 par value common stock in the acquisition of inventory with a market value of \$175,000, land valued at \$220,000, a building valued at \$1,400,000, and equipment valued at \$405,000.

- b. Issues 10,000 shares of \$100 par value preferred stock at par.
- c. Issues 5,000 shares of \$1 par value common stock upon the exercise of stock warrants. The firm had issued the stock warrants several years previously for \$8 per warrant and properly recorded the sale of the warrants in the accounts. The exercise price is \$24 plus one warrant for each share of common stock.
- d. Issues 20,000 shares of \$10 par value common stock upon the conversion of 10,000 shares of \$50 par value convertible preferred stock originally issued for par. Record the conversion using carrying values.
- 26. Transactions to incorporate and run a business.** The following events relate to shareholders' equity transactions of Wilson Supply Company during the first year of its existence. Present journal entries for each of the transactions.
- a. January 2: The firm files articles of incorporation with the State Corporation Commission. The authorized capital stock consists of 5,000 shares of \$100 par value preferred stock that offers an 8% annual dividend, and 50,000 shares of no-par common stock. The original incorporators acquire 300 shares of common stock at \$30 per share; the firm collects cash for the shares. It assigns a stated value of \$30 per share to the common stock.
- b. January 6: The firm issues 2,000 shares of common stock for cash at \$30 per share.
- c. January 8: The firm issues 4,000 shares of preferred stock at par.
- d. January 9: The firm issues certificates for the shares of preferred stock.
- e. January 12: The firm acquires the tangible assets and goodwill of Richardson Supply, a partnership, in exchange for 1,000 shares of preferred stock and 12,000 shares of common stock. It values the tangible assets acquired as follows: inventories, \$50,000; land, \$80,000; buildings, \$210,000; and equipment, \$120,000.
- f. July 3: The directors declare the semiannual dividend on preferred stock outstanding, payable July 25, to shareholders of record on July 12.
- g. July 5: The firm operated profitably for the first six months, and it decides to expand. The company issues 25,000 shares of common stock for cash at \$33 per share.
- h. July 25: It pays the dividend on preferred stock declared on July 3.
- i. October 2: The directors declare a dividend of \$1 per share on the common stock, payable October 25, to shareholders of record on October 12.
- j. October 25: The firm pays the dividend on common stock declared on October 2.
- 27. Reconstructing transactions involving shareholders' equity.** Fisher Company began business on January 1. Its balance sheet on December 31 contained the shareholders' equity section in **Exhibit 15.2**. During the year, Fisher Company engaged in the following transactions:
- (1) Issued shares for \$15 each.
 - (2) Acquired a block of 600 shares for the treasury in a single transaction.
 - (3) Reissued some of the treasury shares.
 - (4) Sold for \$10,000 securities available for sale with original acquisition cost of \$6,000. At the end of the year, securities available for sale, still on hand, had originally cost \$12,000 and had a fair value of \$14,000.

EXHIBIT 15.2

Fisher Company
Shareholders' Equity as of December 31
(Problem 27)

Common Stock (\$10 par value)	\$60,000
Additional Paid-In Capital	31,440
Retained Earnings.	12,000
Plus Unrealized Holding Gain on Securities Available for Sale.	2,000
Less 360 Shares Held in Treasury—At Cost	<u>(7,200)</u>
Total Shareholders' Equity.	<u>\$98,240</u>

Assuming that these were all of the common stock transactions during the year and that the firm used the cost method to account for treasury stock transactions, answer the following questions:

- a. How many shares did Fisher Company issue for \$15?
 - b. What was the price at which it acquired the treasury shares?
 - c. How many shares did it reissue from the block of treasury shares?
 - d. What was the price at which it reissued the treasury shares?
 - e. What journal entries did it make during the year for items (1) to (4)?
 - f. In which statement or statements will Fisher Company report the various gains and losses on its holdings of securities available for sale?
- 28. Reconstructing transactions involving shareholders' equity.** Shea Company began business on January 1. Its balance sheet on December 31 contained the shareholders' equity section shown in **Exhibit 15.3**. During the year, Shea Company engaged in the following transactions:
- (1) Issued shares for \$30 each.
 - (2) Acquired a block of 2,000 shares for the treasury in a single transaction.
 - (3) Reissued some of the treasury shares.
 - (4) Sold for \$12,000 securities available for sale that had originally cost \$14,000. At the end of the year, securities available for sale, still on hand, that had originally cost \$25,000 had a fair value of \$18,000.

Assuming that these were the only common stock transactions during the year and that the firm used the cost method to account for treasury stock transactions, answer the following questions:

- a. How many shares did Shea Company issue for \$30 each?
 - b. What was the price at which it acquired the treasury shares?
 - c. How many shares did it reissue from the block of treasury shares?
 - d. What was the price at which it reissued the treasury shares?
 - e. What journal entries did it make during the year for items (1) to (4)?
 - f. In which statement or statements will Shea Company report the various gains and losses on its holdings of securities available for sale?
- 29. Accounting for stock options.** Lowen Corporation grants stock options to its managerial employees on December 31 of each year. Employees may acquire one share of common stock with each stock option. Lowen sets the exercise price equal to the market price of its common stock on the date of the grant. Employees must continue working for two years after the date of the grant before the options vest and employees can exercise them. This two-year period is the period of benefit. **Exhibit 15.4** presents information for the stock options granted by Lowen on December 31 of each year.
- Calculate the effect of the stock options on net income before income taxes for 2013 to 2017.

EXHIBIT 15.3

**Shea Company
Shareholders' Equity as of December 31
(Problem 28)**

Common Stock (\$5 par value)	\$100,000
Additional Paid-In Capital	509,600
Retained Earnings	50,000
Less Unrealized Holding Loss on Securities Available for Sale	(7,000)
Less 1,200 Shares Held in Treasury—At Cost	<u>(33,600)</u>
Total Shareholders' Equity	<u>\$619,000</u>

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EXHIBIT 15.4**Lowen Corporation
Stock Option Data
(Problem 29)**

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Year	Options Granted at End of Year	Exercise Price per Share	Fair Value per Option
2013.....	5,000	\$18	\$2.40
2014.....	6,000	\$22	\$3.00
2015.....	7,000	\$25	\$3.14
2016.....	8,000	\$30	\$3.25
2017.....	9,000	\$38	\$5.33

30. Accounting for stock options. Pramble Company grants stock options to its managerial employees on December 31 of each year. Employees may acquire one share of common stock with each stock option. Pramble sets the exercise price equal to the market price of its common stock on the date of the grant. Employees must continue working for two years after the date of the grant before the options vest and employees can exercise them. This two-year period is the period of benefit. **Exhibit 15.5** presents information for the stock options granted by Pramble on December 31 of each year.

Calculate the effect of the stock options on net income before income taxes for 2013 to 2017.

31. Reconstructing transactions affecting shareholders' equity. **Exhibit 15.6** reproduces a portion of the statement of changes in shareholders' equity for Microtel Corporation for 2013. When Microtel repurchases its common stock, it cancels the outstanding shares. Prepare journal entries for each of the seven listed transactions in **Exhibit 15.6**. Record the effect of items affecting accumulated other comprehensive income using the amounts in **Exhibit 15.6** (that is, treating those net-of-tax amounts as if they were pre-tax amounts).

32. Journal entries for changes in shareholders' equity. **Exhibit 15.7** presents a portion of the statement of changes in shareholders' equity for Sirens, Inc., for 2013. Prepare journal entries for each of the six listed transactions in **Exhibit 15.7**. Transactions (4) and (5) were not with employees. Transaction (5) did not require the tendering of cash. Record the conversion of the notes in transaction (6) at carrying value.

33. Journal entries for changes in shareholders' equity. **Exhibit 15.8** presents a portion of the statement of changes in shareholders' equity for Busch Corporation for 2013. Prepare journal entries for each of the eight transactions listed in **Exhibit 15.8**. Record the effect of items affecting accumulated other comprehensive income using the amounts in **Exhibit 15.8** (that is, as if they were pre-tax amounts).

EXHIBIT 15.5**Pramble Company
Stock Option Data
(Problem 30)**

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Year	Options Granted at End of Year	Exercise Price per Share	Fair Value per Option
2013.....	35,759	\$35.75	\$10.99
2014.....	40,866	\$51.06	\$12.50
2015.....	29,100	\$53.75	\$14.34
2016.....	33,904	\$59.97	\$16.30
2017.....	33,091	\$63.33	\$17.29

EXHIBIT 15.6

Microtel Corporation
Excerpt from Statement of Changes in Shareholders' Equity
 (amounts in millions of US\$)
 (Problem 31)

	2013
COMMON STOCK AND ADDITIONAL PAID-IN CAPITAL	
Balance, Beginning of Year	\$ 59,005
(1) Common Stock Issued	6,783
(2) Common Stock Repurchased	(6,162)
(3) Stock-Based Compensation Expense	889
Other	42
Balance, End of Year	<u>\$ 60,557</u>
RETAINED EARNINGS	
Balance, Beginning of Year	\$(20,130)
(4) Net Income	14,065
(5) Common Dividends	(3,837)
(2) Common Stock Repurchased	(21,212)
Balance, End of Year	<u>\$(31,114)</u>
ACCUMULATED OTHER COMPREHENSIVE INCOME	
Balance, Beginning of Year	\$ 1,229
(6) Net Change in Unrealized Gains and Losses on Marketable Securities (net of taxes)	326
(7) Net Change in Unrealized Gains and Losses on Derivatives (net of taxes)	14
Net Change in Foreign Currency Translation Adjustment (net of taxes)	85
Balance, End of Year	<u>\$ 1,654</u>
COMPREHENSIVE INCOME	
Net Income	\$ 14,065
Net Change in Accumulated Other Comprehensive Income	425
Comprehensive Income	<u>\$ 14,490</u>

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EXHIBIT 15.7

Sirens, Inc.
Excerpt from Statement of Changes in Shareholders' Equity
 (amounts in thousands of US\$)
 (Problem 32)

	Number of Common Shares	Par Value of Common Stock	Additional Paid-In Capital
Balance, Beginning of Year	1,434,635,501	\$1,435	\$3,443,214
(1) Common Stock Issued to Third Parties	22,058,824	22	82,919
(2) Common Stock Issued to Employees	4,279,097	4	19,242
(3) Stock-Based Compensation Expense			52,683
(4) Exercise of Options	2,859,232	3	3,529
(5) Exercise of Warrants	4,988,726	5	(5)
(6) Exchange of Convertible Notes	2,322,190	2	3,182
Balance, End of Year	<u>1,471,143,570</u>	<u>\$1,471</u>	<u>\$3,604,764</u>

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EXHIBIT 15.8

Busch Corporation
Excerpt from Statement of Changes in Shareholders' Equity
(amounts in millions of US\$, except per share amounts)
(Problem 33)

	2013
COMMON STOCK, \$1 PAR VALUE	
Balance, Beginning of Year	\$ 1,473.7
(1) Shares Issued Under Stock Plans	8.8
Balance, End of Year	<u>\$ 1,482.5</u>
ADDITIONAL PAID-IN CAPITAL	
Balance, Beginning of Year	\$ 2,962.5
(1) Shares Issued Under Stock Plans	283.5
(2) Stock Compensation Related	136.1
Balance, End of Year	<u>\$ 3,382.1</u>
RETAINED EARNINGS	
Balance, Beginning of Year	\$ 16,741.0
(3) Net Income	2,115.3
(4) Common Dividends	(932.4)
Balance, End of Year	<u>\$ 17,923.9</u>
TREASURY STOCK, AT COST	
Balance, Beginning of Year	\$(16,007.7)
(5) Treasury Stock Acquired	(2,707.2)
(2) Stock Compensation Related	0.2
Balance, End of Year	<u>\$(18,714.7)</u>
ACCUMULATED OTHER COMPREHENSIVE INCOME	
Balance, Beginning of Year	\$ (1,230.8)
(6) Net Change in Unrealized Gains and Losses on Marketable Securities (net of taxes)	(0.3)
(7) Net Change in Cash Flow Hedges (net of taxes)	(2.0)
Net Change in Foreign Currency Translation Adjustment (net of taxes)	105.2
(8) Pension Liability Adjustment (net of taxes)	205.2
Net Change in Accumulated Other Comprehensive Income	308.1
Balance, End of Year	<u>\$ (922.7)</u>
COMPREHENSIVE INCOME	
Net Income	\$ 2,115.3
Net Change in Accumulated Other Comprehensive Income	308.6
Comprehensive Income	<u>\$ 2,423.9</u>

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34. Treasury shares and their effects on performance ratios. Exhibit 15.9 presents the changes in common shareholders' equity of Monk Corporation for 2013 through 2015. Monk regularly purchases shares of its common stock and reissues them in connection with stock option plans. It will usually issue a small number of new common shares when it requires fractional shares to complete a stock option transaction. Earnings per common share were \$2.70 for 2013, \$3.20 for 2014, and \$3.83 for 2015.

- a. Give the journal entries for 2013 to record (1) the issue of common shares in connection with stock option plans, and (2) the purchase of treasury stock.

EXHIBIT 15.9

Monk Corporation
Analysis of Changes in Common Shareholders' Equity
 (all amounts in millions of US\$)
 (Problem 34)

	Common Stock			Treasury Stock		
	Shares	Amount	Retained Earnings	Shares	Amount	Total
December 31, Year 2012.	1,483.168	\$4,667.8	\$10,942.0	(235.342)	\$(4,470.8)	\$11,139.0
Net Income	—	—	3,376.6	—	—	3,376.6
Dividends	—	—	(1,578.0)	—	—	(1,578.0)
Stock Options Exercised	0.295	74.7	—	14.104	294.3	369.0
Treasury Stock Purchased	—	—	—	(33.377)	(1,570.9)	(1,570.9)
December 31, 2013	1,483.463	\$4,742.5	\$12,740.6	(254.615)	\$(5,747.4)	\$11,735.7
Net Income	—	—	3,870.5	—	—	3,870.5
Dividends	—	—	(1,793.4)	—	—	(1,793.4)
Stock Options Exercised	0.156	225.0	—	15.982	426.0	651.0
Treasury Stock Purchased	—	—	—	(38.384)	(2,493.3)	(2,493.3)
December 31, 2014	1,483.619	\$4,967.5	\$14,817.7	(277.017)	\$(7,814.7)	\$11,970.5
Net Income	—	—	4,596.5	—	—	4,596.5
Dividends	—	—	(2,094.8)	—	—	(2,094.8)
Stock Options Exercised	0.307	286.5	—	14.183	427.6	714.1
Treasury Stock Purchased	—	—	—	(27.444)	(2,572.8)	(2,572.8)
December 31, 2015	<u>1,483.926</u>	<u>\$5,254.0</u>	<u>\$17,319.4</u>	<u>(290.278)</u>	<u>\$(9,959.9)</u>	<u>\$12,613.5</u>

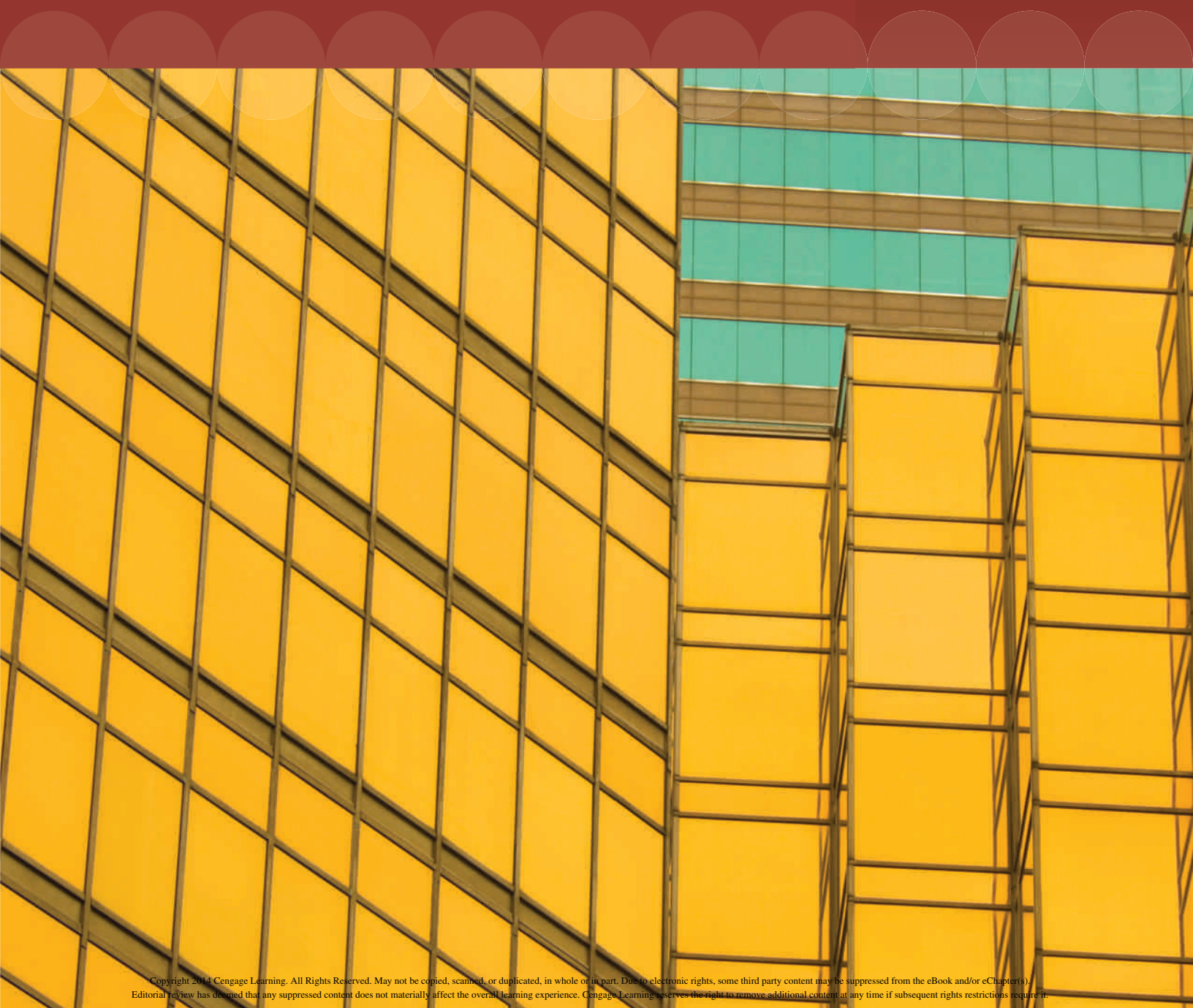
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- b. Compute the percentage change in net income and in earnings per share between 2013 and 2014, and between 2014 and 2015. Why do the percentage changes in earnings per share exceed the percentage changes in net income in both 2014 and 2015?
- c. Compute the book value per outstanding common share at the end of 2013, 2014, and 2015, and the percentage change in book value per share between 2013 and 2014, and between 2014 and 2015. Why are the percentage changes in book value per common share less than the percentage changes in both net income and earnings per share?
- d. Compute the rate of return on common shareholders' equity for 2013, 2014, and 2015.
- e. Does Monk appear to acquire the treasury stock primarily to satisfy commitments under stock option plans? Explain.

Synthesis

P a r t

4



Statement of Cash Flows: Another Look

1. Review the rationale for the statement of cash flows, emphasizing why net income differs from cash flows.
2. Review the T-account procedure, introduced in **Chapter 6**, for preparing the statement of cash flows.
3. Solidify your understanding of the cash flow effects of various transactions presented in **Chapters 8** through **15**.
4. Develop skills in analyzing and interpreting the statement of cash flows.

LEARNING OBJECTIVES

Chapter 6 introduces the statement of cash flows, discussing its rationale and illustrating a T-account approach for its preparation. Subsequent chapters describe the effect of various transactions on the income statement and the balance sheet but do not consider their effect on the statement of cash flows. This chapter discusses the effect of these transactions on the statement of cash flows, using a comprehensive example.

REVIEW OF CONCEPTS UNDERLYING THE STATEMENT OF CASH FLOWS

Chapter 6 discusses the following concepts underlying the statement of cash flows:

1. The statement of cash flows explains the reasons for the change in cash and cash equivalents during a period. This statement classifies the reasons as relating to operating or investing or financing decisions.
2. Revenues from sales of goods or services to customers during a period do not necessarily equal cash received from customers during that period. The receipt of cash can precede, coincide with, or follow the recognition of revenue. Expenses incurred to generate revenues during a period do not necessarily equal cash spent for the goods and services consumed in operations during that period. The expenditure of cash can precede, or coincide with, or follow the recognition of expenses. Thus, net income for a period will likely differ from cash flow from operations for that period.
3. Most, but not all, firms report cash flows from operations using the indirect method. The indirect method starts with net income, adds any expense amount that does not use cash, and subtracts any revenue amount that does not provide cash. The adjustments to convert net income to cash flow from operations generally involve
 - (1) Adding the amount by which an expense exceeds the related cash expenditure for the period (for depreciation, adding the entire amount as there was no cash expenditure in the current period).
 - (2) Subtracting (or adding) the amount by which a revenue item exceeds (or is less than) the related cash receipt for the period. An common example of an arrangement in which

revenue is less than the related cash receipt is a customer payment in advance, for a good or service to be delivered in a later accounting period.

- (3) Adjusting for non-cash income elements that are not revenue and expenses, including gains and losses from dispositions of noncurrent assets; equity method earnings that do not equal dividends received and equity method losses.
 - (4) Adding credit changes¹ in operating non-cash working capital accounts, such as accounts receivable, inventories, and accounts payable.
 - (5) Subtracting debit changes in operating working capital accounts.
4. Cash flow from investing activities includes cash purchases and cash sales of most non-current assets, including marketable securities that are not classified as trading securities; property, plant, and equipment; intangibles; and investments in securities.
 5. Cash flow from financing activities includes cash issues and cash redemptions of long-term borrowings, cash sales and cash repurchases of common and preferred shares, and cash dividends.

REVIEW OF T-ACCOUNT PROCEDURE FOR PREPARING THE STATEMENT OF CASH FLOWS

The accountant prepares the statement of cash flows after completing the balance sheet and the income statement. **Chapter 6** describes and illustrates a procedure for preparing the statement of cash flows using a T-account work sheet. A summary of the procedure follows:

Step 1 Obtain a balance sheet for the beginning and the end of the period for which you wish to prepare the statement of cash flows.

Step 2 Prepare a T-account work sheet. A master T-account for cash appears at the top of the work sheet. This master T-account has three sections labeled, respectively, Operations, Investing, and Financing. Enter the beginning and the ending balances in cash and cash equivalents in the master T-account. *Cash equivalents* represent short-term, highly liquid investments in which a firm has temporarily placed excess cash. Generally, only investments with maturities of three months or less qualify as cash equivalents. We use the term *cash flows* to refer to changes in cash and cash equivalents. Complete the T-account work sheet by preparing a T-account for each balance sheet account other than cash and cash equivalents, and enter the beginning and the ending balances.

Step 3 Explain the change in the master Cash account between the beginning and the end of the period by accounting for the changes in the other balance sheet accounts. Do this by reconstructing the entries originally made in the accounts during the period and entering them in appropriate T-accounts on the work sheet. By explaining the changes in balance sheet accounts other than cash and cash equivalents, this process also explains the change in cash and cash equivalents. We make such extensive use of the Cash Change Equation in this chapter that we abbreviate words into symbols, as follows:

Cash Change Equation

$$\begin{array}{rccccccc} \text{Change} & = & \text{Change in} & & \text{Change in} & & \text{Change in} \\ \text{in Cash} & = & \text{Liabilities} & + & \text{Shareholders'} & - & \text{Non-cash} \\ & & & & \text{Equity} & & \text{Assets} \\ \Delta\text{Cash} & = & \Delta\text{L} & + & \Delta\text{SE} & - & \Delta\text{N}\$\text{A} \end{array}$$

Step 4 Prepare a statement of cash flows using information in the T-account work sheet.

¹With respect to a single account, the term *credit change* means a decrease in an asset account or an increase in a liability (or shareholders' equity) account. So, "credit changes in operating working capital accounts" means "a decrease in a current operating asset account or an increase in a current operating liability account." In parallel, with respect to a single account, the term *debit change* means an increase in an asset account or a decrease in a liability (or shareholders' equity) account.

COMPREHENSIVE ILLUSTRATION OF THE STATEMENT OF CASH FLOWS

The comprehensive illustration that follows uses data for Ellwood Corporation for 2013. **Exhibit 16.1** presents an income statement for 2013; **Exhibit 16.2** presents a comparative balance sheet for December 31, 2013 and 2012; and **Exhibit 16.3** presents a statement of cash flows. The calculation of cash flow from operations first presents the indirect method. The sections that follow explain each of the line items in **Exhibit 16.3**. **Exhibit 16.4** shows the T-account work sheet. Cash and cash equivalents decreased by \$790 during the year, from \$2,670 (= \$1,150 + \$1,520) to \$1,880 (= \$1,090 + \$790).

LINE 1: NET INCOME

The income statement indicates net income of \$760 for the period. The work sheet entry presumes that cash provisionally increases by the amount of net income.

(1a) Cash (Operations—Net Income)	760	
Retained Earnings		760

The effect of net income on the Cash Change Equation is as follows:

$$\begin{array}{rclclcl} \Delta\text{Cash} & = & \Delta\text{L} & + & \Delta\text{SE} & - & \Delta\text{N}\$\text{A} \\ \text{Operations} + \$760 \text{ (1a)} & = & \$0 & + & \$760 \text{ (1a)} & - & \$0 \end{array}$$

Throughout this chapter, entries with a number followed by the letter *a* indicate entries on the statement of cash flows work sheet. Entries with a number and not followed with the letter *a* indicate entries made during the year in the accounting records of Ellwood Corporation.

EXHIBIT 16.1

Ellwood Corporation Consolidated Income Statement For the Year 2013

REVENUES AND OTHER INCOME

Sales	\$10,500
Interest and Dividends	320
Equity in Earnings of Affiliate	480
Gain on Disposal of Equipment	40
Total	<u>\$11,340</u>

EXPENSES

Cost of Goods Sold	\$ 6,000
Selling and Administrative Expense	3,550
Compensation Expense (Employee Stock Options)	170
Impairment Loss on Land	80
Loss on Sale of Marketable Equity Securities	30
Interest Expense	450
Income Tax Expense	300
Total Expenses and Losses	<u>\$10,580</u>
Net Income	<u>\$ 760</u>

EXHIBIT 16.2**Ellwood Corporation
Consolidated Balance Sheet**

	December 31	
	2013	2012
ASSETS		
Current Assets		
Cash	\$ 1,090	\$ 1,150
Certificate of Deposit	790	1,520
Marketable Equity Securities Available for Sale	190	280
Accounts Receivable (Net)	4,300	3,400
Inventories	2,350	1,500
Prepayments	600	800
Total Current Assets	\$ 9,320	\$ 8,650
Investments		
Investment in Company A (15%—Available for Sale)	\$ 1,280	\$ 1,250
Investment in Company B (40%)	2,420	2,100
Total Investments	\$ 3,700	\$ 3,350
Property, Plant, and Equipment		
Land	\$ 920	\$ 1,000
Buildings	8,900	8,600
Equipment	11,540	10,840
Less Accumulated Depreciation	(6,480)	(6,240)
Total Property, Plant, and Equipment	\$14,880	\$14,200
Intangible Assets		
Patent	\$ 2,550	\$ 2,550
Less Accumulated Amortization	(750)	(600)
Total Intangible Assets	\$ 1,800	\$ 1,950
Total Assets	\$29,700	\$28,150
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current Liabilities		
Bank Notes Payable	\$ 2,750	\$ 2,000
Accounts Payable (for Inventory)	3,230	2,450
Warranty Liability	900	1,200
Advances from Customers	1,000	600
Total Current Liabilities	\$ 7,880	\$ 6,250
Noncurrent Liabilities		
Bonds Payable	\$ 1,370	\$ 2,820
Capitalized Lease Obligation	2,100	1,800
Deferred Income Taxes	650	550
Total Noncurrent Liabilities	\$ 4,120	\$ 5,170
Shareholders' Equity		
Preferred Shares	\$ 1,200	\$ 1,000
Common Shares	2,110	2,000
Additional Paid-In Capital	4,400	4,000
Accumulated Other Comprehensive Income:		
Unrealized Loss on Marketable Securities	(40)	(30)
Unrealized Gain on Investments in Securities	80	50
Retained Earnings	10,330	9,960
Total	\$18,080	\$16,900
Less Cost of Treasury Shares	(380)	(250)
Total Shareholders' Equity	\$17,700	\$16,730
Total Liabilities and Shareholders' Equity	\$29,700	\$28,150

EXHIBIT 16.3
Ellwood Corporation
Consolidated Statement of Cash Flows
For the Year 2013

OPERATIONS

(1) Net Income	\$ 760	
Non-cash Revenues, Expenses, Gains, and Losses Included in Income:		
(2) Depreciation of Buildings and Equipment	700	
(3) Amortization of Patent	150	
(4) Compensation Expense (in Form of Employee Stock Options)	170	
(5) Loss on Impairment of Land	80	
(6) Loss on Sale of Marketable Equity Securities	30	
(7) Deferred Income Taxes	100	
(8) Excess of Coupon Payments over Interest Expense	(50)	
(9) Gain on Disposal of Equipment	(40)	
(10) Equity in Undistributed Earnings of Affiliate	(320)	
(11) Decrease in Prepayments	200	
(12) Increase in Accounts Payable (for Inventory)	780	
(13) Increase in Advances from Customers	400	
(14) Increase in Accounts Receivable (Net)	(900)	
(15) Increase in Inventories	(850)	
(16) Decrease in Warranty Liability	<u>(300)</u>	
Cash Flow from Operations		\$ 910

INVESTING

(17) Sale of Marketable Equity Securities	\$ 50	
(18) Sale of Equipment	180	
(19) Acquisition of Equipment	<u>(1,300)</u>	
Cash Flow from Investing		(1,070)

FINANCING

(20) Short-Term Bank Borrowing	\$ 750	
(21) Long-Term Bonds Issued	400	
(22) Preferred Shares Issued	200	
(23) Retirement of Long-Term Debt at Maturity	(1,500)	
(24) Acquisition of Common Shares	(130)	
(25) Dividends	(390)	
(26) Common Shares (Issued on Exercise of Employee Options)	<u>40</u>	
Cash Flow from Financing		<u>(630)</u>
Net Change in Cash		\$ (790)
Cash, Beginning of 2013		<u>2,670</u>
Cash, End of 2013		<u>\$ 1,880</u>

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LINE 2: DEPRECIATION OF BUILDINGS AND EQUIPMENT

Internal records indicate that depreciation on manufacturing facilities totaled \$450 and on selling and administrative facilities totaled \$250 during the year. The firm included these amounts in cost of goods sold and selling and administrative expenses, respectively, in the income statement in **Exhibit 16.1**. None of this \$700 of depreciation required an operating cash flow during 2013. The firm reported cash expenditures for these assets as investing activities in the earlier periods when it acquired them. Thus, the work sheet entry to explain the change in the Accumulated Depreciation account adds back depreciation to net income in deriving cash flow from operations.

(2a) Cash (Operations—Depreciation Expense Addback)	700	
Accumulated Depreciation		700

EXHIBIT 16.4

Ellwood Corporation
T-Account Work Sheet

Cash					
	✓	2,670			
Operations					
Net Income	(1a)	760	50	(8a)	Excess Coupon Payments
Depreciation Expense	(2a)	700	40	(9a)	Gain on Sale of Equipment
Amortization Expense	(3a)	150	320	(10a)	Equity in Undistributed Earnings of Affiliate
Employee Stock Option Compensation	(4a)	170	900	(14a)	Increase in Accounts Receivable (Net)
Impairment Loss on Land	(5a)	80	850	(15a)	Increase in Inventories
Loss on Sale of Marketable Securities	(6a)	30	300	(16a)	Decrease in Warranty Liability
Deferred Income Taxes	(7a)	100			
Decrease in Prepayments	(11a)	200			
Increase in Accounts Payable	(12a)	780			
Increase in Advances from Customers	(13a)	400			
Investing					
Sale of Marketable Securities	(6a)	50	1,300	(19a)	Acquisition of Equipment
Sale of Equipment	(9a)	180			
Financing					
Short-Term Borrowing	(20a)	750	1,500	(23a)	Retirement of Long-Term Debt
Long-Term Bonds Issued	(21a)	400	130	(24a)	Acquisition of Common Shares
Preferred Shares Issued	(22a)	200	390	(25a)	Dividends
Common Shares Issued	(26a)	40			
	✓	1,880			

Marketable Equity Securities Available for Sale			
✓	280		
(6b)	10	80	(6a)
		20	(27a)
✓	190		

Accounts Receivable (Net)			
✓	3,400		
(14a)	900		
✓	4,300		

Inventories			
✓	1,500		
(15a)	850		
✓	2,350		

Prepayments			
✓	800		
		200	(11a)
✓	600		

Investment in Company A Available for Sale			
✓	1,250		
(28a)	30		
✓	1,280		

Investment in Company B			
✓	2,100		
(10a)	320		
✓	2,420		

Land			
✓	1,000		
		80	(5a)
✓	920		

Buildings			
✓	8,600		
(29a)	300		
✓	8,900		

Equipment			
✓	10,840		
(19a)	1,300	600	(9a)
✓	11,540		

Accumulated Depreciation			
		6,240	✓
(9a)	460	700	(2a)
		6,480	✓

Patent			
✓	2,550		
✓	2,550		

Accumulated Amortization			
		600	✓
		150	(3a)
		750	✓

Bank Notes Payable			
		2,000	✓
		750	(20a)
		2,750	✓

Accounts Payable (for Inventory)			
		2,450	✓
		780	(12a)
		3,230	✓

Warranty Liability			
		1,200	✓
(16a)	300		
		900	✓

(continued)

EXHIBIT 16.4**Ellwood Corporation
T-Account Work Sheet (continued)**

Advances from Customers		Bonds Payable		Capitalized Lease Obligation	
	600 ✓		2,820 ✓		1,800 ✓
	400 (13a)	(8a) 50	400 (21a)		300 (29a)
		(23a) 1,500			
		(30a) 300			
	1,000 ✓		1,370 ✓		2,100 ✓
Deferred Income Taxes		Preferred Shares		Common Shares	
	550 ✓		1,000 ✓		2,000 ✓
	100 (7a)		200 (22a)		100 (30a)
					10 (26a)
	650 ✓		1,200 ✓		2,110 ✓
Additional Paid-In Capital		Unrealized Loss on Marketable Securities		Unrealized Gain on Investments in Securities	
	4,000 ✓	✓ 30			50 ✓
	170 (4a)		10 (6b)		30 (28a)
	200 (30a)	(27a) 20			
	30 (26a)				
	4,400 ✓	✓ 40			80 ✓
Retained Earnings		Treasury Shares			
	9,960 ✓	✓ 250			
(25a) 390	760 (1a)	(24a) 130			
	10,330 ✓	✓ 380			

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Addback for Depreciation as a Product Cost The addback for the \$450 of depreciation on manufacturing facilities requires elaboration. **Chapter 9** explains that accountants treat such depreciation charges as a product cost, not a period expense. The accountant debits Work-in-Process Inventory for this \$450 and credits Accumulated Depreciation. If, during the period, the firm sells all the goods it produces, cost of goods sold includes this \$450. Because cost of goods sold includes an amount that does not use cash, the addback to net income adjusts for the portion of depreciation charges that cost of goods sold includes.

If the firm does not sell all the goods it produces during the period, the ending inventory of Work-in-Process Inventory or Finished Goods Inventory includes a portion of the \$450 depreciation charge. Assume, for example, that the firm sold 80% of the units produced during the period. Cost of goods sold includes \$360 ($= 0.80 \times \450) of the depreciation, and inventory accounts include the remaining \$90. The statement of cash flows adds back to net income the entire \$450 of depreciation on manufacturing facilities for the period. The \$90 of depreciation included in the cost of units not sold caused the inventory accounts to increase by \$90. Under the indirect method of computing cash flow from operations, the accountant subtracts this increase in inventories in computing cash flow from operations. The \$450 addition for depreciation less the \$90 subtraction for the increase in inventories nets to a \$360 adjustment to income on the statement of cash flows. Because cost of goods sold includes only \$360 of depreciation, the addition required to adjust for the depreciation included in cost of goods sold equals \$360. Thus, the work sheet entry **2a** shows an addback for the full amount of depreciation for the period (both as a product cost and as a period expense), not just the amount included in cost of goods sold; then line **15** of the statement of cash flows includes a subtraction for the \$90 increase in inventories caused by adding depreciation to work in process.

LINE 3: AMORTIZATION OF PATENT

The effect of patent amortization on cash flow is conceptually identical to that for depreciation charges, both for period expenses and for product costs. Company records indicate that cost of goods sold for 2013 includes patent amortization of \$150. The work sheet entry to explain the change in the Accumulated Amortization account is as follows:

(3a)	Cash (Operations—Amortization Expense Addback)	150	
	Accumulated Amortization		150

LINE 4: STOCK OPTION COMPENSATION EXPENSE

Notes to the financial statements of Ellwood Corporation indicate that part of the compensation to executives took the form of options to buy shares of Ellwood Corporation. **Chapter 15** discusses that firms use an option pricing model to calculate a fair-value-related measure of stock options granted during a period; this measure is the amount of compensation cost to be recognized during the expected period of benefit, typically, the vesting period. Ellwood Corporation amortized \$170 as compensation expense during 2013. Following is the entry in the accounting records to record the expense:

(4)	Compensation Expense	170	
	Additional Paid-In Capital		170

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
				−170	IncSt → RE
				+170	ContriCap

The \$170 of compensation reduced net income but did not require a cash outflow during 2013. The entry explains part of the change in the Additional Paid-In Capital account. The work sheet entry for the recognition of compensation cost related to employee stock options is as follows:

(4a)	Cash (Operations—Compensation Expense Addback)	170	
	Additional Paid-In Capital		170

Income Tax Effects of Employee Stock Option Tax laws in certain jurisdictions permit firms to claim an income tax deduction for stock options. For example, the income tax law in the United States currently permits firms to deduct the intrinsic value (= market price on the date of exercise – exercise price) of a nonqualified stock option in the year employees exercise stock options. The issues raised by the income tax benefits and their effects on the statement of cash flows are too advanced to include in the example for Ellwood Corporation in **Exhibit 16.3**.

LINE 5: IMPAIRMENT LOSS ON LAND

Notes to the financial statements of Ellwood Corporation indicate that the sum of the expected rentals on land that the company rents to others plus the amounts it expects to receive on the eventual sale of the land has dropped so much that the land has become impaired. The difference between the carrying value of the land and its fair value at the end of 2013 is \$80. The following entry is made in the accounting records to record the loss:

(5)	Loss on Impairment of Land	80	
	Land		80

The \$80 of impairment loss reduced net income and the carrying value of land, but did not require a cash outflow during 2013. The work sheet entry to reflect the change in the Land account is as follows:

(5a) Cash (Operations—Asset Impairment Loss Addback)	80	
Land		80

LINE 6: LOSS ON SALE OF MARKETABLE EQUITY SECURITIES

The accounting records indicate that Ellwood Corporation sold marketable equity securities held as securities available for sale during 2013. Ellwood Corporation acquired these securities for \$80 during 2012, wrote them down to their fair value of \$70 at the end of 2012, and sold them during 2013 for \$50. The firm made the following entry in the accounting records to record this sale:

(6) Cash	50	
Realized Loss on Sale of Marketable Equity Securities (IncSt)	30	
Marketable Equity Securities		70
Unrealized Loss on Securities Available for Sale (Other Comprehensive Income)		10

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+50				-30	IncSt → RE
-70				+10	OCI → AOCI

ΔCash	=	ΔL	+	ΔSE	-	ΔN\$A
+50 (Invst.)		0		-20		-70

Recall that journal entry numbers without letters, such as this one numbered **(6)**, refer to actual entries Ellwood recorded in its books. For some such entries, we give the effect on the Cash Change Equation, derived from the balance sheet equation. For some complex transactions, such as this one, we give the Balance Sheet Equation. For some, we give both.

The work sheet entries to reflect this transaction are as follows:

(6a) Cash (Investing—Sale of Marketable Equity Securities)	50	
Cash (Operations—Loss on Sale of Marketable Equity Securities Addback)	30	
Marketable Equity Securities		70
Unrealized Loss on Securities Available for Sale (Other Comprehensive Income)		10

The statement of cash flows classifies the \$50 cash proceeds as an investing activity on line 17. Net income on line 1 in Exhibit 16.3 includes a subtraction for the loss on the sale of marketable equity securities. To avoid understating the amount of cash flow from operations, the accountant adds back the loss to net income. This addback offsets the loss included in the calculation of net income and eliminates its effect on cash flow from operations. Line 17 shows the entire cash proceeds from the sale as an investing activity. The analyst might reasonably view purchases and sales of marketable equity securities as operating activities because these transactions involve the use of temporarily excess cash. Most, but not all, firms consider these transactions sufficiently peripheral to the firms' principal operating activity—selling goods and services to customers—that they classify such purchases and sales as investing activities.

LINE 7: DEFERRED INCOME TAXES

Notes to the financial statements of Ellwood Corporation indicate that income tax expense of \$300 comprises \$200 currently payable taxes and \$100 deferred to future periods. Ellwood Corporation made the following entry during the year to recognize income tax expense.

(7)	Income Tax Expense	300	
	Cash		200
	Deferred Income Tax Liability.		100

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-200		+100		-300	IncSt → RE

ΔCash	=	ΔL	+	ΔSE	-	ΔN\$A
-200 (Opns.)		+100		-300		0

In the United States, a common account title for the debit is “Provision for Income Taxes,” but see the **Glossary** entry for *provision*.

The \$100 of deferred income taxes reduced net income but did not require a cash outflow during 2013. To explain the change in the Deferred Income Tax Liability account, the work sheet must add back the increase in the deferred tax liability to net income to derive cash flow from operations.

(7a)	Cash (Operations—Deferred Tax Addback)	100	
	Deferred Income Tax Liability.		100

We have prepared the statement of cash flows for Ellwood Corporation using U.S. GAAP. If Ellwood were using IFRS, Ellwood would split income tax expense into operating, investing, and financing portions depending on the activity that caused the portion of income tax expense and to report each portion in the corresponding section of the statement.

LINE 8: EXCESS OF COUPON PAYMENTS OVER INTEREST EXPENSE

Bonds Payable on the balance sheet includes one series of bonds initially issued at a premium (that is, the coupon rate exceeded the required market rate of interest when Ellwood Corporation issued the bonds, so the initial issue proceeds exceeded the face value of the bonds). The amortization of the bond premium causes the amount of interest expense recognized over the life of the bonds to be less than the periodic cash debt service payments for the coupons. The entry made in the accounting records for interest expense during the period was as follows:

(8)	Interest Expense	450	
	Bonds Payable.		50
	Cash		500

ΔCash	=	ΔL	+	ΔSE	-	ΔN\$A
-500 (Opns.)		-50		-450		0

The firm spent \$500 of cash even though it subtracted only \$450 of interest expense in computing net income. To explain the change in the Bonds Payable account, the work sheet subtracts an additional \$50 from net income to derive cash flow from operations.

(8a)	Bonds Payable	50	
	Cash (Operations—Excess Coupon Payments Subtraction).		50

The statement of cash flows classifies cash used for interest expense as an operating activity because it views interest as a cost of carrying out operations. Some security analysts suggest that this \$50 use of cash for principal repayment is a financing activity for debt service, not an operating activity, and would place it in the financing section. IFRS allows, but does not

require, showing interest payments as a financing use of cash. U.S. GAAP, however, classifies the \$50 cash outflow as an operating activity, which IFRS allows.

LINE 9: GAIN ON DISPOSAL OF EQUIPMENT

The accounting records indicate that Ellwood Corporation sold for \$180 during 2013 a machine originally costing \$600, with accumulated depreciation of \$460. The journal entry to record this disposal is as follows:

(9)	Cash	180				
	Accumulated Depreciation	460				
	Equipment				600	
	Gain on Disposal of Equipment.				40	

ΔCash	=	ΔL	+	ΔSE	-	ΔN\$A
+180 (Invst.)		0		+40		+460 -600

Line 18 shows all the cash proceeds of \$180 as an increase in cash from an investing activity. Net income reported in line 1 includes the \$40 gain on sale. To avoid overstating the amount of cash derived from this sale, the accountant subtracts the \$40 gain from net income in computing cash flow from operations.

(9a)	Cash (Investing—Sale of Equipment)	180			
	Accumulated Depreciation	460			
	Equipment				600
	Cash (Operations—Gain on Sale of Equipment Subtraction)				40

The statement of cash flows classifies all cash proceeds from selling equipment as an investing activity and none as an operating activity. Most firms acquire and sell fixed assets with the objective of providing the capacity to carry out operations rather than as a means of generating operating income.

Illustration of Loss, Alternative to Main Ellwood Example. Fixed assets disposed of for cash at a loss instead of a gain require an addback to net income in deriving cash flow from operations. The work sheet entry, assuming the same data as in the preceding entry except that Ellwood Corporation sells the equipment for \$110, would be as follows:

	Cash (Investing—Disposal of Equipment)	110			
	Accumulated Depreciation	460			
	Cash (Operations—Loss on Disposal of Equipment Addback)	30			
	Equipment				600

LINE 10: EQUITY IN UNDISTRIBUTED EARNINGS OF AFFILIATE

The balance sheet indicates that Ellwood Corporation owns 40% of the common stock of Company B. During 2013 Company B earned \$1,200 and paid \$400 of dividends. Ellwood Corporation made the following entries on its books during the year:

(10)	Investment in Company B	480			
	Equity in Earnings of Affiliate				480

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+480				+480	IncSt → RE

ΔCash	=	ΔL	+	ΔSE	-	ΔN\$A
0		0		+480		+480

To record equity in earnings of Company B of \$480 ($= 0.40 \times \$1,200$).

Cash	160	
Investment in Company B		160

Δ Cash	=	Δ L	+	Δ SE	-	Δ N\$A
+160 (Opns.)		0		0		-160

To record dividends received of \$160 ($= 0.40 \times \400).

Net income of Ellwood Corporation on line 1 of **Exhibit 16.3** includes \$480 of equity income, but Ellwood Corporation received only \$160 of cash. Thus, the work sheet subtracts \$320 ($= \$480 - \160) from net income in deriving cash from operations.

(10a) Investment in Company B	320	
Cash (Operations—Equity in Undistributed Earnings of Affiliate Subtraction)		320

LINE 11: DECREASE IN PREPAYMENTS

Because prepayments decreased by \$200 during 2013, the firm paid cash during 2013 for new prepayments in an amount smaller than the amount it expensed for prepayments of earlier years. Assume that all prepayments relate to selling and administrative activities. The journal entries that Ellwood Corporation made in the accounting records during the year had the following combined effect:

(11) Selling and Administrative Expenses	3,550	
Cash		3,550
Prepayments		200

Δ Cash	=	Δ L	+	Δ SE	-	Δ N\$A
-3,350 (Opns.)		0		-3,550		-200

To explain the change in the work sheet for prepayments, add back \$200 to net income for the credit change² in an operating current asset account so that cash flow from operations reports the amount for expenditures.

(11a) Cash (Operations—Decrease in Prepayments)	200	
Prepayments		200

LINE 12: INCREASE IN ACCOUNTS PAYABLE

An increase in accounts payable indicates that new purchases on account during 2013 exceeded payments during 2013 for previous purchases on account. This increase in accounts payable, an operating current liability account, implicitly provides cash. Suppliers have provided financing so that Ellwood Corporation can acquire goods on account. You might think of it this way: Imagine a firm borrows cash from a supplier, debiting Cash and crediting Notes Payable. Then the firm uses the cash to acquire inventory or other items. You can see that the supplier has provided cash, and the firm increases a current liability account. A firm buying on account has achieved the same result, except that it credits Accounts Payable, not Notes Payable. Because the supplier ties the financing to the purchase of goods used in operations, accounting classifies this source of cash in the operating, not financing, section of the statement of cash flows.

²Because prepayments declined, the amount of the decline is an addback. Had prepayments increased, a debit change, the amount of the increase would be a subtraction.

(12a) Cash (Operations—Increase in Accounts Payable)	780	
Accounts Payable (for inventory)		780

We explore how the adjustment for the change in accounts payable affects the equation for the change in cash when we discuss the adjustment for inventory.

LINE 13: INCREASE IN ADVANCES FROM CUSTOMERS

The \$400 increase in customer advances means that the firm received \$400 more cash during 2013 than it recognized as revenue. The work sheet adds this excess to net income in deriving cash flow from operations.

(13a) Cash (Operations—Increase in Advances from Customers).	400	
Advances from Customers		400

We consider how the adjustment for the change in advances for customers affects the equation for the change in cash next, when we discuss the adjustment for accounts receivable.

LINE 14: INCREASE IN ACCOUNTS RECEIVABLE

The increase in accounts receivable indicates that the firm collected less cash from customers than the amount shown for sales on account. The work sheet subtracts the increase in accounts receivable in deriving cash flow from operations.

(14a) Accounts Receivable (Net).	900	
Cash (Operations—Increase in Accounts Receivable)		900

This entry automatically incorporates the effect of any change in the Allowance for Uncollectible Accounts. The work sheet could show separate entries for the change in gross accounts receivable and the change in the allowance for uncollectible accounts.

We can now summarize how changes in accounts receivable and changes in advances from customers affect the equation for changes in cash. The single journal entry below combines the actual journal entries Ellwood Corporation made for transactions 13 and 14:

Cash	10,000				
Accounts Receivable, Net	900				
Advances from Customers				400	
Sales Revenue					10,500

ΔCash	=	ΔL	+	ΔSE	−	ΔN\$A
+10,000 (Opns.)		+400		+10,500		+900

LINE 15: INCREASE IN INVENTORIES

The increase in inventories indicates the firm purchased more raw materials and supplies than it sold during 2013. The work sheet subtracts this change in inventory in deriving cash flow from operations.

(15a) Inventories	850	
Cash (Operations—Increase in Inventories)		850

We can now consider the effect on cash of the change in inventories and the change in accounts payable. The single journal entry below combines the actual journal entries Ellwood Corporation made for transactions **12** and **15**:

Cost of Goods Sold	6,000	
Inventories	850	
Accounts Payable (for Inventory)		780
Cash		6,070

Δ Cash	=	Δ L	+	Δ SE	-	Δ N\$A
-6,070 (Opns.)		+780		-6,000		+850

LINE 16: DECREASE IN WARRANTY LIABILITY

As **Chapter 9** explains, firms estimate future warranty costs on current sales using the allowance method for warranties. The Warranty Liability account increases for the estimated cost of future warranty services on products sold during the period and decreases by the actual cost of warranty services performed during the same period. During 2013 the firm paid \$300 more in warranty claims than it reported as expenses on the income statement. Ellwood Corporation estimated warranty expense of \$920 and included that amount in selling and administrative expenses in its income statement in **Exhibit 16.1**. The firm made entries during the year with the following combined effect:

(16) Selling and Administrative Expenses	920	
Warranty Liability	300	
Cash		1,220

Δ Cash	=	Δ L	+	Δ SE	-	Δ N\$A
-1,220 (Opns.)		-300		-920		0

The work sheet subtracts this decrease in Warranty Liability so that cash flow from operations reports the amount of cash expenditures, not the amount for expenses.

(16a) Warranty Liability	300	
Cash (Operations—Decrease in Warranty Liability)		300

Cash flow from operations, summed for the transactions recorded as affecting operating activities, is \$910 for 2013.

LINES 17 AND 18

See the discussion for lines **6** and **9**.

LINE 19: ACQUISITION OF EQUIPMENT

The firm acquired equipment costing \$1,300 during 2013. The entry for this investing activity is as follows:

(19a) Equipment	1,300	
Cash (Investing—Acquisition of Equipment)		1,300

Cash flow from investing, summed for the transactions recorded as affecting investing activities for 2013, is a net outflow of \$1,070.

LINE 20: SHORT-TERM BANK BORROWING

Ellwood Corporation borrowed \$750 during 2013 from its bank under a short-term borrowing arrangement. Even though this loan is short term, the statement of cash flows classifies it as a financing instead of an operating activity. The entry on the work sheet is as follows:

(20a) Cash (Financing—Short-Term Bank Borrowing)	750	
Bank Note Payable		750

LINE 21: LONG-TERM BONDS ISSUED

The firm issued long-term bonds totaling \$400 during 2013.

(21a) Cash (Financing—Long-Term Bonds Issued)	400	
Bonds Payable		400

LINE 22: PREFERRED SHARES ISSUED

The firm issued preferred shares for \$200 cash during the year.

(22a) Cash (Financing—Preferred Shares Issued)	200	
Preferred Shares		200

LINE 23: RETIREMENT OF LONG-TERM DEBT AT MATURITY

Ellwood Corporation retired \$1,500 of long-term debt at maturity. The income statement in **Exhibit 16.1** shows no gain or loss on retirement of this debt. Thus, Ellwood Corporation must have retired the debt at its carrying value. We make the following work sheet entry:

(23a) Bonds Payable	1,500	
Cash (Financing—Retirement of Long-Term Debt)		1,500

If the firm had retired the debt prior to maturity, the firm would likely have recognized a gain or loss. The work sheet would eliminate the gain or loss from net income in computing cash flow from operations and classify as a financing activity the full amount of cash used to retire the debt.

LINE 24: ACQUISITION OF COMMON SHARES

The firm acquired shares of its own common stock at a cost of \$130 during 2013 and accounts for the transaction using the treasury stock method. The entry on the work sheet is as follows:

(24a) Treasury Stock	130	
Cash (Financing—Acquisition of Common Shares)		130

LINE 25: DIVIDENDS

Ellwood Corporation declared and paid \$390 of dividends to its shareholders during 2013. The entry is as follows:

(25a) Retained Earnings	390	
Cash (Financing—Dividends)		390

IFRS allows firms to show cash used for dividends as an operating use.

LINE 26: EXERCISE BY EMPLOYEES OF THEIR STOCK OPTIONS

During 2013, employees of Ellwood Corporation exercised certain stock options. In a previous year the employees had received options for which Ellwood Corporation had recognized \$20 compensation expense (and credited Additional Paid-In Capital). (See entry (4) for the same sort of entry made this year.) During 2013, the employees exercised those options by paying \$40 cash to acquire common shares with par value of \$10. The entry made in the accounting records to record the exercise is as follows:

(26) Cash	40	
Additional Paid-In Capital	20	
Common Shares		10
Additional Paid-In Capital		50

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+40				-20	ContriCap
				+10	ContriCap
				+50	ContriCap

ΔCash	=	ΔL	+	ΔSE	-	ΔN\$A
40		0		-20		0
				+10		
				+50		

The accountant reflects this financing transaction on the T-account work sheet by making the following entry:

(26a) Cash (Financing—Common Shares Issued)	40	
Additional Paid-In Capital	20	
Common Shares (par value)		10
Additional Paid-In Capital		50

Summing the transactions that affect financing activities, we compute a net cash outflow for financing of \$630 for the year.

NON-CASH INVESTING AND FINANCING TRANSACTIONS

Some investing and financing transactions do not involve cash and therefore do not appear in the operating, investing, and financing sections of the statement of cash flows. These transactions nevertheless help explain changes in balance sheet accounts. The accountant must enter these transactions in the T-account work sheet to account fully for all balance sheet changes and to compute correctly the portion of the changes affecting cash.

Remeasurement of Marketable Equity Securities to Fair Value During 2013, Ellwood Corporation remeasured marketable equity securities to fair value. The journal entry is as follows:

(27) Unrealized Loss on Marketable Equity Securities		
Available for Sale (OCI)	20	
Marketable Equity Securities Available for Sale		20

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-20				-20	OCI → AOCI

ΔCash	=	ΔL	+	ΔSE	-	ΔN\$A
0		0		-20		-20

This entry does not affect cash and therefore does not appear in the statement of cash flows. The unrealized loss is not included in net income because these securities are classified as available for sale. The journal entry helps explain the change during the year in the marketable equity securities account above, and it requires the following entry in the T-account work sheet:

(27a)	Unrealized Loss on Marketable Equity Securities	
	Available for Sale	20
	Marketable Equity Securities Available for Sale	20

Remeasurement of Investment in Company A to Fair Value During 2013, Ellwood Corporation also remeasured its Investment in Company A, a security available for sale, to reflect a change in fair value. The journal entry is as follows:

(28)	Investment in Company A	30
	Unrealized Gain on Investment in Securities (OCI)	30

Assets	=	Liabilities	+	Shareholders' Equity		(Class.)
+30				+30		OCI → AOCI

ΔCash	=	ΔL	+	ΔSE	–	ΔN\$A
0		0		+30		+30

This entry does not affect cash flows, and the change in fair value does not affect net income. The entry helps to explain the change during the year in the Investment in Company A account and requires the following entry in the T-account work sheet:

(28a)	Investment in Company A	30
	Unrealized Gain on Investment in Securities	30

Capitalized Lease During 2013, Ellwood Corporation signed a long-term lease for a building. It classified the lease as a capital lease and recorded it in the accounts as follows:³

(29)	Building (or Leasehold).	300
	Capitalized Lease Obligation	300

Assets	=	Liabilities	+	Shareholders' Equity		(Class.)
+300		+300				

ΔCash	=	ΔL	+	ΔSE	–	ΔN\$A
0		+300		0		+300

This entry does not affect cash and does not affect income. It does affect the investing and financing activities of Ellwood Corporation and requires disclosure in a supplementary schedule to the statement of cash flows or notes to the financial statements. The accountant makes the following entry in the T-account work sheet:

(29a)	Building (or Leasehold).	300
	Capitalized Lease Obligation	300

³Technically, the account debited is not Building, but Leasehold on Building. Our research into actual practice suggests that many firms call it, merely, Building.

The firm must disclose transactions such as this one, but does not include these non-cash transactions in the operating, or financing or investing sections of the statement of cash flows.

Conversion of Debt into Equity During 2013, investors in convertible bonds of Ellwood Corporation exercised their option to convert their debt securities into shares of common stock. The entry made in the accounting records to record the conversion is as follows:

(30) Bonds Payable	300				
Common Stock				100	
Additional Paid-In Capital				200	

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
		-300		+100	ContriCap
				+200	ContriCap

ΔCash	=	ΔL	+	ΔSE	-	ΔN\$A
0		-300		+100		0
				+200		

This transaction is, like the capitalized lease arrangement, a material non-cash transaction that the firm must separately disclose even though the Statement of Cash Flows does not show any of its effects. The accountant reflects this financing transaction on the T-account work sheet by making the following entry:

(30) Bonds Payable	300	
Common Stock		100
Additional Paid-In Capital		200

Exhibit 16.4 presents a T-account work sheet for Ellwood Corporation for 2013.

PROBLEM 16.1 FOR SELF-STUDY

Effects of transactions on the statement of cash flows. Exhibit 6.12 in Chapter 6 presents a simplified statement of cash flows. For each of the transactions that follow, indicate the number(s) of the line(s) in Exhibit 6.12 affected by the transaction and the amount and direction (increase or decrease) of the effect. Expand the definition of Line (1) to include receipts from other operating revenue sources. If the transaction affects net income, be sure to indicate whether it increases or decreases. Ignore income tax effects.

- A firm sells for \$12,000 equipment that originally cost \$30,000 and has accumulated depreciation of \$16,000 at the time of sale.
- A firm owns 25% of the common stock of an investee acquired several years ago at its net book value and uses the equity method. The investee had net income of \$80,000 and paid dividends of \$20,000 during the period.
- A firm, as lessee (tenant), records lease payments of \$50,000 on capital leases for the period, of which \$35,000 represents interest expense.
- Income tax expense for the period totals \$120,000, of which the firm pays \$90,000 immediately and defers the remaining \$30,000 because of temporary differences between the accounting principles used for financial reporting and those used for tax reporting.
- A firm owns 10% of the common stock of an investee, and accounts for it as an available for sale security classified as a long-term investment. The investee had net income of \$100,000 and paid dividends of \$40,000 during the period. The fair value of the investment at the end of the period equaled the fair value at the beginning of the period.

ILLUSTRATION OF THE DIRECT METHOD FOR CASH FLOW FROM OPERATIONS

Exhibit 16.5 derives Cash Flow from Operations presented with the direct method for Ellwood Corporation. While the direct method's presentation of cash flow requires less understanding of the contrast between cash and accrual accounting, its derivation requires the same understanding as does the indirect method. Every addback and subtraction in the indirect presentation appears in the direct method's derivation.

To see the relation between the indirect and direct methods, consider the following contrast of the equivalent arithmetic used for the two derivations of cash flow from operations.

EXHIBIT 16.5

**Ellwood Corporation
Deriving Direct Method Cash Flow from Operations
Using Data from T-Account Work Sheet**

1. Copy Income Statement [column (a)] and Cash Flow from Operations [column (b)]
2. Copy Information from T-Account Work Sheet Next to Related Income Statement Item [columns (b) and (c)]
3. Sum Across Rows to Derive Direct Receipts and Expenditures [columns (d) and (e)]

Operations Income Statement: Revenues, Gains, Expenses, and Losses (a)	Indirect Method (b)	Changes in Related Balance Sheet Accounts from T-Account Work Sheet (c)	Direct Method (d)	From Operations: Receipts less Expenditures (e)
Sales \$10,500	\$ 400	= Advances from Customers Increase	\$10,000	Receipts from Customers
Interest and Dividends 320	(900)	= Accounts Receivable Increase	320	Receipts from Investments
Equity in Earnings of Affiliate 480	(320)	Dividends Received were only \$160	160	Receipts from Equity Method Investments
Gain on Disposal of Equipment 40	(40)	Gain Produces No Cash from Operations	—	
Cost of Goods Sold (6,000)	450	Depreciation on Manufacturing Facilities	(5,470)	Payments for Inventory
	150	Amortization of Patents Used in Manufacturing		
	780	= Accounts Payable Increase		
	(850)	= Inventory Increase		
Selling and Administrative Expenses (3,550)	250	Depreciation on Administrative Buildings and Equipment	(3,400)	Payments for Selling and Administrative Services
	200	= Prepayments Decrease		
	(300)	= Warranties Payable Decrease		
Compensation Expense				
Employee Stock Options (170)	170	Compensation Paid in Options	—	
Loss on Impairment of Land (80)	80	Loss Reduces Land Carrying Amount	—	
Loss on Sale of Marketable Equity Securities (30)	30	Loss Uses No Cash	—	
Interest Expense (450)	(50)	Coupon Payments in Excess of Interest Expense	(500)	Payments for Debt Service
Income Tax Expense (300)	100	Deferred Income Taxes Use No Cash This Period	(200)	Payments for Income Taxes
Net Income \$ 760 =	760	Totals	\$ 910	= Cash Flow from Operations Derived via Direct Method
	\$ 910	= Cash Flow from Operations Derived via Indirect Method		

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- The indirect method starts with the total for net income. Then it adds amounts for expenses not using cash in the amount of the expense and subtracts amounts for revenues not producing cash in the amount of the revenue. Then it removes the effects of non-operating gains and losses—subtracting the amount of the gains and adding back the amount of the losses. Finally, it adds or subtracts balance sheet changes involving non-cash operating accounts.
- The direct method starts with the components of income, the individual revenues and expenses, but not gains and losses, and adds or subtracts the same balance sheet changes involving the same operating accounts. Take an income statement line, and then list next to it, horizontally, additions and subtractions.

The indirect method presents the net of revenues less expenses, and adds to, and subtracts from, that total. The direct method starts with a line of the income statement, and then adds to, and subtracts from, that component. Because the amounts for balance sheet changes added and subtracted are the same, the final result—cash flow from operations—must be the same.

We think you will better understand cash flow from operations if you master the direct method, because its presentation, if not its derivation, will match your intuition. In addition, understanding the cause of changes from period to period in cash flow from operations comes easier from the direct method's presentation. Few firms, however, use the direct method in their audited financial reports.

INTERPRETING THE STATEMENT OF CASH FLOWS

Chapter 6 points out that the proper interpretation of information in the statement of cash flows requires:

- An understanding of the economic characteristics of the industries in which a firm conducts operations.
- A multi-period view.

This section discusses the interpretation of the statement of cash flows more fully.

RELATION BETWEEN NET INCOME AND CASH FLOW FROM OPERATIONS

Net income (= Revenues – Expenses) differs from Cash Flow from Operations (= Receipts from operations – Expenditures for operations). The balance sheet reflects these differences in the changes in current and noncurrent accounts:

1. Changes in noncurrent assets and noncurrent liabilities.
2. Changes in operating working capital accounts.

Changes in Noncurrent Assets and Noncurrent Liabilities The extent to which a firm adjusts net income for changes in noncurrent assets and noncurrent liabilities in deriving cash flow from operations depends on the nature of its operations. Capital-intensive firms will likely show a substantial addback to net income for depreciation expense, whereas service firms will show a smaller amount. Rapidly growing firms usually show an addback for deferred tax expense, whereas firms that stop growing or that shrink show a subtraction. Firms that grow or diversify by acquiring minority ownership positions in other businesses will often show a subtraction from net income for equity in undistributed earnings. Firms that decrease in size will usually show additions or subtractions for losses and gains on the disposal of assets.

Changes in Working Capital Accounts The adjustment for changes in working capital accounts depends in part on a firm's rate of growth. Rapidly growing firms usually experience significant increases in accounts receivable and inventories. Some firms use suppliers or other creditors to finance these working capital needs (classified as operating activities), whereas other firms use short- or long-term borrowing or equity financing (classified as financing activities).

RELATIONS AMONG CASH FLOWS FROM OPERATING, INVESTING, AND FINANCING ACTIVITIES

The product life-cycle concept from microeconomics and marketing provides useful insights into the relations among cash flows from operating, investing, and financing activities.

During the introduction phase, cash outflow exceeds cash inflow from operations because operations are not yet earning profits while the firm must invest in accounts receivable and inventories. Investing activities result in a net cash outflow to build productive capacity. Firms must rely on external financing during this phase to overcome the negative cash flow from operations and investing.

The growth phase portrays cash flow characteristics similar to the introduction phase. The growth phase reflects sales of successful products, and net income turns positive. A growing firm makes more sales, but it also needs to acquire more goods, and create more services, to sell. Because a firm often must pay for the goods it acquires before it collects for the goods it sells, the growing firm finds itself often short of cash from operations. The faster it grows (even though profitable), the more cash it needs. The maturing of a product alters these cash flow relations. Net income usually reaches a peak, and working capital stops growing. Operations generate positive cash flow, enough to finance expenditures on property, plant, and equipment. Capital expenditures usually maintain, rather than increase, productive capacity. Firms use the excess cash flow to repay borrowing from the introduction and growth phases and, possibly, to begin paying dividends to shareholders.

Weakening profitability—from reduced sales or reduced profit margins on existing sales—signals the beginning of the decline phase, but ever-declining accounts receivable and inventories can produce positive cash flow from operations. In addition, sales of unneeded property, plant, and equipment can result in positive cash flow from investing activities. Firms can use the excess cash flow to repay remaining debt or diversify into other areas of business.

THE EFFECTS OF TRANSACTIONS INVOLVING DERIVATIVES AND THE FAIR VALUE OPTION ON THE STATEMENT OF CASH FLOWS

Chapter 13 introduces the reasons firms engage in transactions involving derivatives and shows the accounting for them. For the most part, the complex parts of these transactions occur after the firm has acquired the derivative, but those subsequent transactions do not affect cash flows until, possibly, their settlement. The following discussion refers to a statement of cash flows that uses the indirect method for presenting cash flows from operations.

- The firm acquires a derivative for cash. Most such derivative acquisitions represent marketable securities held as current assets. The cash flow from operations section shows a subtraction for the increase in the current asset accounts in an amount equal to the firm's expenditure to acquire the derivative. If the firm classifies the derivative as a non-operating asset, then the cash outflow appears in the investing section of the statement of cash flows.
- Subsequent to acquisition, the firm may report⁴ changes in the fair value of the derivative in income. Those changes do not affect cash flow. A subtraction in the operating section of cash flows from operations offsets the amount of any gain reported in income. An addition in the operating section offsets the amount of any loss reported in income.
- Subsequent to acquisition, the firm may report⁵ changes in fair value of derivatives in Other Comprehensive Income. These changes have no effect on any lines of the statement of cash flows and no effect on net income.
- As the derivative transaction settles, there can be various effects. Some of these settlements involve net cash flow, such as for a derivative that is not a hedge. Derivatives with cash settlement can involve cash flows even when the firm uses them as a hedge; often, however, the cash inflow or outflow from the derivative offsets another cash outflow or inflow from

⁴See **Chapter 13** for the situations.

⁵See **Chapter 13** for the situations.

the other side of the hedge. Other settlements involve the receipt of assets such as inventory or equipment, which do not involve cash. A discussion of all the possibilities goes beyond the scope of this textbook.

Chapter 13 discusses, as well, the fair value option for certain financial assets and financial liabilities. Firms using the fair value option remeasure the carrying value of the asset to fair value each period.

- If the change in fair value increases carrying value, then the firm reports a gain in income equal to the amount of the increase in carrying value during the current period. The cash flow from operations section starts with the resulting higher income. That higher income does not, however, result in increased cash inflows during the current period, so the cash flow from operations sections shows a subtraction for the amount of the gain.
- If the change in fair value of the derivative decreases carrying value, then the firm reports the amount of that decrease as a loss during the current period. The cash flow from operations section shows lower income as a result. The loss does not, however, result in outflows or in decreased cash inflows during the current period, so the cash flow from operations sections shows an addback for the loss.

THE EFFECTS OF TRANSACTIONS INVOLVING INVESTMENTS ON THE STATEMENT OF CASH FLOWS

Chapter 14 discusses the accounting for investments. **Exhibit 14.8** summarizes the effect on the balance sheet and income statement of the various forms of investment. Here, we summarize the effects on the statement of cash flows in U.S. GAAP.

Accounting Method	Effects on Statement of Cash Flows
<ul style="list-style-type: none"> • Fair value method for securities available for sale and cash flow hedge. Realized gains and losses appear in net income. Unrealized gains and losses appear in Other Comprehensive Income. 	<ul style="list-style-type: none"> • Dividends received from investee included in investor's cash flow from operations. In indirect method, add back realized holding losses, and subtract realized holding gains included in income for the period to derive cash flow from operations. All proceeds of sale of securities available for sale appear as a cash inflow from investing activities.
<ul style="list-style-type: none"> • Fair value method for trading securities and fair value hedges. Both realized and unrealized gains and losses appear in net income. 	<ul style="list-style-type: none"> • Dividends received from investee included in investor's cash flow from operations. In indirect method, add back both realized and unrealized holding losses, and subtract both realized and unrealized holding gains included in income for the period. All proceeds of sale of trading securities appear as a cash inflow from investing activities.
<ul style="list-style-type: none"> • Amortized cost method for debt where investor has both ability and intent to hold to maturity. Investor reports interest revenue using methods like those illustrated in Exhibit 13.4. 	<ul style="list-style-type: none"> • If investor acquired the debt at a price below par, then cash flow from operations includes only the interest coupon received. If the investor acquired the investment in debt at a price above par, then cash flow from operations will include the amount of interest revenue for the period, with source of the remainder of the cash received appearing as a cash inflow from investing activities, the same as the proceeds of selling an investment.
<ul style="list-style-type: none"> • Equity method, where investor reports its share of investee's income. 	<ul style="list-style-type: none"> • Investor's cash flow from operations increases by only the amount of dividends received. In the indirect method, deduct the investor's share of the undistributed earnings of the investee. If the investee reports a loss, then the investor reports its share of the loss in income and using the indirect method, adds back the amount of that loss, as it uses no cash.
<ul style="list-style-type: none"> • Consolidation, where investor reports all income of consolidated subsidiaries and subtracts the noncontrolling interest in income of less than 100% owned subsidiaries. 	<ul style="list-style-type: none"> • In indirect method, add back the subtraction for the noncontrolling interest in earnings of consolidated, but less than 100% owned subsidiaries to derive cash flow from operations.

SUMMARY

This chapter provides a comprehensive example of the statement of cash flows, which includes many of the transactions that the text introduces after **Chapter 6**.

SOLUTION TO SELF-STUDY PROBLEM

SUGGESTED SOLUTION TO PROBLEM 16.1 FOR SELF-STUDY

(Effects of transactions on the statement of cash flows.)

a. The journal entry to record this transaction is as follows:

Cash	12,000	
Accumulated Depreciation	16,000	
Loss on Sale of Equipment	2,000	
Equipment		30,000

Δ Cash	=	Δ L	+	Δ SE	-	Δ N\$A
+12,000 (Invst.)		0		-2,000		+16,000
						-30,000

The debit to Cash results in an increase on line **(11)** of \$12,000. Selling equipment is an investing transaction, so line **(6)** increases by \$12,000. The loss on the sale reduces net income, so line **(3)** decreases by \$2,000. Because the loss does not use cash, line **(4)** increases by \$2,000 to add back the loss to net income when computing cash flow from operations.

b. The journal entry to record this transaction is as follows:

Cash	5,000	
Investment in Securities	15,000	
Equity in Earnings of Affiliate		20,000

Δ Cash	=	Δ L	+	Δ SE	-	Δ N\$A
+5,000 (Opns.)		0		+20,000		+15,000

The debit to Cash results in an increase on line **(11)** of \$5,000. Line **(1)** increases by \$5,000 for the receipt from the investment, considered an operating source of cash. Line **(3)** increases by \$20,000 for the equity in earnings of the affiliate. Because the firm receives only \$5,000 in cash, line **(5)** must increase by \$15,000 to subtract from earnings the excess of equity in earnings over the dividends received.

c. The journal entry to record this transaction is as follows:

Interest Expense	35,000	
Capitalized Lease Obligation	15,000	
Cash		50,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-50,000		-15,000		-35,000	IncSt → RE

Δ Cash	=	Δ L	+	Δ SE	-	Δ N\$A
-50,000 (Opns.)		-15,000		-35,000		0

The credit to Cash reduces line (11) by \$50,000. Line (2) increases by \$35,000 for the increased use of cash, the expenditure for the portion of the debt-service payment for interest. The recognition of interest expense reduces net income on line (3) by \$35,000. This amount represents an operating use of cash and, therefore, requires no addback or subtraction in computing cash flow from operations. The remaining cash payment of \$15,000 is a financing use of cash, so line (9) increases by \$15,000.

d. The journal entry to record this transaction is as follows:

Income Tax Expense	120,000	
Deferred Tax Liability	30,000	
Cash		90,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-90,000		+30,000		-120,000	IncSt → RE

ΔCash	=	ΔL	+	ΔSE	-	ΔN\$A
-90,000 (Opns.)		+30,000		-120,000		0

The credit to Cash results in a reduction on line (11) of \$90,000. Line (2) increases by \$90,000 for the expenditure related to income taxes. The recognition of income tax expense reduces net income on line (3) by \$120,000. Because the firm used only \$90,000 in cash for income taxes this period, line (4) increases by \$30,000 for the portion of the expense that did not use cash.

e. The journal entry to record this transaction is as follows:

Cash	4,000	
Dividend Revenue		4,000

ΔCash	=	ΔL	+	ΔSE	-	ΔN\$A
+4,000 (Opns.)		0		+4,000		0

The debit to Cash results in an increase on line (11) of \$4,000. The recognition of dividend revenue increases net income on line (3) by \$4,000. Because dividends received from investments in securities are operating transactions and the amount of the dividends revenue equals the amount of cash received, the accountant makes no adjustment to net income when computing cash flow from operations. IFRS allows the firm to show the cash received from dividend investments either as from operations or from investing activities.

PROBLEMS

- Effects of transactions on statement of cash flows.** Exhibit 6.12 in Chapter 6 provides a simplified statement of cash flows. For each of the transactions that follow, indicate the number(s) of the line(s) in Exhibit 6.12 affected by the transaction and the amount and direction (increase or decrease) of the effect. If the transaction affects net income on line (3) or cash on line (11), be sure to indicate if it increases or decreases the line. Expand the definition of Line (1) to include receipts from other operating revenue sources. Ignore income tax effects. Indicate the effects of each transaction on the Cash Change Equation.

 - A firm declares cash dividends of \$15,000, of which it pays \$12,000 immediately to its shareholders; it will pay the remaining \$3,000 early in the next accounting period.
 - A firm borrows \$75,000 from its bank.
 - A firm sells for \$20,000 machinery originally costing \$40,000 and with accumulated depreciation of \$35,000.

- d. A firm as lessee records lease payments on operating leases of \$28,000 for the period.
 - e. A firm acquires, with temporarily excess cash, marketable equity securities costing \$39,000.
 - f. A firm writes off a fully depreciated truck originally costing \$14,000.
 - g. A marketable equity security (available for sale) acquired during the current period for \$90,000 has a fair value of \$82,000 at the end of the period. Indicate the effect of any year-end adjusting entry to apply the market value method.
 - h. A firm records interest expense of \$15,000 for the period on bonds issued several years ago at a discount, comprising a \$14,500 cash payment and a \$500 addition to Bonds Payable.
 - i. A firm records an impairment loss of \$22,000 for the period on goodwill arising from the acquisition several years ago of an 80% investment in a subsidiary.
- 2. Effects of transactions on statement of cash flows. Exhibit 6.12 in Chapter 6** provides a simplified statement of cash flows. For each of the transactions that follow, indicate the number(s) of the line(s) in **Exhibit 6.12** affected by the transaction and the amount and direction (increase or decrease) of the effect. If the transaction affects net income on line (3) or cash on line (11), be sure to indicate if it increases or decreases the line. Expand the definition of Line (1) to include receipts from other operating revenue sources. Ignore income tax effects. Indicate the effects of each transaction on the Cash Change Equation.
- a. A firm acquires a building costing \$400,000, paying \$40,000 cash and signing a promissory note to the seller for \$360,000.
 - b. A firm using the allowance method records \$32,000 of bad debt expense for the period.
 - c. A firm using the allowance method writes off accounts totaling \$28,000 as uncollectible.
 - d. A firm owns 30% of the common stock of an investee acquired several years ago at carrying value. The investee had net income of \$40,000 and paid dividends of \$50,000 during the period.
 - e. A firm sells for \$22,000 marketable equity securities (available for sale) originally costing \$25,000 and with a carrying value of \$23,000 at the time of sale.
 - f. Holders of a firm's preferred stock with a carrying value of \$10,000 convert their preferred shares into common stock with a par value of \$2,000. Use the book value method.
 - g. A firm gives land with an acquisition cost and market value of \$5,000 in settlement of the annual legal fees of its corporate attorney.
 - h. A firm reduces the liability account Rental Fees Received in Advance for \$8,000 when it provides rental services.
 - i. A firm reclassifies long-term debt of \$30,000, maturing within the next year, as a current liability.
- 3. Effects of transactions on statement of cash flows. Exhibit 6.12 in Chapter 6** provides a simplified statement of cash flows. For each of the transactions that follow, indicate the number(s) of the line(s) in **Exhibit 6.12** affected by the transaction and the amount and direction (increase or decrease) of the effect. If the transaction affects net income on line (3) or cash on line (11), be sure to indicate if it increases or decreases the line. Expand the definition of Line (1) to include receipts from other operating revenue sources. Ignore income tax effects. Indicate the effects of each transaction on the Cash Change Equation.
- a. A firm using the percentage-of-completion method for long-term contracts recognizes \$15,000 of revenue for the period.
 - b. A local government donates land with a fair value of \$50,000 to a firm as an inducement to locate manufacturing facilities in the area.
 - c. A firm writes down long-term investments in securities by \$8,000 to reflect a decrease in fair value.
 - d. A firm records \$60,000 depreciation on manufacturing facilities for the period. The firm has sold all goods it manufactured this period.
 - e. A firm using the allowance method recognizes \$35,000 as warranty expense for the period.

- f. A firm using the allowance method makes expenditures totaling \$28,000 to provide warranty services during the period.
- g. A firm recognizes income tax expense of \$80,000 for the period, comprising \$100,000 paid currently and a \$20,000 reduction in the Deferred Income Tax Liability account.
- h. A firm writes down inventories by \$18,000 to reflect the lower-of-cost-or-market valuation.
4. **Working backward from the statement of cash flows.** Exhibit 16.6 presents an income statement and a statement of cash flows for Metals Company for 2014 (based on financial statements of Alcoa). Give the entry made on the T-account work sheet for each of the numbered line items. For example, the work sheet entry for line (1) is as follows (amounts in millions of US\$):

Cash (Operations—Net Income)	1,367.4	
Retained Earnings		1,367.4

5. **Deriving direct method presentation of cash flow from operations using data from the T-account work sheet.** Refer to the data in Exhibit 16.6 for Metals Company for 2014 (based on financial statements of Alcoa). Derive a presentation of cash flow from operations using the direct method.
6. **Working backward from the statement of cash flows.** Exhibit 16.7 presents a statement of cash flows from Ingers Company for 2013. Give the entry made on the T-account work sheet for each of the numbered line items. For example, the work sheet entry for line (1) is as follows (amounts in millions of US\$):

Cash (Operations—Net Income)	270.3	
Retained Earnings		270.3

7. **Preparing a statement of cash flows.** (Adapted from CPA examination.) The management of Warren Corporation, concerned over a decrease in cash, provides you with the comparative analysis of changes in account balances between June 30, 2013, and June 30, 2014, appearing in Exhibit 16.8.

During the year ended June 30, 2014, Warren Corporation engaged in the following transactions:

- (1) Purchased new machinery for \$463,200. In addition, it sold certain obsolete machinery, having a carrying value of \$73,200, for \$57,600. It made no other entries in Machinery and Equipment or related accounts other than provisions for depreciation.
- (2) Paid \$2,400 of legal costs in a successful defense of a new patent, which it correctly debited to the Patents account. It recorded patent amortization amounting to \$5,040 during the year ended June 30, 2014.
- (3) Purchased 120 preferred shares, par value \$100, at \$110 and subsequently canceled the shares. Warren Corporation debited the premium paid to Retained Earnings.
- (4) On June 10, 2014, the board of directors declared a cash dividend of \$0.24 per share, payable to holders of common stock on July 10, 2014.
- (5) The following illustration presents a comparative analysis of retained earnings as of June 30, 2013, and June 30, 2014:

	June 30	
	2014	2013
Balance, June 30, Beginning of Year	\$321,600	\$157,200
Net Income	<u>234,000</u>	<u>206,400</u>
Subtotal	\$555,600	\$363,600
Dividends Declared	(48,000)	(42,000)
Premium on Preferred Stock Repurchased	<u>(1,200)</u>	<u>—</u>
Balance, June 30, End of Year	<u>\$506,400</u>	<u>\$321,600</u>

- (6) Warren Corporation wrote off accounts totaling \$3,600 as uncollectible during 2014.

EXHIBIT 16.6

Metals Company
(all amounts in millions of US\$)
(Problem 4)

Income Statement for 2014

Sales Revenues	\$20,465.0
Gain on Sale of Marketable Securities	20.8
Equity in Earnings of Affiliates	<u>214.0</u>
Total Revenues and Gains	\$20,699.8
Cost of Goods Sold	\$ 9,963.3
General and Administrative Expenses	5,570.2
Interest Expense	2,887.3
Income Tax Expense	<u>911.6</u>
Total Expenses	\$19,332.4
Net Income	<u>\$ 1,367.4</u>

Statement of Cash Flows for 2014

OPERATIONS

(1) Net Income	\$ 1,367.4
Adjustments for Non-cash Transactions:	
(2) Depreciation	664.0
(3) Increase in Deferred Tax Liability	82.0
(4) Equity in Undistributed Earnings of Affiliates	(47.1)
(5) Gain from Sale of Marketable Securities Available for Sale	(20.8)
(6) (Increase) Decrease in Accounts Receivable	74.6
(7) (Increase) Decrease in Inventories	(198.9)
(8) (Increase) Decrease in Prepayments	(40.3)
(9) Increase (Decrease) in Accounts Payable for Inventory	33.9
(10) Increase (Decrease) in Other Current Liabilities	<u>(110.8)</u>
Cash Flow from Operations	<u>\$ 1,804.0</u>

INVESTING

(11) Sale of Marketable Securities Available for Sale	\$ 49.8
(12) Acquisition of Marketable Securities Available for Sale	(73.2)
(13) Acquisition of Property, Plant, and Equipment	(875.7)
(14) Acquisition of Subsidiaries	<u>(44.5)</u>
Cash Flow from Investing	<u>\$ (943.6)</u>

FINANCING

(15) Common Stock Issued to Employees	\$ 34.4
(16) Repurchase of Common Stock	(100.9)
(17) Dividends Paid to Shareholders	(242.9)
(18) Additions to Short-Term Borrowing	127.6
(19) Additions to Long-Term Debt	121.6
(20) Payments on Long-Term Debt	<u>(476.4)</u>
Cash Flow from Financing	<u>\$ (536.6)</u>
Change in Cash	\$ 323.8
Cash, Beginning of Year	<u>506.8</u>
Cash, End of Year	<u>\$ 830.6</u>

SUPPLEMENTARY INFORMATION

(21) Acquisition of Property, Plant, and Equipment by Mortgaged Borrowing	\$ 76.9
(22) Acquisition of Property, Plant, and Equipment by Capital Leases	98.2
(23) Conversion of Debt into Common Stock	47.8
(24) Other Current Liabilities represents obligations for General and Administrative Expenses.	

EXHIBIT 16.7

Ingers Company
Statement of Cash Flows, 2013
 (all amounts in millions of US\$)
 (Problem 6)

OPERATIONS	
(1) Net Income	\$ 270.3
Adjustments for Non-cash Transactions:	
(2) Depreciation	179.4
(3) Gain on Sale of Property, Plant, and Equipment	(3.6)
(4) Equity in Earnings of Affiliates	(41.5)
(5) Deferred Income Taxes	15.1
(6) (Increase) Decrease in Accounts Receivable	50.9
(7) (Increase) Decrease in Inventories	(15.2)
(8) (Increase) Decrease in Other Current Assets	(33.1)
(9) Increase (Decrease) in Accounts Payable	(37.9)
(10) Increase (Decrease) in Other Current Liabilities	19.2
Cash Flow from Operations	<u>\$ 403.6</u>
(11) Capital Expenditures	\$(211.7)
(12) Proceeds from Sale of Property, Plant, and Equipment	26.5
(13) (Increase) Decrease in Marketable Securities	(4.6)
(14) Advances from Equity Companies	18.4
Cash Flow from Investing	<u>\$(171.4)</u>
FINANCING	
(15) Decrease in Short-Term Borrowing	\$ (81.5)
(16) Issue of Long-Term Debt	147.6
(17) Payment of Long-Term Debt	(129.7)
(18) Proceeds from Exercise of Stock Options	47.9
(19) Proceeds from Sale of Treasury Stock	59.3
(20) Dividends Paid	<u>\$(78.5)</u>
Cash Flow from Financing	<u>\$(34.9)</u>
Change in Cash	197.3
Cash, Beginning of Year	48.3
Cash, End of Year	<u>\$ 245.6</u>
SUPPLEMENTARY INFORMATION	
(21) New Capital Leases Signed	\$ 147.9
(22) Conversion of Preferred Stock into Common Stock	62.0
(23) Issue of Common Stock to Acquire Investments in Securities	94.3

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- a. Prepare a T-account work sheet for the preparation of a statement of cash flows.
 - b. Prepare a formal statement of cash flows for Warren Corporation for the year ending June 30, 2014, using the indirect method for presenting cash flow from operations.
- 8. Preparing a statement of cash flows.** (Adapted from CPA examination.) Roth Company has prepared its financial statements for the year ended December 31, 2013, and for the three months ended March 31, 2014. You will prepare a statement of cash flows for the three months ended March 31, 2014. **Exhibit 16.9** presents the company's balance sheet at December 31, 2013, and March 31, 2014, and **Exhibit 16.10** presents its income statement for the three months ended March 31, 2014. You believe that the amounts presented are correct.

Your discussion with the company's controller and a review of the financial records reveal the following information:

EXHIBIT 16.8

Warren Corporation
Changes in Account Balances
Between June 30, 2013 and June 30, 2014
(Problem 7)

	June 30	
	2014	2013
DEBIT BALANCES		
Cash	\$ 174,000	\$ 223,200
Accounts Receivable	306,000	327,600
Inventories	579,600	645,600
Securities Held for Plant Expansion Purposes.	180,000	—
Machinery and Equipment.	1,112,400	776,400
Leasehold Improvements	104,400	104,400
Patents	33,360	36,000
Totals	<u>\$2,489,760</u>	<u>\$2,113,200</u>
CREDIT BALANCES		
Allowance for Uncollectible Accounts.	\$ 19,200	\$ 20,400
Accumulated Depreciation of Machinery and Equipment	499,200	446,400
Accumulated Amortization of Leasehold Improvements	69,600	58,800
Accounts Payable	279,360	126,000
Cash Dividends Payable	48,000	—
Current Portion of 6% Serial Bonds Payable.	60,000	60,000
6% Serial Bonds Payable (noncurrent portion).	300,000	360,000
Preferred Stock.	108,000	120,000
Common Stock	600,000	600,000
Retained Earnings	506,400	321,600
Totals	<u>\$2,489,760</u>	<u>\$2,113,200</u>

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- (1) On January 8, 2014, the company sold marketable securities for cash. The firm had purchased these securities on December 31, 2013. The firm purchased no marketable securities during 2013.
- (2) The company's preferred stock is convertible into common stock at a rate of one share of preferred for two shares of common. The preferred stock and common stock have par values of \$2 and \$1, respectively.
- (3) On January 17, 2014, the local government condemned three acres of land. Roth Company received an award of \$48,000 in cash on March 22, 2014. It does not expect to purchase additional land as a replacement.
- (4) On March 25, 2014, the company purchased equipment for cash.
- (5) Interest expense on bonds payable exceeded the cash coupon payments by \$225 during the three-month period. On March 29, 2014, the company issued bonds payable for cash.
- (6) Roth Company declared \$12,000 in dividends during the first three months of 2014.
 - a. Prepare a T-account work sheet for the preparation of a statement of cash flows, defining funds as cash and cash equivalents.
 - b. Prepare a formal statement of cash flows for Roth Company for the three months ending March 31, 2014. Use the indirect method.
 - c. Derive a presentation of cash flows from operations using the direct method.
9. **Preparing a statement of cash flows.** (Adapted from CPA examination.) **Exhibit 16.11** presents a comparative statement of financial position for Biddle Corporation as of December 31, 2013 and 2014. **Exhibit 16.12** presents an income statement for 2014. Additional information follows after Exhibit 16.11:

EXHIBIT 16.9**Roth Company
Balance Sheet
(Problem 8)**

	March 31, 2014	December 31, 2013
Cash	\$131,100	\$ 37,950
Marketable Securities Available for Sale	10,200	24,000
Accounts Receivable (Net)	73,980	36,480
Inventory	<u>72,885</u>	<u>46,635</u>
Total Current Assets	\$288,165	\$145,065
Land	28,050	60,000
Building	375,000	375,000
Equipment	122,250	—
Accumulated Depreciation	(24,375)	(22,500)
Investment in 30% Owned Company (Using Equity Method)	100,470	91,830
Other Assets	<u>22,650</u>	<u>22,650</u>
Total Assets	<u>\$912,210</u>	<u>\$672,045</u>
Accounts Payable	\$ 25,995	\$ 31,830
Dividend Payable	12,000	—
Income Taxes Payable	<u>51,924</u>	<u>—</u>
Total Current Liabilities	\$ 89,919	\$ 31,830
Other Liabilities	279,000	279,000
Bonds Payable	169,275	71,550
Deferred Income Tax	1,269	765
Preferred Stock	—	45,000
Common Stock	165,000	120,000
Unrealized Holding Loss on Marketable Securities	(750)	(750)
Retained Earnings	<u>208,497</u>	<u>124,650</u>
Total Liabilities and Shareholders' Equity	<u>\$912,210</u>	<u>\$672,045</u>

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EXHIBIT 16.10**Roth Company
Income Statement Data
For the Three Months Ended March 31, 2014
(Problem 8)**

Sales	\$364,212
Gain on Sale of Marketable Securities	3,600
Equity in Earnings of 30% Owned Company	8,640
Gain on Condemnation of Land	<u>16,050</u>
Total Revenues	\$392,502
Cost of Sales	\$207,612
General and Administrative Expenses	33,015
Depreciation	1,875
Interest Expense	1,725
Income Taxes	<u>52,428</u>
Total Expenses	\$296,655
Net Income	<u>\$ 95,847</u>

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EXHIBIT 16.11
Biddle Corporation
Statement of Financial Position
(Problem 9)

	December 31	
	2014	2013
ASSETS		
Cash	\$ 50,000	\$ 45,000
Accounts Receivable (Net of Allowance for Doubtful Accounts of \$10,000 and \$8,000, Respectively)	105,000	70,000
Inventories	<u>130,000</u>	<u>110,000</u>
Total Current Assets	\$285,000	\$225,000
Land	162,500	100,000
Plant and Equipment	290,000	316,500
Less Accumulated Depreciation	(45,000)	(50,000)
Patents	<u>15,000</u>	<u>16,500</u>
Total Assets	<u>\$707,500</u>	<u>\$608,000</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Liabilities		
Accounts Payable	\$130,000	\$100,000
Accrued Liabilities	<u>100,000</u>	<u>105,000</u>
Total Current Liabilities	\$230,000	\$205,000
Deferred Income Taxes	70,000	50,000
Long-Term Bonds (Due December 15, 2020)	<u>65,000</u>	<u>90,000</u>
Total Liabilities	<u>\$365,000</u>	<u>\$345,000</u>
Shareholders' Equity		
Common Stock, Par Value \$5, Authorized 50,000 Shares, Issued and Outstanding 25,000 at the End of 2014 and 21,000 at the End of 2013	\$125,000	\$105,000
Additional Paid-In Capital	116,500	85,000
Retained Earnings	101,000	73,000
Total Shareholders' Equity	<u>\$342,500</u>	<u>\$263,000</u>
Total Liabilities and Shareholders' Equity	<u>\$707,500</u>	<u>\$608,000</u>

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- (1) On February 2, 2014, Biddle issued a 10% stock dividend to shareholders of record on January 15, 2014. The market price per share of the common stock on February 2, 2014, was \$15.
- (2) On March 1, 2014, Biddle issued 1,900 shares of common stock for land. The common stock and land had current fair values of approximately \$20,000 on March 1, 2014.
- (3) On April 15, 2014, Biddle repurchased long-term bonds with a face and carrying value of \$25,000. It reported a gain of \$6,000 on the income statement.
- (4) On June 30, 2014, Biddle sold equipment costing \$26,500, with a carrying value of \$11,500, for \$9,500 cash.
- (5) On September 30, 2014, Biddle declared and paid a \$0.04 per share cash dividend to shareholders of record on August 1, 2014.
- (6) On October 10, 2014, Biddle purchased land for \$42,500 cash.
- (7) Deferred income taxes represent temporary differences relating to the use of different depreciation methods for income tax and financial statement reporting.
 - a. Prepare a T-account work sheet for the preparation of a statement of cash flows.
 - b. Prepare a formal statement of cash flows for Biddle Corporation for the year ended December 31, 2014. Use the indirect method.

EXHIBIT 16.12

Biddle Corporation
Income Statement
For the Year Ended December 31, 2014
(Problem 9)

Sales	\$500,000
Gain on Repurchase of Bonds	<u>6,000</u>
Total Revenues	<u>\$506,000</u>
Expenses:	
Cost of Goods Sold	\$280,000
Salary and Wages	95,000
Depreciation	10,000
Patent Amortization	1,500
Loss on Sale of Equipment	2,000
Interest	8,000
Miscellaneous	<u>4,000</u>
Expenses Before Income Taxes	<u>\$400,500</u>
Income Before Income Taxes	<u>\$105,500</u>
Income Taxes	
Current	\$ 25,000
Deferred	<u>20,000</u>
Provision for Income Taxes	<u>\$ 45,000</u>
Net Income	<u>\$ 60,500</u>
Earnings Per Share	<u>\$ 2.45</u>

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10. Preparing a statement of cash flows. (Adapted from CPA examination.) **Exhibit 16.13** presents the comparative balance sheets for Plainview Corporation for 2013 and 2014.

The following additional information relates to 2014 activities:

(1) The Retained Earnings account changed as follows:

Retained Earnings, December 31, 2013		\$755,700
Add Net Income		<u>236,580</u>
Subtotal		\$992,280
Deduct:		
Cash Dividends	\$130,000	
Loss on Reissue of Treasury Stock	3,000	
Stock Dividend	<u>100,200</u>	<u>233,200</u>
Retained Earnings, December 31, 2014		<u>\$759,080</u>

- (2) On January 2, 2014, Plainview Corporation sold for \$127,000 marketable securities with an acquisition cost and a carrying value of \$110,000. The firm used the proceeds from this sale, the funds in the bond sinking fund, and the amount received from the issuance of the 8% debentures to retire the 6% mortgage bonds.
- (3) The firm reissued treasury stock on February 28, 2014. It treats “losses” on the reissue of treasury stock as a charge to Retained Earnings.
- (4) The firm declared a stock dividend on October 31, 2014, when the market price of Plainview Corporation’s stock was \$12 per share.
- (5) On April 30, 2014, a fire destroyed a warehouse that cost \$100,000 and on which depreciation of \$65,000 had accumulated. The firm carried no insurance of this loss. Plainview Corporation properly included the loss in the Continuing Operations section of the income statement.
- (6) Plant and equipment transactions consisted of the sale of a building at its carrying value of \$4,000 and the purchase of machinery for \$28,000.

EXHIBIT 16.13

Plainview Corporation
Comparative Balance Sheets
December 31, 2014 and 2013
(Problem 10)

	2014	2013
ASSETS		
Cash	\$ 142,100	\$ 165,300
Marketable Securities (at Fair Value)	122,600	129,200
Accounts Receivable (Net)	312,200	371,200
Inventories	255,200	124,100
Prepayments	23,400	22,000
Bond Sinking Fund	—	63,000
Investment in Subsidiary (at Equity)	134,080	152,000
Plant and Equipment (Net)	<u>1,443,700</u>	<u>1,534,600</u>
Total Assets	<u>\$2,433,280</u>	<u>\$2,561,400</u>
SOURCES OF FINANCING		
Accounts Payable	\$ 238,100	\$ 213,300
Notes Payable—Current	—	145,000
Accrued Payables	16,500	18,000
Income Taxes Payable	97,500	31,000
Deferred Income Taxes (Noncurrent)	127,900	128,400
6% Mortgage Bonds Payable (Due 2022)	—	310,000
8% Debentures Payable (Due 2029)	125,000	—
Common Stock, \$10 Par Value	1,033,500	950,000
Additional Paid-In Capital	67,700	51,000
Accumulated Other Comprehensive Income		
Unrealized Holding Gain on Marketable Securities	2,500	2,500
Retained Earnings	759,080	755,700
Treasury Stock—at Cost of \$3 per Share	<u>(34,500)</u>	<u>(43,500)</u>
Total Sources of Financing	<u>\$2,433,280</u>	<u>\$2,561,400</u>

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- (7) The firm wrote off accounts receivable as uncollectible totaling \$16,300 in 2013 and \$18,500 in 2014. It recognized expired insurance of \$4,100 in 2013 and \$3,900 in 2014.
- (8) The subsidiary, which is 40% owned, reported a loss of \$44,800 for 2014.
- Prepare a T-account work sheet for Plainview Corporation for 2014 for preparing a statement of cash flows.
 - Prepare a formal statement of cash flows using the indirect method for the year ending December 31, 2014.
- 11. Preparing and interpreting the statement of cash flows.** Exhibit 16.14 presents a comparative balance sheet and Exhibit 16.15 presents a comparative income statement for Airlines Corporation for 2013 and 2014 (based on financial statements of UAL). Expenditures on new property, plant, and equipment were \$1,568 million in 2013 and \$2,821 million in 2014. Changes in other noncurrent assets are investing activities, and changes in other noncurrent liabilities are financing activities.
- Prepare T-account work sheets for 2013 and 2014 for a statement of cash flows.
 - Prepare a comparative statement of cash flows for 2013 and 2014 using the indirect method.
 - Comment on the relations between cash flows from operating, investing, and financing activities for 2013 and 2014.
- 12. Preparing and interpreting the statement of cash flows.** Irish Paper Company (Irish) manufactures and markets various paper products around the world. Paper manufacturing is a

EXHIBIT 16.14
**Airlines Corporation
Comparative Balance Sheet
(all amounts in millions of US\$)
(Problem 11)**

	December 31		
	2014	2013	2012
ASSETS			
Cash	\$ 221	\$ 465	\$ 1,087
Marketable Securities	1,066	1,042	—
Accounts Receivable (Net)	913	888	741
Inventories	323	249	210
Prepayments	209	179	112
Total Current Assets	<u>\$ 2,732</u>	<u>\$ 2,823</u>	<u>\$ 2,150</u>
Property, Plant, and Equipment	8,587	7,704	7,710
Accumulated Depreciation	(3,838)	(3,805)	(3,769)
Other Assets	605	570	610
Total Assets	<u>\$ 8,086</u>	<u>\$ 7,292</u>	<u>\$ 6,701</u>
LIABILITIES AND SHAREHOLDERS' EQUITY			
Accounts Payable	\$ 552	\$ 596	\$ 540
Short-Term Borrowing	447	446	121
Current Portion of Long-Term Debt	89	84	110
Advances from Customers	843	661	619
Other Current Liabilities	1,826	1,436	1,485
Total Current Liabilities	<u>\$ 3,757</u>	<u>\$ 3,223</u>	<u>\$ 2,875</u>
Long-Term Debt	1,475	1,334	1,418
Deferred Tax Liability	368	64	352
Other Noncurrent Liabilities	721	719	715
Total Liabilities	<u>\$ 6,321</u>	<u>\$ 5,640</u>	<u>\$ 5,360</u>
Common Stock	\$ 120	\$ 119	\$ 119
Additional Paid-In Capital	52	48	48
Accumulated Other Comprehensive Income			
Unrealized Holding Gain on Marketable Securities	92	85	—
Retained Earnings	1,613	1,512	1,188
Treasury Stock	(112)	(112)	(14)
Total Shareholders' Equity	<u>\$ 1,765</u>	<u>\$ 1,652</u>	<u>\$ 1,341</u>
Total Liabilities and Shareholders' Equity	<u>\$ 8,086</u>	<u>\$ 7,292</u>	<u>\$ 6,701</u>

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capital-intensive activity. A firm that does not adequately use its manufacturing capacity will experience poor operating performance. Sales of paper products tend to be cyclical with general economic conditions, although consumer paper products are less cyclical than business paper products.

Exhibit 16.16 on page 647 presents comparative income statements and **Exhibit 16.17** on page 648 presents comparative balance sheets for Irish Paper Company for 2012, 2013, and 2014. Additional information appears below (amounts in millions of US\$).

(1)

Cash Flow Information	2014	2013	2012
Investments in Affiliates ^a	\$ (13)	\$ 86	\$ (92)
Expenditures on Property, Plant, and Equipment	(315)	(931)	(775)
Long-Term Debt Issued	36	890	449

^aExcludes earnings and dividends.

EXHIBIT 16.15
**Airlines Corporation
Comparative Income Statement
(all amounts in millions of US\$)
(Problem 11)**

	2014	2013
REVENUES		
Sales	\$11,037	\$ 9,794
Interest Revenue	123	121
Gains on Dispositions of Property, Plant, and Equipment	286	106
Total Revenues	<u>\$11,446</u>	<u>\$10,021</u>
EXPENSES		
Compensation	\$ 3,550	\$ 3,158
Fuel	1,811	1,353
Commissions	1,719	1,336
Depreciation	560	517
Other Operating Costs	3,514	2,950
Interest	121	169
Income Taxes	70	214
Total Expenses	<u>\$11,345</u>	<u>\$ 9,697</u>
Net Income	<u>\$ 101</u>	<u>\$ 324</u>

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EXHIBIT 16.16
**Irish Paper Company
Comparative Income Statements
(all amounts in millions of US\$)
(Problem 12)**

For the Year Ended December 31	2014	2013	2012
Sales	\$4,976	\$5,356	\$5,066
Equity in Earnings of Affiliates	30	38	31
Interest Income	60	23	34
Gain (Loss) on Sale of Property, Plant, and Equipment	(34)	19	221
Total Revenues	<u>\$5,032</u>	<u>\$5,436</u>	<u>\$5,352</u>
Cost of Goods Sold	\$3,388	\$3,721	\$3,493
Selling Expenses	1,005	925	857
Administrative Expenses	581	414	303
Interest Expense	221	199	158
Income Tax Expense	(21)	8	165
Total Expenses	<u>\$5,174</u>	<u>\$5,267</u>	<u>\$4,976</u>
Net Income	<u>\$ (142)</u>	<u>\$ 169</u>	<u>\$ 376</u>

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- (2) Depreciation expense was \$306 million in 2012, \$346 million in 2013, and \$353 million in 2014.
- (3) During 2012, Irish purchased outstanding stock warrants for \$201 million. It recorded the transaction by debiting the Common Stock account.
- (4) During 2012, Irish sold timberlands at a gain. It received cash of \$5 million and a long-term note receivable for \$220 million, which it includes in Other Assets on the balance sheet.

EXHIBIT 16.17

Irish Paper Company
Comparative Balance Sheets
 (all amounts in millions of US\$)
 (Problem 12)

On December 31	2014	2013	2012	2011
ASSETS				
Cash	\$ 184	\$ 114	\$ 49	\$ 374
Accounts Receivable (Net)	670	829	723	611
Inventories	571	735	581	522
Prepayments	56	54	54	108
Total Current Assets	\$ 1,481	\$ 1,732	\$ 1,407	\$ 1,615
Investments in Affiliates	333	322	375	254
Property, Plant, and Equipment	7,172	7,079	5,969	5,272
Accumulated Depreciation	(2,977)	(2,698)	(2,392)	(2,160)
Other Assets	484	465	387	175
Total Assets	\$ 6,493	\$ 6,900	\$ 5,746	\$ 5,156
LIABILITIES AND SHAREHOLDERS' EQUITY				
Accounts Payable	\$ 1,314	\$ 1,178	\$ 992	\$ 920
Current Portion of Long-Term Debt	158	334	221	129
Other Current Liabilities	38	83	93	98
Total Current Liabilities	\$ 1,510	\$ 1,595	\$ 1,306	\$ 1,147
Long-Term Debt	2,333	2,455	1,678	1,450
Deferred Income Taxes	661	668	694	607
Total Liabilities	\$ 4,504	\$ 4,718	\$ 3,678	\$ 3,204
Preferred Stock	\$ 7	\$ 7	\$ 7	\$ 7
Common Stock	439	432	428	629
Retained Earnings	1,557	1,758	1,648	1,331
Treasury Stock	(14)	(15)	(15)	(15)
Total Shareholders' Equity	\$ 1,989	\$ 2,182	\$ 2,068	\$ 1,952
Total Liabilities and Shareholders' Equity	\$ 6,493	\$ 6,900	\$ 5,746	\$ 5,156

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- (5) In addition to the preceding cash expenditures, Irish acquired property, plant, and equipment during 2013 costing \$221 million by assuming a long-term mortgage payable.
- (6) During 2014, Irish resold treasury stock for an amount greater than its cost.
- (7) Changes in Other Assets are investing activities.
- Prepare T-account work sheets for a statement of cash flows for Irish for 2012, 2013, and 2014.
 - Prepare a comparative statement of cash flows for Irish for 2012, 2013, and 2014 using the indirect method.
 - Comment on the pattern of cash flows from operating, investing, and financing activities for each of the three years.
13. **Preparing a statement of cash flows.** (Adapted from a problem prepared by Stephen A. Zeff.) Selected information from the accounting records of Breda Enterprises, Inc., appears next. The firm uses a calendar year as its reporting period. Prepare a statement of cash flows for Breda Enterprises for 2014. Use the indirect method. Key all figures in the statement of cash flows to the numbered items below.
- Net income for 2014 is \$90,000.
 - Beginning and ending balances in three accounts relating to the firm's customers were as follows:

	December 31, 2014	December 31, 2013
Accounts Receivable (Gross)	\$53,000	\$41,000
Allowance for Uncollectible Accounts	3,200	1,800
Advances from Customers	1,000	3,700

On November 1, 2014, a customer gave the firm a six-month, 8%, \$15,000 note in satisfaction of an account receivable of \$15,000. Interest is payable at maturity. This was the only note receivable held by the company during 2014.

- (3) The balances in Merchandise Inventory and Accounts Payable were as follows:

	December 31, 2014	December 31, 2013
Merchandise Inventory	\$43,000	\$47,000
Accounts Payable	39,000	27,000

- (4) During 2014 the firm sold, for \$25,000 cash, equipment with a carrying value of \$38,000. The firm also purchased equipment for cash. Depreciation expense for 2014 was \$42,000. The balance in the Equipment account at acquisition cost decreased \$26,000 between the beginning and end of 2014. The balance in the Accumulated Depreciation account increased \$11,000 between the beginning and end of 2014.

- (5) The balances in the Leasehold Asset and Lease Liability accounts were as follows on various dates:

	December 31, 2014	December 31, 2013	December 31, 2012
Leasehold Asset (net)	\$71,000	\$76,000	\$0
Lease Liability	73,600	76,000	0

On December 31, 2013, the firm signed a long-term lease, which, by its terms, qualified as a capital lease. The firm made a payment under the lease of \$10,000 on December 31, 2014.

- (6) The firm declared cash dividends during 2014 of \$26,000, of which \$10,000 remains unpaid on December 31, 2014. During 2014 the firm paid \$8,000 cash for dividends declared during 2013.
- (7) The firm classifies all marketable securities as available for sale. It purchased no marketable securities during 2014 but sold marketable equity securities that had originally cost \$4,500 for \$9,100 cash in November 2014. The fair values of marketable equity securities were \$4,000 on December 31, 2013, and \$10,500 on December 31, 2014. These amounts were also the carrying values of the securities on these two dates.
- (8) Investors in \$100,000 face value of convertible bonds of Breda Enterprises converted them into 8,000 shares of the firm's \$12 par value common stock during 2014. The common stock had a market value of \$15 per share on the conversion date. Breda Enterprises had originally issued the bonds at a premium. Their carrying value on the date of the conversion was \$105,000. The firm chose the generally accepted (alternative) accounting principle of recording the issuance of the common stock at market value and recognizing a loss of \$15,000. The loss is not an extraordinary item. The firm amortized \$1,500 of the bond premium between January 1, 2014, and the date of the conversion.

14. Interpreting the statement of cash flows. Exhibit 16.18 presents a statement of cash flows for Gear Locker, manufacturer of athletic shoes and sportswear, for three recent years.

- What is the likely reason for the negative cash flow from operations?
- How did Gear Locker finance the negative cash flow from operations during each of the three years? Suggest reasons for Gear Locker's choice of financing source for each year.
- Expenditures on property, plant, and equipment substantially exceeded the addback for depreciation expense each year. What is the likely explanation for this difference in amounts?

EXHIBIT 16.18

Gear Locker
Statement of Cash Flows
(all amounts in thousands of US\$)
(Problem 14)

	2014	2013	2012
OPERATIONS			
Net Income	\$ 55,059	\$ 22,030	\$ 4,371
Depreciation	1,199	446	133
Non-cash Compensation to Employees	558	—	—
Increase in Accounts Receivable	(51,223)	(34,378)	(12,410)
Increase in Inventories	(72,960)	(50,743)	(1,990)
Increase in Prepayments	(8,624)	(2,432)	(599)
Increase in Accounts Payable	17,871	7,197	1,656
Increase (Decrease) in Other Current Liabilities	10,587	11,193	(537)
Cash Flow from Operations	<u>\$(47,533)</u>	<u>\$(46,687)</u>	<u>\$ (9,376)</u>
INVESTING			
Sale of Marketable Securities	—	—	\$ 5,661
Acquisition of Property, Plant, and Equipment	\$ (6,168)	\$ (2,546)	(874)
Acquisition of Other Noncurrent Assets	(246)	(406)	(241)
Cash Flow from Investing	<u>\$ (6,414)</u>	<u>\$ (2,952)</u>	<u>\$ 4,546</u>
FINANCING			
Increase (Decrease) in Short-Term Borrowing	\$(19,830)	\$ 50,104	\$ 4,566
Issue of Common Stock	69,925	495	—
Cash Flow from Financing	<u>\$ 50,095</u>	<u>\$ 50,599</u>	<u>\$ 4,566</u>
Change in Cash	\$ (3,852)	\$ 960	\$ (264)
Cash, Beginning of Year	4,205	3,245	3,509
Cash, End of Year	<u>\$ 353</u>	<u>\$ 4,205</u>	<u>\$ 3,245</u>

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- d. The addback for depreciation expense is a relatively small proportion of net income. What is the likely explanation for this situation?
- e. Gear Locker had no long-term debt in its capital structure during 2012 through 2014. What is the likely explanation for such a financial structure?
15. **Interpreting the statement of cash flows.** Exhibit 16.19 presents a statement of cash flows for Canned Soup Company for three recent years (based on financial statements of Campbell Soup Company). Canned Soup Company is in the consumer foods industry, a relatively mature industry in the United States.
- Cash flow from operations each year approximately equals net income plus addbacks for depreciation, deferred taxes, and other. What is the likely explanation for this relation?
 - In the Investing section of Canned's statement of cash flows, what are the indications that the company is in a relatively mature industry?
 - In the Financing section of Canned's statement of cash flows, what are the indications that the company is in a relatively mature industry?
16. **Interpreting the statement of cash flows.** Prime Contracting Services provides various services to government agencies under multi-year contracts. In 2006, the services primarily involved transportation of equipment and furniture. Beginning in 2012, the firm began exiting these transportation services businesses and began offering more people-based services (clerical, training). Sales increased at a compounded annual rate of 28.9% during the five-year period. Exhibit 16.20 presents a statement of cash flows for Prime Contracting Services for 2006 to 2010. Changes in Other Current Liabilities primarily represent salaries.
- What evidence do you see of the strategic shift from asset-based to people-based services?

EXHIBIT 16.19

Canned Soup Company
Statement of Cash Flows
 (all amounts in millions of US\$)
 (Problem 15)

	2014	2013	2012
OPERATIONS			
Net Income	\$ 274	\$ 247	\$ 223
Depreciation	171	145	127
Deferred Income Taxes	31	46	29
Other Addbacks	11	34	21
(Increase) in Accounts Receivable	(55)	(40)	(19)
(Increase) Decrease in Inventories	6	(13)	13
(Increase) in Prepayments	(40)	(11)	(7)
Increase in Accounts Payable	72	53	27
Increase (Decrease) in Other Current Liabilities	(1)	2	29
Cash Flow from Operations	<u>\$ 469</u>	<u>\$ 463</u>	<u>\$ 443</u>
INVESTING			
Sale of Property, Plant, and Equipment	\$ 41	\$ 21	\$ 30
Sale of Marketable Securities	319	535	328
Acquisition of Property, Plant, and Equipment	(245)	(250)	(275)
Acquisition of Marketable Securities	(70)	(680)	(472)
Acquisition of Investments in Securities	(472)	—	—
Other Investing Transactions	(48)	(34)	(5)
Cash Flow from Investing	<u>\$ (475)</u>	<u>\$ (408)</u>	<u>\$ (394)</u>
FINANCING			
Increase in Short-Term Borrowing	\$ 86	\$ 5	—
Increase in Long-Term Borrowing	103	29	\$ 220
Issue of Common Stock	—	2	4
Decrease in Short-Term Borrowing	(5)	—	(3)
Decrease in Long-Term Borrowing	(106)	(27)	(168)
Acquisition of Common Stock	(28)	—	—
Dividends	(103)	(92)	(84)
Cash Flow from Financing	<u>\$ (53)</u>	<u>\$ (83)</u>	<u>\$ (31)</u>
Change in Cash	\$ (59)	\$ (28)	\$ 18
Cash, Beginning of Year	145	173	155
Cash, End of Year	<u>\$ 86</u>	<u>\$ 145</u>	<u>\$ 173</u>

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- b. What are the likely reasons that net income decreased between 2006 and 2013 while cash flow from operations increased during the same period?
- c. What are the likely reasons that net income increased between 2013 and 2010 while cash flow from operations was less during 2014 and 2010 than in 2013?
- d. How has the risk of Prime Contracting Services changed during the five years?
- 17. Interpreting the statement of cash flows.** Exhibit 16.21 presents a statement of cash flows for Cypress Corporation.
- a. What are the likely reasons that net income increased between 2011 and 2013, but cash flow from operations decreased?
- b. What are the likely reasons for the increased cash flow from operations between 2013 and 2015?
- c. How has the risk of Cypress Corporation changed over the five-year period?

EXHIBIT 16.20

Prime Contracting Services
Statement of Cash Flows
 (all amounts in millions of US\$)
 (Problem 16)

	2015	2014	2013	2012	2011
OPERATIONS					
Net Income	\$ 593,518	\$ 412,908	\$ 46,799	\$ 249,438	\$ 261,243
Depreciation	606,633	664,882	826,745	616,335	306,423
Deferred Income Taxes	(154,000)	(110,116)	55,000	179,584	158,966
Loss (Gain) on Disposition of Assets	(35,077)	(117,804)	—	—	20,000
Other	9,100	(19,377)	(51,711)	(7,226)	2,200
(Increase) Decrease in Accounts Receivable	175,408	(864,555)	(263,164)	(647,087)	(1,420,783)
(Increase) Decrease in Other Current Assets	127,548	(9,333)	(40,067)	(25,792)	(38,031)
Increase (Decrease) in Accounts Payable	(166,672)	(272,121)	(32,732)	(177,031)	507,386
Increase (Decrease) in Other Current Liabilities	(416,856)	927,478	422,929	99,417	266,260
Cash Flow from Operations	<u>\$ 739,602</u>	<u>\$ 611,962</u>	<u>\$ 963,799</u>	<u>\$ 287,638</u>	<u>\$ 63,664</u>
INVESTING					
Fixed Assets Sold	\$ 175,075	\$ 117,804	—	—	\$ 80,000
Employee and Officer Loans	—	—	—	\$ 62,894	(16,960)
Fixed Assets Acquired	(48,296)	(19,222)	\$ (56,370)	(911,470)	(2,002,912)
Cash Flow from Investing	<u>\$ 126,779</u>	<u>\$ 98,582</u>	<u>\$ (56,370)</u>	<u>\$ (848,576)</u>	<u>\$ (1,939,872)</u>
FINANCING					
Net Increase (Decrease) in Notes Payable	\$ 325,354	\$ 12,650	\$ (126,932)	\$ 275,475	\$ 204,817
Borrowings Under Equipment Loans	—	—	208,418	793,590	943,589
Borrowings Under Capital Leases	—	—	—	—	915,596
Borrowings from Shareholder Loans	—	—	—	117,422	127,500
Repayments Under Equipment Loans	(736,793)	(437,660)	(564,585)	(389,268)	(236,229)
Repayments Under Capital Leases	—	(304,054)	(296,495)	(268,556)	(124,012)
Repayments Under Shareholder Loans	(28,710)	—	(150,000)	—	(63,077)
Cash Flow from Financing	<u>\$ (440,149)</u>	<u>\$ (729,064)</u>	<u>\$ (929,594)</u>	<u>\$ 528,663</u>	<u>\$ 1,768,184</u>
Change in Cash	\$ 426,232	\$ (18,520)	\$ (22,165)	\$ (32,275)	\$ (108,024)
Cash, Beginning of Year	5,913	24,433	46,598	78,873	186,897
Cash, End of Year	<u>\$ 432,145</u>	<u>\$ 5,913</u>	<u>\$ 24,433</u>	<u>\$ 46,598</u>	<u>\$ 78,873</u>

18. Deriving cash flows from financial statement data; comprehensive review, including other comprehensive income. Exhibit 16.22 presents financial data, including a partial statement of cash flows, for LKR Company for the year. Fill in the numbers in the statement of cash flows. (*Hint:* Work from the bottom up.) Then respond to the following questions. Use positive numbers for cash inflows (receipts) and negative numbers for cash outflows (expenditures).

- What were the proceeds of sale of the old Buildings and Equipment?
- What were the proceeds of sale of the Securities Available for Sale?
- What were the purchases during the year of new Securities Available for Sale?
- During the year, the market value of the Securities Available for Sale changed while LKR held them. By how much did the aggregate market value increase or decrease? Give the amount and whether *increase* or *decrease*.
- What dividends, if any, did LKR receive from its 40% owned affiliate?
- What was the net income, if any, of the 90% owned subsidiary?

EXHIBIT 16.21

Cypress Corporation
Statement of Cash Flows
(all amounts in thousands of US\$)
(Problem 17)

	2015	2014	2013	2012	2011
OPERATING					
Net Income	\$ 6,602	\$ 6,583	\$ 3,716	\$ 1,733	\$ 1,045
Depreciation and Amortization	643	586	513	490	491
Other Addbacks	299	151	243	25	20
Other Subtractions	(97)	0	0	0	0
Working Capital Provided by Operations	\$ 7,447	\$ 7,320	\$ 4,472	\$ 2,248	\$ 1,556
(Increase) Decrease in Receivables	4,456	(5,452)	(3,589)	(2,424)	(750)
(Increase) Decrease in Inventories	1,068	1,867	(7,629)	(4,111)	(1,387)
Increase (Decrease) Accts. Pay—Trade	(2,608)	1,496	1,393	2,374	1,228
Increase (Decrease) in Other Current Liabilities	(1,508)	1,649	4,737	2,865	473
Cash Flow from Operations	\$ 8,855	\$ 6,880	\$ (616)	\$ 952	\$ 1,120
INVESTING					
Fixed Assets Acquired (Net)	\$(1,172)	\$(1,426)	\$ (749)	\$ (849)	\$ (347)
Marketable Securities Acquired	(3,306)	0	0	0	0
Other Investment Transactions	39	(64)	81	0	45
Cash Flow from Investing	\$(4,439)	\$(1,490)	\$ (668)	\$ (849)	\$ (302)
FINANCING					
Increase in Short-Term Borrowing	\$ 0	\$ 0	\$ 2,800	\$ 700	\$ 0
Increase in Long-Term Borrowing	0	0	0	0	0
Issue of Capital Stock	315	0	0	0	0
Decrease in Short-Term Borrowing	0	(3,500)	0	0	0
Decrease in Long-Term Borrowing	(170)	(170)	(170)	(170)	(170)
Acquisition of Capital Stock	0	0	0	0	(27)
Dividends Paid to Shareholders	(2,243)	(1,427)	(964)	(730)	(614)
Other Financing Transactions	0	0	0	0	0
Cash Flow from Financing	\$(2,098)	\$(5,097)	\$ 1,666	\$ (200)	\$ (811)
Change in Cash	\$ 2,318	\$ 293	\$ 382	\$ (97)	\$ 7
Cash, Beginning of Year	1,540	1,247	865	962	955
Cash, End of Year	\$ 3,858	\$ 1,540	\$ 1,247	\$ 865	\$ 962

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- g. What was the amount of expenditure for the year for warranty service, repairs, and replacements?
- h. What was the amount of accounts receivable LKR wrote off as uncollectible during the year?
- i. What was the total depreciation deduction LKR claimed on its income tax return for the year?
- j. What were total cash dividends LKR paid during the year?
- k. What was total cash flow for or from *Financing* activities for the year?
- l. What was total cash flow for or from *Investing* activities for the year?
- m. What was total cash flow for or from *Operations* for the year?
- n. What were the total receipts from customers for the year?
- o. What were the total expenditures for inventory during the year?

EXHIBIT 16.22
LKR Company
Statement of Earnings and Comprehensive Income
(Problem 18) (continued)

Balance Sheet	End of Year 31 December	Start of Year 1 January	ADDITIONAL INFORMATION
ASSETS			
Cash	\$ 65,000	\$ 52,000	Asset Sale: Initial Cost of B&E Sold During Year Was: \$40,000
Accounts Receivable	197,000	184,000	
Allowance for Uncollectibles	(43,000)	(41,000)	No Purchases or Sales of Shares of Affiliates and Subsidiaries During Year; LKR Owns 40% of Affiliate and 90% of Subsidiary.
Advances to Suppliers of Inventory	4,000	5,000	
Inventory at FIFO Cost	212,000	192,000	
Allowance to Reduce to LIFO Valuation	(58,000)	(50,000)	
Prepaid Income Taxes	—	18,000	Cost of Securities Available for Sale Sold During Year Was: \$4,000
Deferred Income Taxes	9,800	9,000	
Investment in Securities Available for Sale	80,000	68,000	Fair Value on Dates of Sale of Securities Available for Sale Sold During the Year Was: \$5,000
Investment in Affiliate	13,700	13,000	
Land	39,000	28,000	Income Tax Rate was 40%; All Deferred Tax Assets Result from Warranties and Uncollectible Accounts Causing Temporary Differences
Buildings and Equipment (Cost)	858,000	790,000	
Accumulated Depreciation	(504,000)	(460,000)	All Deferred Tax Liabilities Result from Depreciation Causing Temporary Differences
Total Assets	<u>\$ 873,500</u>	<u>\$ 808,000</u>	
LIABILITIES AND SHAREHOLDERS' EQUITY			
Accounts Payable for Inventory	\$ 141,000	\$ 136,000	Accumulated Other Comprehensive Income Relates only to Investments in Securities Available for Sale
Advances from Customers	6,000	14,000	
Warranty Liability	28,000	28,000	Income Tax Rate was 40%; All Deferred Tax Assets Result from Warranties and Uncollectible Accounts Causing Temporary Differences
Interest Payable	8,000	10,000	
Income Taxes Payable	19,000	—	All Deferred Tax Liabilities Result from Depreciation Causing Temporary Differences
Deferred Income Taxes	34,400	32,000	
Mortgage Payable	118,000	120,000	Accumulated Other Comprehensive Income Relates only to Investments in Securities Available for Sale
Minority Interest in Subsidiary	2,100	1,000	
Common Stock	257,000	250,000	Income Tax Rate was 40%; All Deferred Tax Assets Result from Warranties and Uncollectible Accounts Causing Temporary Differences
Retained Earnings	236,000	200,000	
Accumulated Other Comprehensive Income	24,000	17,000	All Deferred Tax Liabilities Result from Depreciation Causing Temporary Differences
Total Liabilities and Shareholders' Equity	<u>\$ 873,500</u>	<u>\$ 808,000</u>	

- p. What were the total expenditures for income taxes during the year?
- q. Did LKR use a LIFO or a FIFO cost-flow assumption for the year?
- r. By what amount would LKR's pretax income for the year have changed if LKR had used the other cost-flow assumption? Give the amount and whether *larger* or *smaller*.
- s. By the end of the year, what was LKR's total unrealized holding gain on inventory?
- t. Refer to the total unrealized holding gain in the preceding question. In which of the following is that gain more likely reflected in the statements for the current year?
 - A. Other Comprehensive Income
 - B. Accumulated Other Comprehensive Income
 - C. Net Income
 - D. Retained Earnings
 - E. None of the above

Synthesis and Extensions

1. Review the conceptual framework underlying the authoritative guidance for financial reporting and potential changes in that framework.
2. Synthesize the financial reporting standards and concepts discussed in previous chapters.
3. Summarize certain differences in financial reporting between U.S. GAAP and IFRS.
4. Extend your understanding of the reporting and disclosure of income statement information, including the nature and reporting of transactions, accounting errors and adjustments, earnings per share, and segment reporting.

LEARNING OBJECTIVES

SECTION 1: REVIEW AND SYNTHESIS

CONCEPTUAL FRAMEWORK

The FASB and the IASB use a conceptual framework to guide their standard-setting decisions. The FASB and the IASB have separately developed most of their conceptual frameworks, which are similar. The conceptual framework is not a rigorous set of principles from which standard setters logically deduce appropriate financial reporting standards. Rather, the conceptual framework guides standard-setting decisions in order to enhance the quality and consistency of those decisions. **Figure 17.1** summarizes the components of the conceptual framework.

The FASB and IASB are working to develop a common conceptual framework, and have issued converged conceptual guidance on the objectives of general purpose financial reporting and qualitative characteristics of decision useful information. We discuss the direction of the FASB-IASB conceptual framework efforts in the following sections. We designate in parentheses the chapters that discuss these topics more fully.

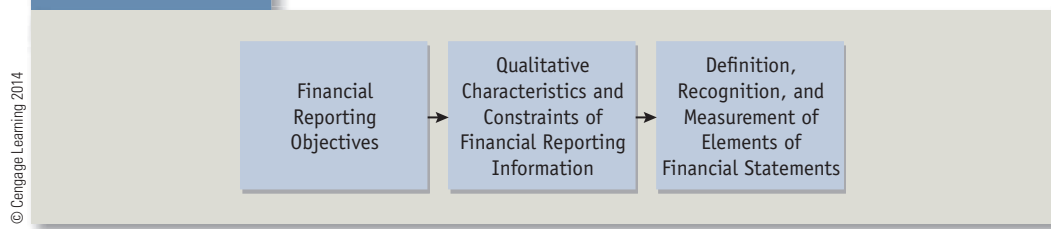
FINANCIAL REPORTING OBJECTIVES (CHAPTER 1)

Financial reporting objectives speak to the purpose of financial reports and the primary users and uses of those reports. The FASB and IASB have completed the portion of their conceptual framework project that specifies the objectives of financial reporting.¹ The resulting conceptual guidance lists the following financial reporting objectives:

¹FASB, *Statement of Financial Accounting Concepts No. 8*, “Chapter 1: The Objective of General Purpose Financial Reporting, and Chapter 3: Qualitative Characteristics of Useful Financial Information,” 2010; International Accounting Standards Board, *The Conceptual Framework for Financial Reporting 2010*, 2010.

FIGURE 17.1

Components of the Conceptual Framework



1. Provide information useful for making decisions about providing resources to an entity, including buying, selling, or holding debt and equity instruments and providing or settling loans and other forms of credit.
2. Provide information to help current and potential investors and creditors assess the amount, timing, and uncertainty of future cash flows.
3. Provide information about the economic resources of an entity and the claims on those resources, as well as changes in those resources and related claims.
4. Provide information about an entity's operating performance during a period.
5. Provide information about how an entity obtains and uses cash (its cash flows).
6. Provide information about how management has discharged its responsibilities to make efficient and effective use of the entity's resources.

These objectives identify investors and creditors, both current and potential, as the principal users of financial reports. They also identify the provision of information to make investment and credit decisions as the principal purpose of financial reporting. This portion of the conceptual framework specifies that financial reports are not intended to show the value of the reporting entity, but rather to provide information to help financial statement users estimate that value. The IASB and FASB acknowledge that individual financial statement users may have different and possibly conflicting information needs and desires, and that general purpose financial reporting may not be able to meet these potentially specialized needs. Finally, the IASB and FASB acknowledge that financial reports are based on estimates, judgments, and models and specify the conceptual framework as establishing the concepts that underlie those estimates, judgments and models.

QUALITATIVE CHARACTERISTICS OF FINANCIAL REPORTING INFORMATION (CHAPTER 1)

The *qualitative characteristics* describe the attributes that determine the usefulness of financial reporting information. The FASB's *Concepts Statement 8*, Chapter 3, and the IASB's *Conceptual Framework 2010* set forth the following fundamental and enhancing qualitative characteristics:

1. **Relevance**, described as a fundamental qualitative characteristic, refers to information that can make a difference in a resource allocation decision. Information is relevant when it helps users to form predictions about the outcomes of future events and to confirm or correct prior information or expectations. Receiving information in a timely manner (referred to as *timeliness*, included as an enhancing qualitative characteristic), so that it can influence decisions, increases the relevance of financial information.
2. **Faithful representation**, described as a fundamental qualitative characteristic, refers to the faithfulness with which accounting information represents what it purports to represent. Faithful representation encompasses completeness, neutrality, and freedom from error. Completeness means that all the necessary information is present. Neutrality refers to an absence of bias in the selection or presentation of financial information. Freedom from error is not used to mean entirely accurate in all respects; rather, the freedom from error refers to the process that generates the financial information.
3. **Comparability**, described as an enhancing qualitative characteristic, refers to financial reporting that treats similar items the same way and different items differently. **Consistency** refers to financial reporting that applies the same accounting method to the same items,

either across firms or over time. The conceptual framework describes consistency as helping to achieve comparability.

4. **Verifiability**, described as an enhancing qualitative characteristic, means that different knowledgeable and independent observers would reach consensus that a specific depiction is a faithful representation.
5. **Understandability**, described as an enhancing qualitative characteristic, means that information is classified, characterized and presented clearly and concisely.

The conceptual framework also discusses **materiality**, which refers to whether the effect of relevant information is large enough to influence a decision, and **cost constraints**, which refer to the idea that in developing authoritative guidance, standard setters weigh the benefits of financial reporting information to users of financial reports against the costs of providing that information.

The conceptual framework distinguishes between the fundamental qualitative characteristics and the enhancing qualitative characteristics in the following ways. First, both relevance and representational faithfulness are necessary conditions for useful financial information. Second, the enhancing qualitative characteristics, whether considered individually or as a group, cannot make information useful if that information is not relevant and not representationally faithful. Third, it may be necessary to diminish an enhancing characteristic in order to increase a fundamental characteristic, for example, reducing comparability to increase relevance.

DEFINITION, RECOGNITION, AND MEASUREMENT OF ELEMENTS OF FINANCIAL STATEMENTS (CHAPTERS 4 AND 5)

The elements of financial statements are the building blocks for the balance sheet and income statement. The principal elements are as follows:

Balance Sheet

1. Asset
2. Liability
3. Equity

Income Statement

1. Revenue
2. Expense
3. Gains and losses

In addition to discussing these financial statement elements, this section also discusses two related concepts: (1) income and (2) accrual accounting.

Asset The FASB's conceptual framework defines an asset as a probable future economic benefit that is obtained or controlled by an entity as a result of a past transaction or event. The IASB's conceptual framework defines an asset as a resource controlled by an entity as a result of a past event and from which a firm expects future economic benefits. Like the definition of an asset, the criteria for asset recognition are similar under the two frameworks:

1. The firm owns or controls the right to use the asset.
2. The right to use the item arises as a result of a past transaction or event.
3. The future benefit has a relevant measurement attribute that a firm can quantify with sufficient reliability.

The two conceptual frameworks also discuss measurement attributes for assets. Measurement attributes include, for example, acquisition cost, current replacement cost, and net realizable value.

The definition of an asset and the recognition criteria focus on a “past transaction” and “measurable future benefits”:

- The existence of a past transaction demonstrates that the firm has undertaken a past economic sacrifice to acquire the asset.
- The existence of measurable future benefits enables assessments of the amount of future benefits the firm will receive from the asset.

This definition of an asset excludes certain transactions. For example, it excludes the expected benefits that arise from rights under executory contracts (mere exchanges of promises) because the conceptual framework does not view the signing of a contract, in isolation, as evidence of a past transaction. As another example, the asset definition excludes expected benefits arising from transactions where the receipt of future benefits depends on the outcome of a future event.

As part of their joint conceptual framework project, the FASB and the IASB are reconsidering both the definition of an asset and the criteria for asset recognition. Their proposed definition emphasizes the *present* existence of an economic resource and de-emphasizes the notions of a *past* exchange and *future* benefits. Resources would satisfy the definition of an asset if (1) the entity can separate the resources from the entity (by sale, or exchange, or license, or other disposal), or (2) the resources arise from contractual or other legal rights, suggesting that negotiations between independent parties in establishing the rights permit estimation of value, even if the entity cannot exchange the item.

Asset recognition criteria also focus on which entity should recognize an asset. The issue is particularly pertinent as it applies to asset *derecognition*. Derecognition refers to the removal of an asset from a firm's balance sheet. Standard setters have changed the criteria for asset derecognition several times over the last 30 years.

Asset recognition criteria also affect the treatment of expenditures that create future benefits, but the firm cannot measure those future benefits with sufficient reliability. Examples include expenditures for creating a brand name and for researching new technologies. U.S. GAAP and IFRS differ in the extent to which they require firms to recognize a portion of these expenditures as assets versus treating the expenditures fully as expenses. A related issue is the inconsistent treatment of expenditures incurred internally versus amounts spent to acquire brand names, technologies, and other intangibles in external market transactions.

Liability The FASB's conceptual framework defines a liability as a probable future sacrifice of economic resources arising from present obligations of a particular entity to transfer assets or provide services to other entities in the future as a result of past transactions or events. The IASB's framework defines a liability as a present obligation of an entity arising from past events, the settlement of which is expected to result in an outflow of resources embodying economic benefits. The criteria for recognition of a liability are as follows:

1. The obligation represents a present obligation, not a potential future commitment or intent.
2. The obligation exists as a result of a past transaction or exchange, called the *obligating event*.
3. The obligation requires the probable future sacrifice of an economic resource that the firm has little or no discretion to avoid.
4. The obligation has a relevant measurement attribute that the firm can quantify with sufficient reliability.

Firms report many financial liabilities as the present value of the amount payable, except that firms can ignore discounting for liabilities due within one year. Nonfinancial liabilities, those settled by providing goods and services instead of cash, typically appear at either the amount of cash received (for example, advances from customers) or the expected cost of providing goods and services (for example, warranty liability).

Obligations under executory contracts do not usually appear as liabilities because they do not represent a present obligation. Authoritative guidance² that exists as this book goes to press distinguishes between operating leases, accounted for as executory contracts, and leases accounted for as capital, or finance, leases. Firms also do not recognize certain obligations that are uncertain as to amount or timing or both as liabilities, unless those items meet a probability threshold and have a reliable measurement attribute. U.S. GAAP refers to these unrecognized obligations, such as the possible obligation under an unsettled lawsuit, as unrecognized *contingencies*, and IFRS uses the term *contingent liability*.

As previously discussed for assets, the FASB and the IASB are reconsidering the definition of a liability. Their proposed definition focuses on a *present* obligation and de-emphasizes a *past* obligating event and a probable *future* sacrifice of resources. For example, the proposed

²As discussed in Chapter 10.

definition might result in the recognition of certain executory contracts as liabilities, and the recognition of more obligations with uncertain amount or timing as liabilities.

The FASB and the IASB are reconsidering the role of uncertainty, or probability, in the definition, recognition, and measurement of liabilities. Existing recognition criteria include a probable future sacrifice of resources; one issue involves the minimum probability level to warrant recognition of an uncertain obligation as a liability. U.S. GAAP does not specify a minimum probability level for recognition of a liability, although the rule of thumb in practice is approximately 80%. IFRS specifies that *probable* means more likely than not, implying greater than 50%.

Sometimes the FASB and the IASB view probability of payment as relating to measurement of a liability, not to its definition and recognition. One of the characteristics of a fair value measurement is that the measurement does not embody a minimum probability for recognition. For example, an entity that guarantees the debt of another entity has incurred an unconditional obligation to stand ready to repay the other entity's debt. The probability of having to make a payment does not affect the existence of that unconditional obligation. Under current guidance, the *unconditional* obligation is a liability, measured at fair value incorporating both the probability of payment and the possible amounts of payment. Also under current guidance, the *conditional* obligation, which depends on whether the guaranteed firm is able to repay the debt, does not appear as a liability until it becomes probable, typically, when it is probable that the guaranteed firm will not be able to repay the debt. While a guarantee—an unconditional obligation—is initially measured at fair value, the conditional obligation is measured at the most likely amount.

Equity Equity, or shareholders' equity for a corporation, is the residual interest of owners in the assets of an entity, after subtracting liabilities. Equity is a measure of assets exchanged by owners in return for an ownership interest and net assets generated by earnings activities in excess of net assets distributed to owners as dividends. Repurchases by a firm of its ownership interests reduce equity. Firms may issue equity interests with different rights, such as one class of common stock with 10 votes per share and another class of common stock with one vote per share.

Hybrid securities have characteristics of both debt and equity. Examples include convertible bonds and some preferred stock issues subject to redemption.³

Revenue The FASB's conceptual framework defines revenues as inflows or other enhancements of assets of an entity or settlements of its liabilities from delivering or producing goods, rendering services, or other activities that constitute the entity's ongoing major or central operations. The IASB's conceptual framework defines income as increases in economic benefits during an accounting period in the form of inflows or enhancements of assets or decreases in liabilities that result in increases in equity, other than those relating to contributions from equity investors. Under current authoritative guidance, firms recognize revenue (U.S. GAAP) or income (IFRS) when they satisfy two conditions:

1. **Completion of the earnings process.** The firm has done all, or nearly all, it has promised to do for the customer.
2. **Receipt of assets from the customer.** The firm has received either cash or some other asset that the firm can convert into cash, for example, by collecting an account receivable.

Firms measure revenue as the amount of cash they expect to collect from customers. If firms expect to receive cash more than one year after the time of recognizing revenue, they measure revenues at the present value of the amount of cash they expect to receive.

Arrangements with multiple deliverables create difficulties in the timing and measurement of revenues. For example, if a firm sells a product bundled with an obligation to provide additional services over time, should the firm recognize the selling price for the bundled product and services at the time of delivery of the product? Or, should the firm recognize revenue from the sale of the product at the time of delivery and revenue from the services as the firm renders the services? How should the firm measure the portion of the selling price related to the product and the portion related to the services? The joint IASB-FASB revenue recognition project, in progress as this textbook goes to press, will address these and other revenue recognition and measurement issues.

³Chapter 15 discusses the accounting for such securities.

Expenses The FASB's conceptual framework defines expenses as outflows or other using up of assets or incurrences of liabilities from delivering or producing goods, rendering services, or carrying out other activities that constitute the entity's ongoing major or central operations. The IASB's conceptual framework defines expenses as decreases in economic benefits during an accounting period in the form of outflows or depletions of assets or incurrences of liabilities that result in decreases in equity, other than those relating to distributions to equity investors. Firms recognize expenses under the following conditions:

1. The consumption of an asset (or incurrence of a liability) results from a transaction that leads to the recognition of revenue. That is, firms attempt to match expenses with associated revenues.
2. The consumption of an asset (or incurrence of a liability) results from the passage of time and does not lead to the creation of another asset.

Firms measure expenses at the same amount as the asset consumed or the liability incurred.

Gains and Losses Gains (losses) are increases (decreases) in net assets from peripheral or incidental transactions of an entity and from other transactions and events affecting the entity except those that result from revenues (expenses) or investments by (distributions to) owners. Firms usually report gains and losses from sales of assets or settlements of liabilities at a net amount; the net amount equals the difference between the net asset received and the carrying value of the asset sold or between the net asset given and the carrying value of the liability settled. Gains and losses may also arise from the remeasurement of assets and liabilities. Firms recognize gains and losses when those items enter the measurement of net income or other comprehensive income. Firms realize gains and losses when they sell or exchange assets or settle liabilities in arms-length transactions.

COMPREHENSIVE INCOME, NET INCOME, AND OTHER COMPREHENSIVE INCOME

Comprehensive income equals the net amount of revenues, expenses, gains, and losses during an accounting period; it equals the change in net assets of the firm during a period except from transactions with the firm's owners. Authoritative guidance classifies revenues and expenses arising from a firm's core business as components of net income. In addition to revenues and expenses, net income also includes gains and losses from sales or exchanges of assets or settlements of liabilities related incidentally or peripherally to the firm's core business. Authoritative guidance classifies gains and losses from the remeasurement of certain assets and liabilities as either net income or other comprehensive income. The IASB's and FASB's conceptual frameworks do not contain a conceptual model for classifying items in net income versus in other comprehensive income. Firms reclassify gains and losses initially classified in other comprehensive income into net income when a specified subsequent event occurs. At the end of every accounting period, firms close amounts in other comprehensive income for that period to Accumulated Other Comprehensive Income, a shareholders' equity account that acts for other comprehensive income the way retained earnings acts for net income. Comprehensive income for a period equals net income plus other comprehensive income.

Accrual Accounting Accrual accounting measures the effects of transactions and events in the periods when they occur. In contrast, cash-basis accounting recognizes only cash receipts and disbursements. Under accrual accounting, firms recognize revenues when an arrangement satisfies the revenue recognition criteria previously listed, which increases net assets, but not necessarily cash, at the time of revenue recognition. Firms recognize expenses when an arrangement satisfies one of the two expense recognition criteria previously listed, decreasing net assets, but not necessarily cash, at the time of expense recognition. Accrual accounting often uses the amount of cash received or paid in some period to measure the amount of revenues and expenses recognized during the current period, but the timing of revenue and expense recognition does not necessarily coincide with the timing of cash receipts and disbursements. Accrual accounting underlies the measurements of revenues and expenses on the income statement.

Accrual accounting also affects balance sheet carrying amounts. Firms report economic resources with measurable future benefits as assets, even if the resources are not cash. Firms report obligations arising from economic benefits received in the past as liabilities, even though

the firm has not yet paid cash. Shareholders' equity reflects changes in the residual interest of owners from transactions involving capital stock and from earnings activities independent of when cash flows in or out of a firm.

Accrual accounting separates the timing of recognition in the income statement and the balance sheet from the timing of cash flows. Therefore, the need arises for a financial statement that reports the effects of operating, investing, and financing activities on cash flows.⁴

Entity The definitions of financial statement elements, including assets, liabilities, revenues, and expenses, refer to a reporting entity. The concept of a reporting entity pertains to a group of entities pursuing a common business purpose, typically, under the control of one of the entities in the group. For example, a single entity may operate through subsidiaries, joint ventures, trusts, partnerships, and other corporations. It may control some or all of these other entities. The concept of control includes both the power, or capacity, to direct the strategic, operating, investing, and financing activities of another entity, and the ability to benefit from increases in the value of the other entity and to incur losses from decreases in value.

Both U.S. GAAP and IFRS often refer to ownership of a majority of the voting stock of another entity as indicating control, unless evidence indicates that the majority owner cannot exercise control. IFRS has a more expansive definition of control than does U.S. GAAP, including conditions under which one entity controls another with a less-than-majority voting interest. Firms sometimes operate through entities that lack economically meaningful ownership interests, like a trust, or entities where control arises through arrangements such as contractual rights without ownership of voting stock. Identifying the reporting entity in these cases is more difficult.

SYNTHESIS OF FINANCIAL REPORTING STANDARDS AND CONCEPTS

Authoritative guidance in accounting exists for particular assets, liabilities, shareholders' equity, revenues, expenses, gains, and losses.⁵ This section summarizes the required accounting. We indicate in parentheses the chapter that discusses the particular financial reporting guidance more fully.

Ideally, financial reporting standards should flow from and be consistent with the financial reporting objectives, qualitative characteristics of accounting information, and elements of financial statements that comprise the FASB's and the IASB's conceptual frameworks. Although these conceptual frameworks guide the development of financial reporting standards, they are not intended as a rigorous set of principles from which standard-setting bodies can (and must) logically deduce acceptable accounting methods. In some cases, standards conflict with the conceptual frameworks. Standards take precedence over the conceptual frameworks.

REVENUE RECOGNITION (CHAPTER 8)

Under guidance that exists as this book goes to press, firms recognize revenue when they have (1) completed an earnings process or performed most or all of their obligations to customers, usually the delivery of a product or service, and (2) received cash or a receivable capable of sufficiently reliable measurement. In some cases firms apply the revenue recognition criteria to each component of an arrangement with multiple deliverables. Firms that sell products under long-term contracts, such as construction companies, often recognize revenue using the percentage-of-completion method. U.S. GAAP allows the use of the completed contract method when firms cannot reasonably estimate revenues and costs, whereas IFRS requires a variant of the cost-recovery method under these circumstances (the firm recognizes revenues in a period equal to costs incurred that period, until all costs have been recovered). As this book goes to press, the FASB and IASB are in the process of creating converged and improved guidance for revenue recognition.

⁴This is the purpose of the statement of cash flows, discussed in **Chapters 6 and 16**.

⁵As discussed in **Chapters 8 to 15**.

ACCOUNTS RECEIVABLE (CHAPTER 8)

Firms report accounts receivable they expect to collect within one year at the amount of cash the firms expect to receive. This amount may differ from the amount owed by customers (that is, the gross receivable) because of estimated uncollectible accounts. Firms with significant uncollectible accounts receivable must estimate the amount of uncollectible accounts each accounting period and recognize bad debt expense each accounting period. Firms typically use a contra account, Allowance for Uncollectible Accounts, to reflect the amount of accounts receivable they do not expect to collect. The entry to recognize estimated uncollectible amounts involves a debit to Bad Debt Expense and a credit to Allowance for Uncollectible Accounts. The write-off of a particular customer's account that becomes uncollectible involves a debit to Allowance for Uncollectible Accounts and a credit to Accounts Receivable, Gross. Common terminology refers to this accounting as the *allowance method*.⁶

INVENTORIES (CHAPTER 9)

Firms initially record inventories at acquisition cost. Acquisition cost for a merchandising firm includes the costs incurred to purchase and transport the inventory prior to sale. Acquisition cost for a manufacturing firm includes the direct material, direct labor, and manufacturing overhead cost to produce the inventory.

If the market values of inventory items decline below acquisition cost prior to sale, firms must reduce the inventory carrying value using the lower of cost or market method. With a few narrow exceptions (for example, precious metals), neither U.S. GAAP nor IFRS permits firms to remeasure inventories upward when market value exceeds acquisition cost. If the market values of inventories increase during a period, IFRS permits firms to recognize the unrealized gain to the extent that the firm had previously recognized an unrealized loss on those inventory items. U.S. GAAP does not permit recognition of such reversals of previously recognized unrealized losses.

Firms measure the cost of goods sold and the amount of ending inventories for a period either using specific identification or making a cost-flow assumption. U.S. GAAP permits firms to use a first-in, first-out (FIFO), weighted-average, and last-in, first-out (LIFO) cost-flow assumption. IFRS does not permit the use of LIFO.

PROPERTY, PLANT, AND EQUIPMENT (CHAPTER 10)

Firms initially record property, plant, and equipment, sometimes referred to as *fixed assets*, at acquisition cost. Acquisition cost equals the cash paid or the fair value of other consideration given in exchange for the asset. Acquisition cost includes all costs necessary to prepare the asset for its intended use. Firms capitalize into the asset's carrying amount subsequent expenditures that extend the service life or increase the benefits of a fixed asset beyond those initially anticipated. Buildings and equipment have a finite life, so firms must depreciate their acquisition cost less estimated salvage value over the expected service life. Firms may use a straight-line method or an accelerated depreciation method. If new information indicates that the expected service life or estimated salvage value differs significantly from that initially anticipated, the firm revises its depreciation prospectively.

IFRS permits firms to remeasure property, plant, and equipment upward for increases in fair value under certain conditions. U.S. GAAP does not permit such upward remeasurements. Firms must test property, plant, and equipment for possible asset impairment when conditions indicate that a significant decrease in fair value has occurred.

INTANGIBLES OTHER THAN GOODWILL (CHAPTER 10)

U.S. GAAP and IFRS require firms to treat some or all expenditures made to *internally* develop brand names, customer lists, new technologies, and other intangibles as expenses in the period of the expenditure. U.S. GAAP treats all such expenditures as expenses of the period (except for certain software development costs). IFRS treats research costs as immediate

⁶Firms also use the allowance method to account for estimated sales discounts, returns, and allowances (Chapter 8), as well as for warranties (Chapter 9).

expenses but treats qualifying development costs as assets. Development costs are expenditures made after a research project reaches the stage of technical feasibility.

In contrast to costs incurred internally to develop intangibles, U.S. GAAP and IFRS require firms to recognize as assets the identifiable intangibles that the firm acquires in external market transactions. The exchange between an independent buyer and seller provides evidence of the existence of expected future benefits, and the exchange price provides evidence of the fair value of those benefits. Identifiable intangibles include patents, trademarks, customer lists, and other economic resources ready for use, as well as in-process research and development. Identifiable intangible assets have either finite (definite) lives or indefinite lives. Indefinite does not mean infinite, only not knowable. Firms do not amortize assets with indefinite lives. Firms must amortize intangible assets with finite lives. Firms must also test both definite-lived and indefinite-lived intangible assets for impairment.

GOODWILL (CHAPTERS 10 AND 14)

Goodwill arises when a firm acquires another entity in an external market transaction and pays more for that entity than the fair value of the identifiable assets net of identifiable liabilities. Goodwill is the excess of the amount paid for the acquired entity over the fair value of identifiable net assets. Goodwill has an indefinite life and, therefore, is not amortized. Firms must test goodwill at least annually for impairment.

NOTES AND BONDS (CHAPTER 11)

U.S. GAAP and IFRS account for notes and nonconvertible bonds payable similarly. Firms initially record long-term notes and bonds at their issue price. The issue price equals the present value of the future contractual cash flows discounted at the market interest rate for the bonds at the time of issue (the *effective interest rate*). If the effective interest rate equals the coupon rate for the bonds, the firm will issue the bonds for face value. If the effective interest rate exceeds the coupon rate, the firm will issue the bonds for less than face value (a *discount*). If the coupon rate exceeds the effective interest rate, the firm will issue the bonds for more than face value (a *premium*).

Firms must amortize discounts and premiums over the life of the bonds. Amortization follows the effective interest method, in which interest expense each period equals the effective interest rate times the carrying value of the debt at the beginning of the period. The difference between interest expense and any cash payment affects the carrying value of the debt. The difference increases the carrying value of the debt for bonds originally issued at a discount and decreases the carrying value of the debt for bonds originally issued at a premium. Firms that repay debt prior to maturity record a gain or loss for the difference between the carrying value of the debt and the amount paid to repay the debt.

Firms must disclose the fair value of long-term notes and bonds in notes to the financial statements. Fair value is the amount the firm would pay to settle the debt on the date of the balance sheet. For debt that trades on active markets, fair value is the current market price of those traded debt securities. For other debt items, firms measure fair value using techniques and assumptions that market participants would use. For example, one approach would be to discount the contractual cash flows at the current market interest rate that reflects factors that market participants would consider, including the item's credit risk.

Firms can adopt the fair value option for long-term notes and bonds. If so, the balance sheet carrying amounts for these items are the fair value amounts that they would disclose in the notes if they did not adopt the fair value option. The offsetting debit or credit for the remeasurement is to an unrealized loss or gain. Under the fair value option, this unrealized loss or gain is included in net income.

LEASES (CHAPTER 11)

Following guidance in effect as this book goes to press, firms account for leases using either the operating lease method or the capital (finance) lease method. The operating lease method treats leases as executory contracts: neither the leased asset nor the lease liability is recognized on the lessee's balance sheet. The lessor (lessee) recognizes rent revenue (rent expense) as the lessee uses the leased asset over time. The capital lease method treats leases equivalent to installment purchases: the lessee borrows funds from the lessor to purchase the asset, and the lessor

recognizes profit at the time of sale. The lessee records the leased asset and the lease liability on the balance sheet at the present value of the contractual cash flows at the time of signing the lease. The lessee amortizes the leased asset, similar to recognizing depreciation on buildings and equipment. The lessee recognizes interest expense on the lease liability, similar to recognizing interest expense on long-term notes or bonds. The lessor records the signing of a capital lease the same as if the lessor sold the leased asset for a lease receivable. The lessor records the lease receivable at the present value of the contractual cash flows, removes the cost of the leased asset from its accounting records, and recognizes income for the difference. Over time, the lessor recognizes interest revenue in amounts paralleling interest expense recognized by the lessee.

U.S. GAAP and IFRS provide criteria for distinguishing operating leases from capital leases. These criteria attempt to identify the entity that enjoys the benefits and incurs the risks of the leased asset. When the lessor enjoys the benefits and bears the risk, the lease is an operating lease. When the lessee enjoys the benefits and bears the risk, the lease is a capital lease. U.S. GAAP provides four criteria, any one of which qualifies a lease as a capital lease. IFRS provides more general criteria. As this textbook goes to press, the FASB and IASB are in the process of creating converged and improved accounting guidance for leases.

RETIREMENT BENEFITS (CHAPTER 12)

U.S. GAAP and IFRS require firms to recognize the cost of retirement benefits (primarily, pensions and health care) as an expense while employees work, not when they receive payments or other benefits during retirement. Employers often contribute cash to a trust, an entity legally separate from the employer, to fund their retirement obligations. The trust invests the funds received to generate an investment return. Payments to employees come from both the employer's contributions and investment returns. The accounting records of the trust are separate from the accounting records of the employer, and the amounts on the two sets of books usually differ.

Firms do not consolidate the retirement trust. The employer must, however, report the net funded status of each defined benefit retirement plan (that is, the fair value of retirement trust assets minus the retirement trust obligation) as either an asset or a liability on its balance sheet. The offsetting credit (for an overfunded plan) or debit (for an underfunded plan) is to Other Comprehensive Income. Notes to the financial statements provide information about investments made by the retirement trust and how trust assets and liabilities changed during a period.

Although an employer must recognize changes in the funded status of a defined benefit retirement plan on its balance sheet each period, under U.S. GAAP, the employer does not recognize these changes immediately in net income. Changes in the net funded status of a defined benefit retirement plan because investment performance differs from expectations (or because of changes in actuarial assumptions, or in the retirement benefit formula) initially affect other comprehensive income and are then amortized into net income. Under IFRS, certain changes in the net funded status can appear in other comprehensive income but are not amortized into net income.

INCOME TAXES (CHAPTER 12)

Income before taxes for financial reporting usually differs from taxable income reported to tax authorities. The differences arise because of (1) permanent differences (items that affect income for financial reporting but never affect taxable income, or vice versa) or (2) temporary differences (items that affect income for financial reporting in a period different than for tax reporting). Firms must measure income tax expense based on income for financial reporting (excluding permanent differences). Income tax authorities impose taxes on taxable income. The difference between income tax expense and income tax payable represents the tax effects of temporary differences:

$$\text{Income Tax Expense} - \text{Income Tax Payable} = \text{Changes in Deferred Tax Assets and Deferred Tax Liabilities}$$

Deferred tax assets and deferred tax liabilities can change because of temporary differences and because of changes in income tax rates affecting future tax benefits and obligations. The net deferred tax asset reported on a firm's balance sheet will also change with changes in the valuation allowance for deferred tax assets.

MARKETABLE SECURITIES (CHAPTER 13)

Firms sometimes acquire bonds or capital stock of other entities for their expected returns (through interest, dividends, and price appreciation) without any intent to exert influence or control over the other entity. U.S. GAAP and IFRS presume that the acquisition of any amount of bonds, and the acquisition of less than 20% of the voting stock of another entity, implies an inability to exert significant influence or control. Firms account for such securities as passive investments. Firms classify such securities into three categories:

1. Debt securities held to maturity (IFRS uses the term *held-to-maturity investments*).
2. Trading securities (IFRS uses the term *financial assets at fair value through profit or loss*).
3. Securities available for sale (IFRS uses the term *available-for-sale financial assets*).

Marketable securities with an expected holding period of less than one year appear in current assets on the balance sheet (Marketable Securities), and those with an expected holding period longer than one year appear in noncurrent assets (Marketable Securities or Investments in Securities).

U.S. GAAP and IFRS prescribe the following accounting for marketable securities:⁷

1. Debt securities held to maturity: amortized acquisition cost, subject to impairment.
2. Trading securities: fair value, with unrealized gains and losses recognized in net income.
3. Securities available for sale: fair value, with unrealized gains and losses recognized in other comprehensive income as fair values change and realized gains and losses, measured as disposal proceeds less amortized acquisition cost, recognized in net income at the time of sale. Amortized acquisition cost means acquisition cost for non-debt securities. Securities available for sale are also subject to impairment testing.

Firms can apply the fair value option to marketable securities, in which case firms account for debt securities held to maturity and securities available for sale as if they were trading securities. Firms remeasure these securities to fair value each period and recognize unrealized gains and losses in net income.

DERIVATIVE INSTRUMENTS (CHAPTER 13)

Firms often acquire derivative instruments to hedge interest rate, exchange rate, commodity price, and other risks. U.S. GAAP and IFRS classify derivatives into three categories:

1. Fair value hedges of a recognized asset or liability or of an unrecognized firm commitment.
2. Cash flow hedges of an existing asset or liability or of a forecasted transaction.
3. Nonhedging derivative.

Firms must designate each derivative as a hedging instrument, or else accounting views the derivative as a nonhedging instrument. Furthermore, firms must designate each hedging instrument as either a fair value hedge or a cash flow hedge. The following summarizes the accounting for each of these three categories of derivatives:

1. Fair value hedges: remeasure both the hedged item and the derivative to fair value each period and recognize any unrealized gains and losses in net income.
2. Cash flow hedges: remeasure the derivative to fair value each period and include the unrealized gain or loss in other comprehensive income to the extent that the derivative instrument is effective in neutralizing risk. When the firm settles the hedged item, transfer the previously unrealized gain or loss from other comprehensive income to net income.
3. Nonhedging derivatives: remeasure the derivative to fair value each period and include the unrealized gain or loss in net income.

Firms can apply the fair value option to derivatives. Under the fair value option, the principal change in accounting for derivatives relates to cash flow hedges. Changes in the fair value of cash flow hedges affect net income as they occur instead of initially affecting other comprehensive income.

⁷As described in the **Appendix to Chapter 13**, IFRS 9, with an effective date in 2015, would change the IFRS requirements for marketable securities.

INTERCORPORATE INVESTMENTS IN COMMON STOCK (CHAPTER 14)

Firms sometimes invest in the common stock of other entities in order to exert significant influence or control over the other entity. U.S. GAAP and IFRS assume that firms owning between 20% and 50% of the voting stock of another entity can exert significant influence, and firms owning more than 50% can exert control, unless other information indicates the contrary. In addition, IFRS specifies conditions under which one entity controls another with a less-than-majority ownership interest.

A firm applies the equity method to account for an intercorporate investment if that firm can exert significant influence over the investee. The investor recognizes its share of the net income or net loss of the investee, after eliminating any intercompany income items, and increases (in the case of net income) or decreases (in the case of net loss) its investment account in an equal amount. The investor decreases the investment account for dividends received. If the acquisition cost of the investment exceeds the investor's interest in the net assets of the investee at the time of the acquisition, the investor must decide if the excess relates to assets of the investee with a limited life. If so, the investor must amortize a portion of the acquisition cost of the investment to reflect the decline in expected benefits.

A firm that controls another entity prepares consolidated financial statements with that entity. The consolidated financial statements reflect the results of the legally separate entities as if they were a single entity. Thus, consolidated financial statements eliminate intercompany balance sheet and income statement accounts and intercompany profit or loss on transactions between the entities. If the parent company does not own 100% of the other entity, the remaining shareholders hold a noncontrolling (or minority) interest. Consolidated balance sheets consolidate all of the assets and liabilities of the controlled entity and then show the claim of noncontrolling shareholders against consolidated net assets as part of shareholders' equity. Likewise, consolidated income statements consolidate all of the revenues and expenses of the controlled entity and then show the portions of the consolidated net income to which the noncontrolling shareholders and the controlling shareholders have a claim.

EMPLOYEE STOCK OPTIONS (CHAPTER 15)

Firms compute a fair-value-based measure of employee stock options on the date of the grant using an option-pricing model that incorporates information about the current market price, the exercise price, the expected time between grant and exercise, the expected volatility of the stock, the expected dividends, and the risk-free interest rate. Total compensation cost is the number of options the firm expects to vest times the value per option. Firms amortize this total cost over the service period, which is the expected period of benefit. This period is usually the period between the grant date and the vesting date. Firms do not typically remeasure stock options after the initial grant date.

ISSUE OF SECURITIES WITH WARRANTS ATTACHED OR CONVERSION FEATURES (CHAPTER 15)

Firms sometimes issue bonds with stock warrants attached. They allocate the amount received between the bonds and the warrants based on their respective fair values. When firms issue conventional convertible bonds, in which the conversion option is settled by issuing shares, U.S. GAAP requires firms to allocate the full issue price to the bonds and none to the conversion feature. IFRS, however, requires firms to allocate the issue price between the bonds and the conversion feature. The allocation involves estimating the issue price of bonds with terms similar to those issued but without the conversion feature. The firm allocates this amount to the bonds and the remainder of the issue price to the conversion option.

TREASURY SHARES (CHAPTER 15)

Firms recognize no gain or loss from purchasing their own shares or reissuing previously purchased shares. Differences between the purchase price and reissue price are not earnings transactions but affect contributed capital accounts. Firms account for the purchase of treasury shares using the cost method, or the par value method, or the constructive retirement method. These methods differ in terms of the shareholders' equity accounts affected, but all result in an equal reduction in total shareholders' equity when firms purchase their own shares.

SUMMARY OF FINANCIAL REPORTING STANDARDS

Exhibit 17.1 summarizes certain differences between U.S. GAAP and IFRS. This exhibit also appears on the inside front cover of the book. The FASB and the IASB have agreed to plans for improving and converging some of U.S. GAAP and IFRS to a single set of high-quality standards. The Web sites of the FASB and IASB contain information on the current status of various convergence activities. As previously described in this book, some of the differences shown in **Exhibit 17.1** would be eliminated by completion of joint convergence projects.

► PROBLEM 17.1 FOR SELF-STUDY

Review of Chapters 1–16. A set of financial statements for Kaplan Corporation follows, including a consolidated income statement for 2013 (**Exhibit 17.2**), a comparative consolidated balance sheet on December 31, 2012 and 2013 (**Exhibit 17.3**), and a consolidated statement of cash flows for 2013 (**Exhibit 17.4**). A series of eight notes provides additional information on certain items in the financial statements.

Respond to each of the questions beginning after the eight notes, using information from the financial statements and notes for Kaplan Corporation. We suggest that you study the statements and notes carefully before attempting to respond to the questions.

Note 1: Kaplan Corporation applies the following accounting policies:

- *Basis of consolidation.* Kaplan Corporation consolidates its financial statements with those of Heimann Corporation, an 80%-owned subsidiary acquired on January 2, 2012.
- *Marketable securities.* Kaplan Corporation classifies its marketable securities as available for sale. These securities appear at fair value.
- *Accounts receivable.* Kaplan Corporation uses the allowance method for uncollectible accounts.
- *Inventories.* Kaplan Corporation uses a last-in, first-out (LIFO) cost-flow assumption for inventories and cost of goods sold.
- *Investments.* Kaplan Corporation reports investments of less than 20% of the outstanding common stock of other companies at fair value and applies the equity method for investments of 20% to 50% of the outstanding common stock of unconsolidated affiliates.
- *Buildings and equipment.* Kaplan Corporation uses the straight-line method of depreciation for financial reporting and uses accelerated depreciation for tax reporting.
- *Patent.* The corporation amortizes patents straight line over a period of 10 years.
- *Interest on long-term debt.* The calculation of interest expense on bonds payable uses the effective interest method.
- *Deferred income taxes.* The corporation provides deferred income taxes for temporary differences between book income and taxable income.

Note 2: Marketable securities appear at fair values that are less than their acquisition cost by \$50,000 on December 31, 2012, and by \$70,000 on December 31, 2013.

Note 3: Accounts receivable appear net of an allowance for uncollectibles of \$200,000 on December 31, 2012, and \$250,000 on December 31, 2013. Selling and administrative expenses include bad debt expense of \$120,000.

Note 4: Inventories comprise the following:

	December 31, 2013	December 31, 2012
Raw Materials	\$ 380,000	\$ 330,000
Work-in-Process	530,000	460,000
Finished Goods	<u>2,200,000</u>	<u>1,800,000</u>
Total	<u>\$3,110,000</u>	<u>\$2,590,000</u>

(continued)

EXHIBIT 17.1

Examples of Differences Between U.S. GAAP and IFRS

Chapter	Reporting Topic	U.S. GAAP	IFRS
8	Revenue recognition	Must have delivered a product or service in return for net assets capable of sufficiently reliable measurement. Over 200 documents provide industry-specific and transaction-specific guidance.	One general standard and a few documents with industry-specific guidance. For long-term contracts, use percentage-of-completion method if amounts are estimable. Otherwise, use cost-recovery method. Completed contract method not permitted.
9	Inventories and cost of goods sold: lower of cost or market	Measurement of market value uses a combination of replacement cost and net realizable values.	Measurement of market value uses net realizable value.
9	Inventories: cost flow	Specific identification, FIFO, weighted-average, and LIFO cost-flow assumptions permitted.	Specific identification, FIFO, and weighted-average cost-flow assumptions permitted. LIFO not permitted.
10	Property, plant, and equipment: revaluations above acquisition cost	Not permitted.	Permitted under certain conditions.
10	Research and development cost	Recognize as an expense in the period incurred, except for certain software development costs.	Recognize research costs as an expense in the period incurred. Capitalize certain development costs and amortize them over the expected period of benefit.
10	Property, plant, and equipment: impairment loss	If carrying value exceeds undiscounted cash flows value, recognize an impairment loss equal to the excess of carrying value over fair value.	Recognize an impairment loss for the excess of carrying value over recoverable amount. Recoverable amount is larger of the fair value less cost to sell and the value in use. Can subsequently reverse the impairment loss but not above acquisition cost.
10	Intangible assets with finite lives: impairment loss	If undiscounted cash flows exceed carrying value, recognize an impairment loss equal to the excess of carrying value over fair value.	Recognize an impairment loss for the excess of carrying value over recoverable amount. Recoverable amount is the larger of the fair value less cost to sell and the value in use. Can subsequently reverse the impairment loss but not above acquisition cost.
10	Intangible assets, other than goodwill, with indefinite lives: impairment loss	Recognize an impairment loss for the excess of carrying value over fair value.	Recognize an impairment loss for the excess of carrying value over recoverable amount. Recoverable amount is the larger of the fair value less cost to sell and the value in use. Test these assets annually for impairment losses and recoveries of impairment losses.
10	Goodwill: impairment loss	<p>Step 1: Compare the carrying value to the fair value of a reporting unit. If the carrying value exceeds the fair value, proceed to Step 2.</p> <p>Step 2: Allocate the fair value of the reporting unit to assets and liabilities based on their fair values and any excess to goodwill. Recognize an impairment loss on the goodwill if the carrying value exceeds the allocated fair value.</p> <p>Step 3: Test goodwill annually for impairment loss or whenever a goodwill impairment loss is probable. Firms may also apply a qualitative impairment test.</p>	<p>Step 1: Compare the carrying value to the recoverable amount for a cash-generating unit.</p> <p>Step 2: Recognize an impairment loss for any excess of carrying value over recoverable amount of the cash-generating unit. First write down goodwill and then allocate any remaining loss to other assets based on their relative recoverable amounts.</p> <p>Step 3: Test goodwill annually for impairment losses.</p>
12	Contingent obligations (U.S. GAAP) and provisions (IFRS)	Recognize as liabilities if payment is probable (probability usually exceeds 80%). Measure at the most likely amount or at the low end of range if no one estimate is better than any other.	Recognize as liabilities if payment is more likely than not (probability exceeds 50%). Measure at the best estimate of the amount to settle the obligation.
11	Leases	A lease is a capital lease if it satisfies one of four conditions; otherwise, it is an operating lease.	Judgment required based on several indicators to identify the entity that enjoys the benefits and bears the risks of leasing.
15	Convertible bonds	Unless the conversion option can be settled in cash, allocate issue price entirely to bonds and none to conversion option.	Allocate issue price between the bonds and the conversion option.

EXHIBIT 17.2

**Kaplan Corporation
Consolidated Income Statement For 2013
(all amounts in thousands of US\$)
(Problem 17.1 for Self-Study)**

REVENUES AND GAINS	
Sales	\$12,000
Equity in Earnings of Unconsolidated Affiliates	300
Dividend Revenue	20
Gain on Sale of Marketable Securities	30
Total Revenues and Gains	<u>\$12,350</u>
EXPENSES AND LOSSES	
Cost of Goods Sold	\$ 7,200
Selling and Administrative	2,709
Loss on Sale of Equipment	80
Interest (Notes 7 and 8)	561
Total Expenses and Losses	<u>\$10,550</u>
Net Income Before Income Taxes	\$ 1,800
Income Tax Expense	540
Net Income	<u>\$ 1,260</u>

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The current cost of inventories exceeded the amounts computed on a LIFO basis by \$420,000 on December 31, 2012, and \$730,000 on December 31, 2013.

Note 5: Burton Corporation had net income of \$400,000 and paid dividends of \$75,000 in 2013.

Note 6: On January 2, 2012, Kaplan Corporation acquired 100% of the outstanding common shares of Heimann Corporation by issuing 20,000 shares of Kaplan Corporation common stock. The fair value of Kaplan Corporation’s shares on January 2, 2012, was \$40 per share. The fair values of the recorded assets and liabilities of Heimann Corporation equal their carrying values. Kaplan Corporation attributes any difference between the acquisition price and the fair value of the recorded net assets to a patent that Heimann Corporation developed internally. Kaplan Corporation amortizes the patent over a period of 10 years from the date of acquisition.

Note 7: Current liabilities include a one-year, 5% note payable due on January 1, 2014.

Note 8: Bonds payable are as follows:

	December 31, 2013	December 31, 2012
4%, \$2,000,000 Bonds Due December 31, 2018, with Interest Payable Semiannually	\$1,829,390	\$1,800,920
10%, \$3,000,000 Bonds Due December 31, 2022, with Interest Payable Semiannually	3,379,790	3,407,720
8%, \$1,000,000 Bonds Due December 31, 2028, with Interest Payable Semiannually	<u>1,000,000</u>	<u>1,000,000</u>
Total	<u>\$6,209,180</u>	<u>\$6,208,640</u>

Required

- a. Kaplan Corporation sold marketable securities originally costing \$180,000 during 2013. Ascertain the price at which it sold these securities.
- b. Refer to part a. Compute the cost of marketable securities purchased during 2013.

(continued)

EXHIBIT 17.3

Kaplan Corporation
Consolidated Balance Sheets
December 31, 2012 and 2013
 (all amounts in thousands of US\$)
 (Problem 17.1 for Self-Study)

	December 31, 2013	December 31, 2012
ASSETS		
Current Assets		
Cash	\$ 2,919	\$ 1,470
Marketable Securities (Note 2)	550	450
Accounts Receivable (Net; Note 3)	2,850	2,300
Inventories (Note 4)	3,110	2,590
Prepayments	970	800
Total Current Assets	<u>\$10,399</u>	<u>\$ 7,610</u>
Investments (Note 5)		
Investment in Maher Corporation (10%)	\$ 185	\$ 200
Investment in Johnson Corporation (30%)	410	310
Investment in Burton Corporation (40%)	930	800
Total Investments	<u>\$ 1,525</u>	<u>\$ 1,310</u>
Property, Plant, and Equipment		
Land	\$ 500	\$ 400
Buildings	940	800
Equipment	3,800	3,300
Total Acquisition Cost	\$ 5,240	\$ 4,500
Less Accumulated Depreciation	(930)	(1,200)
Net Property, Plant, and Equipment	<u>\$ 4,310</u>	<u>\$ 3,300</u>
Patent (Note 6)	80	90
Total Assets	<u>\$16,314</u>	<u>\$12,310</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current Liabilities		
Note Payable (Note 7)	\$ 2,000	\$ —
Accounts Payable	1,425	1,070
Salaries Payable	900	1,100
Interest Payable	100	0
Income Taxes Payable	375	250
Total Current Liabilities	<u>\$ 4,800</u>	<u>\$ 2,420</u>
Long-Term Liabilities		
Bonds Payable (Note 8)	\$ 6,209	\$ 209
Deferred Tax Liability	940	820
Total Long-Term Liabilities	<u>\$ 7,149</u>	<u>\$ 7,029</u>
Shareholders' Equity		
Common Shares (\$10 par value)	\$ 600	\$ 500
Additional Paid-In Capital	1,205	800
Accumulated Other Comprehensive Income:		
Unrealized Loss on Marketable Securities	(70)	(50)
Unrealized Loss on Investments in Securities	(40)	(25)
Retained Earnings	2,690	1,666
Total	<u>\$ 4,385</u>	<u>\$ 2,891</u>
Less Treasury Shares (at cost)	(20)	(30)
Total Shareholders' Equity	<u>\$ 4,365</u>	<u>\$ 2,861</u>
Total Liabilities and Shareholders' Equity	<u>\$16,314</u>	<u>\$12,310</u>

EXHIBIT 17.4

**Kaplan Corporation
Consolidated Statement of Cash Flows for 2013
(all amounts in thousands of US\$)
(Problem 17.1 for Self-Study)**

OPERATIONS		
Net Income		\$ 1,260
Additions:		
Depreciation	560	
Deferred Taxes	120	
Loss on Sale of Equipment	80	
Excess of Interest Expense over Coupon Payments	28	
Amortization of Patent	10	
Increase in Accounts Payable	355	
Increase in Interest Payable	100	
Increase in Income Taxes Payable	125	
Subtractions:		
Gain on Sale of Marketable Securities	(30)	
Equity in Earnings of Affiliates in Excess of Dividends Received	(180)	
Amortization of Premium on Bonds	(28)	
Increase in Accounts Receivable	(550)	
Increase in Inventories	(520)	
Increase in Prepayments	(170)	
Decrease in Salaries Payable	<u>(200)</u>	
Cash Flow from Operations		\$ 960
INVESTING		
Sale of Marketable Securities	\$ 210	
Sale of Equipment	150	
Investment in Johnson Corporation	(50)	
Purchase of Marketable Securities	(300)	
Acquisition of:		
Land	(100)	
Building	(300)	
Equipment	<u>(1,400)</u>	
Cash Flow from Investing		(1,790)
FINANCING		
Increase in Notes Payable	\$ 2,000	
Common Stock Issued	500	
Treasury Stock Sold	15	
Dividends	<u>(236)</u>	
Cash Flow from Financing		<u>2,279</u>
Net Change in Cash		\$ 1,449
Cash, January 1		<u>1,470</u>
Cash, December 31		<u>\$ 2,919</u>

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- c. What was the amount of specific customers' accounts that Kaplan Corporation wrote off as uncollectible during 2013?
- d. Compute the amount of cash collected from customers during the year.
- e. Compute the cost of units completed and transferred to the finished goods inventory during 2013.

(continued)

- f. Direct labor and overhead costs incurred in manufacturing during 2013 totaled \$4,500,000. Compute the cost of raw materials purchased during 2013.
- g. Assume that the amounts disclosed in **Note 4** for the current cost of inventories represent the amounts that would result from using a first-in, first-out (FIFO) cost-flow assumption. Compute the cost of goods sold if the firm had used FIFO rather than LIFO.
- h. Prepare an analysis that explains the causes of the changes in each of the three intercorporate investment accounts.
- i. Prepare an analysis that explains the change in each of the following accounts during 2013: Land; Building; Equipment; and Accumulated Depreciation.
- j. Give the journal entry that Kaplan Corporation made on January 2, 2012, when it acquired Heimann Corporation.
- k. Compute the carrying value of the net assets of Heimann Corporation on January 2, 2012.
- l. Kaplan Corporation initially priced the 4% bonds payable to yield 6% compounded semiannually. The firm initially priced the 10% bonds to yield 8% compounded semiannually. Show that \$1,800,920 and \$3,407,720 (see **Note 8**) are the correct carrying values for these two bond issues on December 31, 2012.
- m. Calculate the amount of interest expense and any change in the carrying value of the bond liability for 2013 on each of the three long-term bond issues (see **Note 8**).
- n. Compute the amount of income taxes actually paid during 2013.
- o. On July 1, 2013, Kaplan Corporation issued 10,000 shares of its common stock for \$50 cash per share. Prepare an analysis explaining the change during 2013 in each of the following accounts: Common Shares; Additional Paid-in Capital; Retained Earnings; and Treasury Shares.

SECTION 2: EXTENSIONS

MORE ON THE MEASUREMENT AND REPORTING OF INCOME

The primary purpose of the income statement is not to show the amount of net income (or loss) for the period. The reader of the financial statements can generally ascertain net income (or loss) by subtracting the beginning balance of the Retained Earnings account from its ending balance and adjusting for dividends. Income statements help users of financial reports understand the nature and amounts of a firm's revenues, gains, expenses, and losses. This information permits the reader to compare a company's performance with other companies (cross-sectional analysis) or with the company itself over time (time-series analysis) and to make more informed projections about the future.⁸

Previous chapters concentrated on *measuring* the results of income transactions. This section focuses on *reporting*, or *disclosing*, income transactions in the financial statements and notes. The principal topics we describe are:

1. How does the nature of an earnings item affect users' perceptions of that item? How do firms report information in the income statement to enable users to understand the nature of earnings items?

⁸Chapter 7 describes cross-sectional analysis and time-series analysis.

2. How do errors, changes in accounting principles, and changes in accounting estimates affect the reporting of income? How and when are these items reported in the income statement?
3. Firms commonly report earnings attributed to shares of common stock (earnings-per-share). What is earnings-per-share and how is it calculated?
4. Some firms operate in single product lines and single geographic regions. Other, more diversified or more complex firms operate in multiple product lines or businesses or in multiple geographic regions. Does accounting require a diverse/complex firm to report separate financial information for its distinct segments? How does accounting define segments? What information must a firm report about its segments?

NATURE AND REPORTING OF INCOME TRANSACTIONS

To motivate an understanding of the issues involved in understanding the nature and reporting of income transactions, consider the data for Bernard Company in **Exhibit 17.5**. To simplify the illustration, we assume that revenues result in immediate cash receipts, expenses require immediate cash expenditures, and we ignore taxes. Thus, income flows equal cash flows.

Suppose that an analyst wished to value Bernard Company using the present value of the cash flows of its individual activities, some recurring and some not. Assume the discount rate appropriate for finding the present value of Bernard’s cash flows is 10% per year. Valuation classes discuss the issues related to choosing the discount rate, and the **Appendix** to this book introduces the techniques of present value analysis.

Bernard Company engages in six activities, numbered 1 through 6, shown in **Exhibit 17.5**.

Activity 1. The first activity generates \$100 per year, with the cash flow at the end of each year, indefinitely. The present value of this activity is \$1,000 (= \$100/0.10). (See the discussion of the present value of a perpetuity in the **Appendix**.)

Activity 2. The second activity generates \$30 at the end of the first year, and a cash flow that grows by 6% per year thereafter. The present value of this activity is \$750 [= \$30/(0.10 – 0.06)]. (See the discussion of the valuation of a growing perpetuity in the **Appendix**.)

Activity 3. The third activity is cyclic, generating \$115 per year at the end of each odd-numbered year. The present value of this activity is \$602.38.

Activity 4. The fourth activity is nonrecurring, generating a single cash flow of \$120 at the end of the first year, with present value of \$109.09 (= \$120/1.10) at the start of the first year.

EXHIBIT 17.5

Bernard Company
Measurement of a Firm’s Value from Cash Flow Data

Activities of the Firm	Cash Flows Occur at the End of Each Period								Present Value of Activity Using Discount Rate of 10%	
	Period Number									
	1	2	3	4	5	6	7	8		
1. Recurring	\$100	\$100	\$100	\$100	\$100	\$100	\$100	\$100	...	\$1,000.00
2. Recurring and Growing at 6% per Year	30	32	34	36	38	40	43	45	...	750.00
3. Cyclic	115	0	115	0	115	0	115	0	...	602.38
4. Nonrecurring	120	0	0	0	0	0	0	0	...	109.09
5. Recurring	(40)	(40)	(40)	(40)	(40)	(40)	(40)	(40)	...	(400.00)
6. Nonrecurring	(70)	0	0	0	0	0	0	0	...	(63.64)
Net Income for Year 1	<u>\$255</u>									
										<u>\$1,997.83</u>
										Present Value of Entire Firm . . .

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Activity 5. The fifth activity, an expenditure (outflow), uses \$40 of cash each year, at the end of each year. The present value of this activity is $-\$400 (= -\$40/0.10)$.

Activity 6. The sixth activity, a single expenditure (outflow), uses \$70 cash at the end of the first year and has present value of $-\$63.64 (= -\$70/1.10)$.

The value of the firm is the sum of the present values of its individual activities, \$1,997.83 in **Exhibit 17.5**. In this example, most of the value of the firm comes from the recurring activities. In deriving firm values, investors generally care about recurring activities more than non-recurring ones. This is because recurring activities add value each year whereas nonrecurring activities, by definition, happen once or infrequently.

Exhibit 17.5 shows net income of \$255 (recall that we assume income equals cash flows). How can analysts and investors deduce the value of the company from this one year's income statement? The answer is they can't. This firm is too complex for even a sophisticated user to derive the value from a single piece or column of data. To estimate a firm's value, investors and analysts need information about the components of a firm's net income and their recurring versus nonrecurring nature. Because recurring items are easier to predict, analysts are more confident estimating the value of firms with recurring activities than firms with nonrecurring activities.

OVERVIEW OF REPORTING OF INCOME TRANSACTIONS

The sections that follow discuss the reporting of various income items. We begin by providing an overview of this reporting.

1. Firms must initially report the results of most income transactions in the income statement instead of bypassing the income statement and reporting the amounts in some other shareholders' equity account. This reporting reflects the emphasis that analysts and investors place on the income statement when evaluating a firm's operating performance. It also reflects the concern that statement users might overlook income transactions if they were reported elsewhere.
2. U.S. GAAP and IFRS recognize that some income transactions are central to a firm's principal business activities and recur, while others are peripheral or nonrecurring. Firms must report items in their income statements in a way that informs users about the nature (recurring versus non-recurring) of income items.
3. Changes in the fair values of assets and liabilities affect the value of a firm as they occur. A firm recognizes some of these fair value changes in net income as they occur even though it has not yet sold the asset for cash or settled the liability. (Sales or settlements confirm the amount of the value change.) Firms must delay reporting fair value changes of other assets and liabilities in net income until confirming events occur. In the meantime, firms include such value changes in Other Comprehensive Income; this account is closed to Accumulated Other Comprehensive Income, a component of shareholders' equity.
4. Firms sometimes discover errors in amounts previously reported, change their accounting principles, or change estimates made in applying their accounting principles. Firms must retrospectively restate previously reported amounts for material corrections of errors and some changes in accounting principles. Both U.S. GAAP and IFRS require firms to adjust current and future amounts for changes in accounting estimates and some changes in accounting principles.

We examine the reporting of four types of earnings transactions, which succeeding sections discuss and illustrate more fully:

1. Recurring versus nonrecurring.
2. Central versus peripheral.
3. Unrealized versus realized gains and losses from changes in the fair values of assets and liabilities.
4. Adjustments for errors and changes in accounting principles and accounting estimates.

The accounting for these four items affects the user's interpretation of reported net income and the forecasting of future net income. U.S. GAAP and IFRS aid this analysis process by requiring firms to classify income transactions in particular ways in the financial statements.

REPORTING RECURRING/NONRECURRING AND CENTRAL/PERIPHERAL ACTIVITIES

An analyst likely asks two questions when using a firm’s past profitability to project its likely future profitability:

1. Does the income item result from an activity in which a firm will likely continue its involvement, or does the income item result from a transaction or event that is unlikely to recur?
2. Does the income item result from a firm’s primary operating activity (creating and selling a good or service to customers) or from an activity incidental or peripheral to the primary operating activity (for example, sales of equipment previously used by the firm in manufacturing)?

Figure 17.2 depicts these distinctions, with examples of each. A financial statement user who wants to evaluate a firm’s ongoing operating profitability will likely focus on income items in the upper left cell. A financial statement user who wants to project net income of prior periods into the future would likely focus on the two *recurring income* cells. Income items in the nonrecurring cells should not affect long-term assessments of profitability. The following discussion considers the reporting of each type of income item.

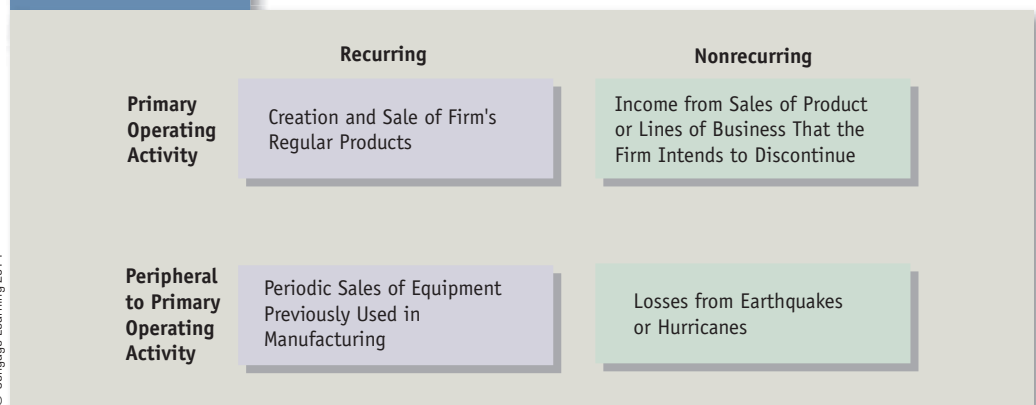
MEASUREMENT OF INCOME

U.S. GAAP and IFRS distinguish between revenues and expenses on the one hand and gains and losses on the other. Revenues and expenses result from the recurring, primary operating activities of a business (upper left cell in **Figure 17.2**). Income items in this first category are the ordinary, recurring operating activities of the firm. Gains and losses result from either peripheral activities (lower left cell) or nonrecurring activities (upper and lower right cells). A second distinction is the reporting of revenues and expenses at gross amounts, versus the reporting of gains and losses at net amounts. The following examples illustrate this distinction.

Example 1 Thames sells a communications system to a customer for €400,000 cash. The cost to Thames of the system is €300,000. Thames records this sale as follows:

Cash	400,000	
Sales Revenue		400,000
To record sale.		
Cost of Goods Sold	300,000	
Finished Goods Inventory		300,000
To record the cost of goods sold.		

FIGURE 17.2 Nature of Income Items with Examples



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This transaction fits into the upper left cell of **Figure 17.2** (primary/recurring). The income statement reports both sales revenue and cost of goods sold, providing information to the financial statement user regarding both the cost to Thames of the system and Thames's ability to mark up this cost in setting selling prices. Retained earnings increase by €100,000 as a result of this transaction. Notice that the €100,000 amount does not itself appear in the income statement. Rather, income increases by €100,000 as a result of sales of €400,000 offset with cost of goods sold of €300,000.

Example 2 Great Deal sells computers previously used for processing data in its stores. This sale relates only peripherally to Great Deal's primary operating activity, which is to sell *new*, as opposed to used, consumer electronics. Assume that the computers originally cost \$500,000 and have \$200,000 of accumulated depreciation at the time of sale. Thus, the computers have a net carrying value of \$300,000. The sale of these computers for \$400,000 cash results in the following journal entry on Great Deal's books:

Cash	400,000	
Accumulated Depreciation	200,000	
Equipment		500,000
Gain on Sale of Equipment		100,000
Disposal of computers for \$100,000 more than carrying value.		

This transaction fits into the lower left cell of **Figure 17.2** (peripheral/recurring). The income statement reports only the \$100,000 gain on the sale, not the selling price of \$400,000 and the carrying value of \$300,000. The income statement reports gains and losses at net, instead of gross, amounts because, presumably, financial statement users do not need information about the individual components comprising peripheral or nonrecurring income items. The gain on the sale increases retained earnings by \$100,000.

Note that both revenues and gains appear as credits in journal entries and increase Retained Earnings. Both expenses and losses appear as debits in journal entries and reduce Retained Earnings. To repeat, revenues and expenses report operating or central items as gross amounts; gains and losses report nonrecurring or peripheral items as net amounts.

CLASSIFICATION IN THE INCOME STATEMENT

Income statements contain some or all of the following sections or categories, depending on the nature of a firm's earnings for the period:⁹

1. Income from continuing operations.
2. Income, gains, and losses from discontinued operations.
3. For financial statements prepared under U.S. GAAP, extraordinary gains and losses. IFRS does not use the term *extraordinary* but does require the separate disclosure of material income items, along with suggested circumstances and items that would qualify for separate disclosure.¹⁰

Many income statements include only the first section. **Exhibit 17.6** presents an income statement for Gavan Company that includes all three sections.

Income from Continuing Operations Revenues, gains, expenses, and losses from the continuing areas of business activity of a firm appear in the first section of the income statement, **Income from Continuing Operations**. This section includes income derived from a firm's primary business activities as well as from activities peripherally related to operations. The firm expects these sources of earnings to continue. Firms without the nonrecurring categories of earnings for a particular year (discussed next) need not use the title *Income from*

⁹Accounting Principles Board, *Opinion No. 30*, "Reporting the Results of Operations," 1973 (**Codification Topic 225**); FASB, *Statement of Financial Accounting Standards No. 130*, "Reporting Comprehensive Income," 1997 (**Codification Topic 225**); IASB, *International Accounting Standard 1*, "Presentation of Financial Statements," revised 2011.

¹⁰IASB, *International Accounting Standard 1*, "Presentation of Financial Statements," revised 2011, para. 87 precludes the presentation of any item of comprehensive income as extraordinary.

EXHIBIT 17.6

Gavan Company
Income Statement
 (all except per share amounts in millions of US\$)

	2013	2012	2011
INCOME FROM CONTINUING OPERATIONS			
Sales	\$ 295	\$ 265	\$ 240
Cost of Goods Sold	(165)	(154)	(144)
Selling and Administrative Expenses	<u>(67)</u>	<u>(58)</u>	<u>(50)</u>
Operating Income	\$ 63	\$ 53	\$ 46
Interest Revenue	7	5	4
Interest Expense	(22)	(19)	(15)
Gain on Sale of Equipment	<u>3</u>	<u>9</u>	<u>4</u>
Income from Continuing Operations Before Taxes	\$ 51	\$ 48	\$ 39
Income Taxes	<u>(17)</u>	<u>(16)</u>	<u>(13)</u>
Income from Continuing Operations	<u>\$ 34</u>	<u>\$ 32</u>	<u>\$ 26</u>
INCOME, GAINS, AND LOSSES FROM DISCONTINUED OPERATIONS			
Income (Loss) from Operations of Division Sold in 2013 (Net of Income Taxes)	\$ 2	\$ (4)	\$ 16
Gain on Sale of Division (Net of Income Taxes)	<u>40</u>	<u>—</u>	<u>—</u>
Income from Discontinued Operations	<u>\$ 42</u>	<u>\$ (4)</u>	<u>\$ 16</u>
EXTRAORDINARY GAINS AND LOSSES			
Loss from Hurricane (net of income taxes)	<u>—</u>	<u>\$ (12)</u>	<u>—</u>
Net Income	<u>\$ 76</u>	<u>\$ 16</u>	<u>\$ 42</u>
EARNINGS PER COMMON SHARE			
Continuing Operations	\$ 3.09	\$ 3.04	\$ 2.60
Discontinued Operations	3.82	(0.38)	1.60
Extraordinary Items	<u>—</u>	<u>(1.14)</u>	<u>—</u>
Net Income	<u>\$ 6.91</u>	<u>\$ 1.52</u>	<u>\$ 4.20</u>

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Continuing Operations in their income statements. In these cases, the absence of nonrecurring types of income implies that all reported revenues, gains, expenses, and losses relate to continuing operations. Firms often show a subtotal within the continuing operations section of the income statement, labeled *operating income*. U.S. GAAP and IFRS do not define *operating* and *non-operating*, so firms have some flexibility as to the classification of particular revenues and expenses. **Exhibit 17.6** includes revenues and expenses from the firm's primary business activity of creating and selling goods or services as *operating income*. Interest revenue from marketable debt securities and investments in debt securities, interest expense on borrowings, and gains and losses from peripheral activities appear separately as *non-operating income* in the continuing operations section of the income statement in this example.

Firms almost always report asset impairment charges or restructuring charges in Income from Continuing Operations. Although these charges may not appear every year and therefore appear to be nonrecurring, the business activity to which they relate is a continuing operation of the firm. As a result, firms typically classify them as part of Income from Continuing Operations.

Income, Gains, and Losses from Discontinued Operations Sometimes a firm sells a major division or segment of its business during the year or contemplates its sale within a foreseeable time after the end of the accounting period. If so, the firm must disclose separately any income, gains, and losses related to that division or segment. The separate disclosure appears in the next section of the income statement, **Income, Gains, and Losses from Discontinued Operations**. This section alerts the financial statement user that the firm does not

expect this source of earnings to continue. Firms report the income, gain, or loss net of income tax effects. This section follows the section presenting Income from Continuing Operations.

U.S. GAAP and IFRS are similar in their accounting for discontinued operations, although the definition of a discontinued operation differs. Under U.S. GAAP, a discontinued operation is a *component of an entity*, comprising operations and cash flows that clearly differ from the rest of the entity, both operationally and for financial reporting.¹¹ Under U.S. GAAP, segments, divisions, subsidiaries, and groups of assets can qualify as a component of an entity. IFRS uses the idea of a *disposal group*, which it defines as a group of assets and directly associated liabilities that a firm will dispose of as a group in a single transaction.¹² The disposal group notion of IFRS encompasses a larger unit than the component notion of U.S. GAAP.

In the year that a firm decides to sell a unit that qualifies as a discontinued operation, it aggregates the assets and liabilities of that unit on the balance sheet into four groups:

1. Current assets of discontinued operations.
2. Noncurrent assets of discontinued operations.
3. Current liabilities of discontinued operations.
4. Noncurrent liabilities of discontinued operations.

The firm measures these assets and liabilities at the lower of their carrying values or their fair values. It reports any gain or loss that results because the carrying value exceeds fair value in the Discontinued Operations section of the income statement. The Discontinued Operations section also includes income or loss from operating the unit for that year. Financial statements for prior years included for comparative purposes classify those amounts also as a discontinued operation.

The firm continues to report income from operating that unit prior to disposal in the Discontinued Operations section of the income statement. When the firm sells or disposes of the unit, it includes any gain or loss on the sale in the Discontinued Operations section.

Example 3 Exterior Group, Inc., owns Jaxin SA. Exterior Group follows U.S. GAAP. During 2012 Exterior Group contemplated spinning off Jaxin to its shareholders as a dividend but took no formal action to do so. However, in preparation for the spin-off, Exterior Group recognized impairment losses on Jaxin's assets totaling \$1,002 million. The recognition of the impairment losses resulted in measuring Jaxin's assets at fair value. The journal entry to recognize the impairment losses in 2012 is as follows (amounts in millions and pretax):

Impairment Losses on Assets	1,002	
Various Specific Assets		1,002
To recognize impairment losses on specific assets.		

Exterior Group reported the impairment loss in Income from Continuing Operations in 2012 because it has not yet considered Jaxin to be a discontinued operation.

Example 4 On January 31, 2013, Exterior Group's board of directors voted to spin off Jaxin as a dividend to shareholders. The distribution was to occur on March 30, 2013. Because Jaxin qualified as a component of Exterior Group with separable operations and cash flows, Exterior Group treated Jaxin as a discontinued operation under U.S. GAAP. Exterior Group reclassified Jaxin's assets and liabilities into the following four accounts:

1. Current Assets of Discontinued Operations: \$7,647 million.
2. Noncurrent Assets of Discontinued Operations: \$48,805 million.
3. Current Liabilities of Discontinued Operations: \$9,866 million.
4. Noncurrent Liabilities of Discontinued Operations: \$19,629 million.
5. Retained Earnings and Contributed Capital of Discontinued Operations: \$26,957 million.

Exterior Group measured Jaxin's assets at fair value, given the asset impairment charges recognized during 2012.

¹¹FASB, *Statement of Financial Accounting Standards No. 144*, "Accounting for the Impairment or Disposal of Long-lived Assets," 2001 (**Codification Topic 360**).

¹²IASB, *International Financial Reporting Standard 5*, "Non-current Assets Held for Sale and Discontinued Operations," 2004.

Example 5 On March 30, 2013, Exterior Group spun off Jaxin to its shareholders as a dividend. Recall that firms debit Retained Earnings for the fair value of the net assets distributed and recognize a gain or loss for any difference between the fair value and the carrying value of the net assets. Exterior Group did not recognize a gain or loss in connection with the spin-off, evidence that Jaxin's carrying values of assets and liabilities reflected fair values. Based on the information reported by Exterior Group for this transaction, we can recreate the journal entry to record the spin-off as follows:

March 30, 2013	
Current Liabilities of Discontinued Operations	9,866
Noncurrent Liabilities of Discontinued Operations	19,629
Retained Earnings and Contributed Capital of Discontinued Operations	26,957
Current Assets of Discontinued Operations	7,647
Noncurrent Assets of Discontinued Operations	48,805
To record spin-off of Jaxin to shareholders of Exterior Group.	

Example 6 The income statement of Exterior Group for the year ended December 31, 2013, reports Jaxin's income as part of discontinued operations for 2011, 2012, and 2013, even though the income statements originally issued for 2011 and 2012 included Jaxin's income as part of continuing operations. **Exhibit 17.7** summarizes the reporting.

Extraordinary Gains and Losses A separate section of an income statement prepared under U.S. GAAP presents **Extraordinary Gains and Losses**. For an item to be extraordinary, it must generally meet both of the following criteria:

1. Unusual in nature.
2. Infrequent in occurrence.

An example of an item likely to be extraordinary for most firms is a loss from an earthquake or confiscation of assets by a foreign government. Firms report extraordinary items net of their tax effects. IFRS guidance would require the separate disclosure of the item but would not permit the use of the label *extraordinary*.

UNREALIZED GAINS AND LOSSES FROM CHANGES IN FAIR VALUES OF CERTAIN ASSETS AND LIABILITIES

Standards issued by the FASB and IASB require or permit firms to report certain assets and liabilities at their fair values (or at the lower of fair value or historical cost) at the end of each period. Examples discussed in previous chapters include the following:

EXHIBIT 17.7

Exterior Group Partial Income Statements For the Years Ended December 31, 2013, 2012, and 2011

	2013	2012	2011
AS ORIGINALLY REPORTED FOR 2012 AND 2011			
Income from Continuing Operations	—	\$12,022	\$10,668
Income from Discontinued Operations	—	—	(233)
Net Income	—	\$12,022	\$10,435
AS REPORTED IN 2013 ANNUAL REPORT			
Income from Continuing Operations	\$9,161	\$ 9,329	\$ 8,170
Income from Discontinued Operations	625	2,693	2,265
Net Income	\$9,786	\$12,022	\$10,435

1. Measurement of inventories at lower of cost or market (**Chapter 9**).
2. Measurement of fixed assets and intangibles at fair value when recognizing an asset impairment loss (**Chapter 10**).
3. Measurement of certain marketable equity securities at fair value (**Chapter 13**).

When a firm increases or decreases the carrying values of assets and liabilities to reflect fair values, the question arises as to how it should treat the offsetting credit (gain) or debit (loss). At the time of the remeasurement, the firm has not yet realized the gains or losses. That is, the firm has not yet sold the asset or settled the liability. In some cases U.S. GAAP and IFRS require firms to recognize the gains and losses in measuring net income in the period of the remeasurement, even though the firm has not yet realized the gain or loss in a cash transaction. For example, firms include losses from decreases in the carrying values of inventories, fixed assets, and intangibles in computing net income in the period of the remeasurement.

U.S. GAAP and IFRS do not require firms to include in net income all unrealized gains and losses from the remeasurement of assets and liabilities. Instead, U.S. GAAP and IFRS require firms to report certain unrealized gains and losses in other comprehensive income.¹³ Other comprehensive income *for a reporting period* includes changes in the fair value of marketable securities available for sale and changes in the fair value of derivatives used as cash flow hedges.¹⁴ Other comprehensive income also includes gains and losses related to retirement plans not yet recognized in measuring retirement benefits expense.¹⁵ Accumulated Other Comprehensive Income, a shareholders' equity account on the balance sheet, reports the *cumulative* amounts of other comprehensive income (or loss) as of the date of the balance sheet. Comprehensive income equals net income on the traditional income statement plus other comprehensive income for the period.

Under U.S. GAAP and IFRS, firms can report other comprehensive income in one of two ways:

1. Include it with net income in a single statement of comprehensive income.
2. Include it in a separate statement of comprehensive income that immediately follows the income statement.

ADJUSTMENTS FOR ERRORS AND ACCOUNTING CHANGES

Firms occasionally obtain new information about amounts included in net income of prior periods or change either their accounting principles or estimates used in applying their accounting principles. Consider the following examples:

1. Great Deal discovered that it overstated its ending inventory for the current year. As a consequence, Great Deal understated cost of goods sold and overstated net income for the year. The amount of the under- and overstatement was \$145.9 million.
2. Great Deal has used a LIFO cost-flow assumption for inventories and cost of goods sold for many years. It decides during the current year to change to a FIFO cost-flow assumption. Net income of prior years would differ if Great Deal had used a FIFO, instead of a LIFO, cost-flow assumption.
3. Thames depreciates its manufacturing machinery over a 20-year life. The availability of more efficient machines prompts Thames to begin replacing its existing machinery with new machinery. Thames reduces the depreciable life of its existing machinery, which increases current and future depreciation charges relative to the recent past.

Each of these three examples requires the accountant to apply U.S. GAAP and IFRS guidance to determine whether to

1. Retrospectively restate prior years' net income (*retrospective restatement*), or
2. Include an adjustment for the correction or accounting change in the current year's net income, or
3. Adjust net income of the current and future periods (*prospective adjustment*).

¹³FASB, *Statement of Financial Accounting Standards No. 130*, "Reporting Comprehensive Income," 1997 (**Codification Topic 220**); IASB, *International Accounting Standard 1*, "Presentation of Financial Statements," revised 2003.

¹⁴Discussed in **Chapter 13**.

¹⁵Discussed in **Chapter 12**.

Advocates of retrospective restatement view past net income numbers as useful to the extent they permit predictions of future net income. Retrospective restatement results in re-computing net income for prior years on the same basis as net income of the current and future years, thereby enhancing earnings predictions.

Advocates of including adjustments for these items in the income statement of the current year argue that all income items should initially appear in the income statement of some period. In this way, the cumulative series of income statements includes all income items. Financial statement users are less likely to overlook the items if they appear in the income statement than if they appear as an adjustment of prior years' net income. Adequate disclosure of the nature of each item in the income statement will permit financial statement users to assess its importance when evaluating the firm's profitability.

Advocates of adjusting earnings prospectively argue that restating previously reported amounts reduces the credibility of the financing reporting process. They further argue that adjustments such as those in the three examples are a normal, recurring part of the accounting process. Prospective adjustment avoids the implication that the firm has computed prior years' earnings incorrectly.

U.S. GAAP and IFRS distinguish the accounting for (1) corrections of errors, (2) adjustments for changes in accounting principles, and (3) adjustments for changes in accounting estimates.¹⁶

Reporting Corrections of Errors Errors result from such actions as miscounting inventories and misapplying accounting principles. U.S. GAAP and IFRS require firms to account for **corrections of errors**, if material, by retrospectively restating net income of prior periods and adjusting the beginning balance in Retained Earnings for the current period. In the earlier example where Great Deal miscounted its inventories, the cumulative effect of the inventory error at the end of 2012 was an overstatement of retained earnings of \$145.9 million. Ignoring the effects of income taxes, Great Deal makes the following entry at the beginning of 2013 to correct the error (amounts are in millions of U.S. dollars):

Retained Earnings	145.9	
Inventory		145.9

Reporting Changes in Accounting Principles Great Deal's change from a LIFO to a FIFO cost-flow assumption is a **change in accounting principle**. If it is practical to recalculate income for prior periods under the new accounting principle, U.S. GAAP and IFRS require firms to retrospectively apply the new accounting principle to recalculate prior years' net income. Assume that inventory at the end of last year for Great Deal was \$450 million under LIFO and \$525 million under FIFO. The entry to record the balance sheet effect of the change in accounting principle, ignoring income taxes, is as follows (in millions of US\$):

Merchandise Inventory	75	
Retained Earnings		75
To retrospectively apply the FIFO accounting principle.		

Great Deal would also recalculate net income for each prior year reported in its financial statements using a FIFO cost-flow assumption.

Reporting Changes in Accounting Estimates Accrual accounting requires frequent, ongoing changes in estimates. As time passes and conditions change, new information becomes available that causes management to change the estimates required to apply accounting principles. Examples of such **changes in estimates** include the amount of uncollectible accounts and the useful lives of depreciable assets. The previous example of a change in the service life for Thames's machinery is a change in accounting estimate. Earlier chapters point

¹⁶FASB, *Statement of Financial Accounting Standards No. 154*, "Accounting Changes and Error Corrections," 2005 (**Codification Topic 250**); IASB, *International Accounting Standard 8*, "Accounting Policies, Changes in Accounting Estimates, and Errors," revised 2003.

out that firms do not recalculate revenues and expenses of previous periods to incorporate new information involving estimates. Instead, firms report the effect of the change in estimate prospectively, in current and future periods' earnings; that is, firms adjust current and future depreciation charges—but not past ones—to take into account the carrying value at the time the new information arrives as well as the new information itself.

Changes in estimates do not always relate to recurring accounting measurements, such as depreciable lives. Some changes in estimates concern unusual or nonrecurring events. Consider, for example, a litigation situation in which a court this period finds a firm responsible for an act that occurred several years previously and caused injury. The damage award differs from the amount that the firm previously recognized with a debit to a loss and a credit to a liability. The court's decision provides new information regarding measurements made in previous periods. Firms report the income effect of these items in the income statement of the current period, appropriately disclosed, not in retained earnings as a direct adjustment.

► PROBLEM 17.2 FOR SELF-STUDY

Journal entries for net income and retained earnings transactions. Prepare journal entries for each of the following transactions of Able Corporation for 2012. Ignore income taxes.

- a. January 15: As a result of a computer software error the preceding December, the firm failed to record depreciation on office facilities totaling \$35,000.
- b. March 20: An earthquake in California causes an uninsured loss of \$70,000 to a warehouse.
- c. December 31: The firm acquired its office building six years before December 31, 2012. The building cost \$400,000, had zero estimated salvage value, and had a 40-year life. The firm uses the straight-line depreciation method. Able Corporation now estimates that the building will have a total useful life of 30 years instead of 40 years. Record depreciation expense on the building for 2012 and any required adjustment to depreciation of previous years.

EARNINGS PER SHARE

Publicly held firms that apply U.S. GAAP or IFRS must show **earnings per share (EPS)** data in the body of the income statement.¹⁷ Earnings per share is a common measure of profitability.¹⁸ Earnings per share result from dividing net income (minus any preferred stock dividends) by the **weighted-average number of outstanding common shares** during the accounting period. The weighted-average number of shares outstanding is calculated by multiplying the number of shares outstanding by the length of time (as a fraction of the year) those shares remain outstanding.

Example 7 Great Deal's statement of shareholders' equity (**Exhibit 1.4**) shows that Great Deal had 419 million shares of common stock outstanding on February 27, 2013. Suppose that on August 31, 2013, Great Deal issues 100 million additional common shares. Further, suppose that on January 31, 2014, Great Deal repurchased 75 million shares of common stock. Great Deal engaged in no other common share transactions during the fiscal year ending February 27, 2014.

Great Deal's weighted-average number of shares outstanding to be used to calculate earnings-per-share for fiscal 2013 is 462.75 million shares, calculated as follows:

¹⁷FASB, *Statement of Financial Accounting Standards No. 128*, "Earnings per Share," 1997 (**Codification Topic 250**); IASB, *International Accounting Standard 33*, "Earnings per Share," revised 2003.

¹⁸Firms reporting multiple categories of income items must disclose earnings per share for each reported category. For example, firms reporting discontinued operations must report earnings per share from continuing operations and earnings per share from discontinued operations.

Calendar Period	Fraction of Year	×	Number of Shares Outstanding (in millions)	=	Weighted Calculation
March 1, 2013– August 31, 2013	1/2 (= 6 months/12 months)	×	419	=	209.50
September 1, 2013– January 31, 2014	5/12 (= 5 months/12 months)	×	519 (= 419 + 100)	=	216.25
February 1, 2014– February 27, 2014	1/12 (= 1 month/12 months)	×	444 (= 519 – 75)	=	<u>37.00</u>
Weighted-average number of shares outstanding during fiscal 2013					<u>462.75</u>

Exhibit 1.2 shows Great Deal's earnings per share for recent fiscal years. For fiscal 2012 (the year ending February 27, 2013), earnings per share, based on 416.8 million weighted-average shares outstanding, is \$3.16 (= \$1,317/416.8). **Exhibit 1.6** shows that in fiscal 2013, Thames reported a loss per share of €1.03 (= €201.8/195.054).

Some firms may issue instruments that holders can exchange for shares of common stock (such as a convertible bond) or exercise to buy shares of common stock (such as employee stock options). These firms report two earnings-per-share amounts: **basic earnings per share** (the amount that results from the calculations above) and **diluted earnings per share**. When holders convert their securities or exercise their options, the firm will issue additional shares of common stock. The additional shares increase the denominator of the earnings-per-share calculation, leading to a decline in the earnings-per-share amount. This phenomenon is called *dilution*. If a firm has securities that, if exchanged for common stock, would cause basic earnings per share to dilute by 3% or more, accounting requires the firm to present both basic earnings per share and diluted earnings per share.¹⁹

Great Deal and Thames report both basic earnings per share and diluted earnings per share. In fiscal 2012, Great Deal reported \$3.10 diluted earnings per share on diluted shares of 427.5 million (compared to basic shares of 416.8 million). Thames reported a loss of €1.03 per share on diluted shares of 195.488 million (compared to basic shares of 195.054 million). Thames's basic and diluted loss per share are the same in 2013 (a loss of €1.03 per share) because the difference in basic and diluted shares is small.

Interpreting Earnings per Share Accountants and financial analysts criticize earnings per share as a measure of profitability because it does not consider the amount of assets required to generate that level of earnings. Two firms with the same earnings and earnings per share will differ in profitability if one of the firms requires more assets to generate those earnings than does the other firm.

In comparing firms, earnings-per-share amounts have limited use. For example, if two firms have identical earnings and common shareholders' equity, they have the same return on equity (ROE). Yet, one firm may have a lower earnings per share simply because it has a larger number of shares outstanding.

Price-Earnings Ratio Financial analysts often compare earnings-per-share amounts with the market price of the stock. They usually express this comparison as a price-earnings ratio, equal to the market price per share divided by earnings per share. For example, suppose the price of one share of common stock of Great Deal is \$32.00 on February 27, 2013. On this date, Great Deal's price-earnings ratio, often called the P/E ratio, is 10.1 (= \$32.00/\$3.16) to 1. The analyst often expresses the relation by saying, "The stock sells at 10.1 times earnings."

Tables of stock prices and financial periodicals often present price-earnings ratios. The analyst must interpret these published P/E ratios cautiously. In cases in which a firm's net income includes unusual, nonrecurring gains and losses, the reader must ascertain whether the published ratio uses income only from recurring operations or final net income that includes the unusual items. To serve their intended purpose, P/E ratios should use normal, ongoing earnings data in the denominator.

¹⁹FASB, *Statement of Financial Accounting Standards, No. 128*, "Earnings per Share," 1997 (**Codification Topic 260**). IASB, *International Accounting Standard 33*, "Earnings per Share," revised 2003.

SEGMENT DISCLOSURE

Both U.S. GAAP and IFRS require firms to report certain information about each of their operating segments.²⁰ These disclosures permit analysis of profitability at a less aggregated level. We first consider the required segment disclosures, and then illustrate their use in the analysis of the profitability of Great Deal, Inc., and Thames Limited.

Required Segment Information Authoritative guidance requires firms to disclose information about their **operating segments**. The definition of segments takes a management approach. Specifically, U.S. GAAP and IFRS define an operating segment as a unit within a firm for which management both

- Prepares separate financial information.
- Regularly evaluates this financial information for the purposes of allocating resources and assessing performance.

By defining segments in the same way that management operates a business, accounting tries to provide financial statement users with the same sort of information that management uses to evaluate the business. This means that a firm that chooses to organize, manage, and evaluate its business by products and services would define its operating segments along product and service lines. Most firms report operating segments by products and services. Firms might also report information by geographical markets (if information is available without undue cost) and by customers who represent more than 10% of revenues (called major customers). Both U.S. GAAP and IFRS provide criteria for determining how many segments a firm should report. Firms must report segment information for any operating segments that constitute 10% or more of revenues, assets, or profit and loss. Firms must also report enough segment information to account for at least 75% of the entity's total revenues.

For each operating segment, firms must report information about revenues, assets, and measures of the segment's operating results,²¹ as well as components of operating profit or loss, including depreciation, interest revenue, and interest expense. Firms also generally report information about long-lived assets and capital expenditures. IFRS, but not U.S. GAAP, also requires disclosure of segment liabilities, if management uses this information as part of the normal reporting structure to manage and evaluate the business.

Firms must reconcile data for their operating segments with total revenues, operating income, and assets at a firm-wide level. Segment revenues usually sum to firm-wide revenues. Segment operating income will not equal firm-wide operating income because firms do not allocate all corporate-level expenses (for example, compensation of top management and interest expense) to operating segments. Segment assets will not equal firm-wide assets because firms do not allocate corporate-level assets (for example, corporate headquarters) to operating segments.

SEGMENT DISCLOSURES

In this section, we analyze the segment disclosures of Great Deal, Inc., and Thames Limited. **Exhibit 17.8** presents segment information for Great Deal, Inc., for fiscal years 2010–2012. **Exhibit 17.9** presents the segment information reported by Thames Limited for fiscal 2012.

Great Deal defines its operating segments in broad geographic terms: domestic and international. The Domestic segment consists of all stores and online operations within the United States. The International segment consists of all stores and online operations outside of the United States. Domestic revenues constitute the majority of Great Deal's revenues over the past three years. Domestic revenues as a percentage of total revenues have been declining: from 83% (= \$33,328/\$40,023) in fiscal 2010, to 78% (= \$35,070/\$45,015) in fiscal 2011, to 75% (= \$37,314/\$49,694) in fiscal 2012. This trend, together with the overall growth in revenues over the same period, suggests that Great Deal has been successful in pursuing a growth strategy aimed at non-U.S. markets for its products and services.

²⁰FASB, *Statement of Financial Accounting Standards, No. 131*, "Disclosures About Segments of an Enterprise and Related Information," 1997 (**Codification Topic 280**); IASB, *International Financial Reporting Standard 8*, "Operating Segments."

²¹U.S. GAAP and IFRS do not precisely define operating results at either a firm-wide level or segment level. Most firms measure operating income before interest revenue, interest expense, and income tax expense.

EXHIBIT 17.8**Great Deal, Inc.
Segment Information
(amounts in millions)**

	For the Year Ended February 27/28		
	2013	2012	2011
REVENUES			
Domestic	\$37,314	\$35,070	\$33,328
International	<u>12,380</u>	<u>9,945</u>	<u>6,695</u>
Total Revenue	<u>\$49,694</u>	<u>\$45,015</u>	<u>\$40,023</u>
PERCENTAGE OF REVENUES, BY PRODUCT AND SERVICE			
Domestic:			
Consumer Electronics	39%	39%	41%
Home Office	34%	31%	28%
Entertainment Software	16%	19%	20%
Appliances	4%	5%	5%
Services	6%	6%	6%
Other	<u><1%</u>	<u><1%</u>	<u><1%</u>
Total	<u>100%</u>	<u>100%</u>	<u>100%</u>
International:			
Consumer Electronics	20%	26%	39%
Home Office	53%	45%	30%
Entertainment Software	7%	9%	13%
Appliances	8%	10%	13%
Services	12%	10%	5%
Other	<u><1%</u>	<u><1%</u>	<u><1%</u>
Total	<u>100%</u>	<u>100%</u>	<u>100%</u>
OPERATING INCOME			
Domestic	2,071	1,758	1,999
International	<u>164</u>	<u>112</u>	<u>162</u>
Total operating income	\$ 2,235	\$ 1,870	\$ 2,161
Other income (expense):			
Investment income	54	35	129
Investment impairment and other	—	(111)	—
Interest expense	<u>(94)</u>	<u>(94)</u>	<u>(62)</u>
Earnings before operations before income taxes and equity in income (loss) of affiliates	<u>\$ 2,195</u>	<u>\$ 1,700</u>	<u>\$ 2,228</u>
ASSETS			
Domestic	\$10,431	\$ 9,059	\$ 8,194
International	<u>7,871</u>	<u>6,767</u>	<u>4,564</u>
Total Assets	<u>\$18,302</u>	<u>\$15,826</u>	<u>\$12,758</u>
DEPRECIATION			
Domestic	\$ 585	\$ 550	\$ 500
International	<u>253</u>	<u>180</u>	<u>80</u>
Total Depreciation	\$ 838	\$ 730	\$ 580
CAPITAL EXPENDITURES			
Domestic	\$ 385	\$ 971	\$ 673
International	<u>230</u>	<u>332</u>	<u>124</u>
Total Depreciation	<u>\$ 615</u>	<u>\$ 1,303</u>	<u>\$ 797</u>

EXHIBIT 17.9

Thames Limited
Segment Information
 (amounts in millions of euros)

	Aerospace	Defense	Security	Other, Including Non-allocated Amounts	Thames Limited
Total Revenues	4,164.4	5,932.7	3,303.4	(519.0)	12,881.5
Income from Operations	(309.6)	544.4	(11.1)	(171.9)	51.8
Noncurrent Operating Assets	1,607.6	1,405.8	1,844.7	392.4	5,250.5
Current Operating Assets	3,026.5	3,372.0	2,474.2	31.1	8,903.8
Current Operating Liabilities	(3,297.4)	(4,595.6)	(2,526.6)	(451.8)	(10,871.4)
Net Current Operating Assets (Liabilities)	(270.9)	(1,223.6)	(52.4)	(420.7)	(1,967.6)
Capital Expenditure	182.4	83.0	80.5	73.0	418.9
Depreciation and Amortization	157.3	88.7	131.9	42.9	420.8

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Great Deal also provides a breakdown of the revenues, by products and service, within each of its operating segments. For both segments, consumer electronics and home office products constitute the majority of revenues in all years. Finally, Great Deal reports information about the amount of operating income, assets, capital expenditures and depreciation, by operating segment. These data indicate that most of Great Deal's operating profits derive from its domestic sales of products and services. In addition, the majority of Great Deal's assets, capital expenditures and depreciation also relate to its domestic segment.

In contrast to Great Deal, Thames defines its operating segments in terms of products and services. Thames groups these products and services by the product markets served. Those product markets are Aerospace, Defense, Security, and Other. The largest of these segments in terms of revenues is the Defense segment, which generated €5,932.7 million in 2012, or about 46% (= €5,932.7/€12,881.5) of total consolidated revenues that year. The Defense segment also generated the most operating income in 2012. In fact, it was the only segment that generated operating profit (as opposed to an operating loss) in 2012.

The fourth column of **Exhibit 17.9** shows the amounts associated with Thames's Other operating segment. This segment includes several items:

- The operating activities of segments that do not meet the 10% criterion for separate disclosure of revenues, assets, profit or loss.
- Costs that are not allocated to other operating segments (for example, group research and development expenditures).
- The elimination of intersegment transactions among the three other operating segments (Aerospace, Defense, and Security) during the year.

The segment disclosures for both Great Deal and Thames reconcile to the amounts reported in their financial statements.²² For example, the sum of Great Deal's Domestic revenues (\$37,314) and International revenues (\$12,380) is \$49,694—the amount of consolidated total revenues reported in the first line of its income statement, shown in **Exhibit 1.2**. The sum of Thames's segment revenues, €12,881.5 (= €4,164.4 + €5,932.7 + €3,303.4 – €519.0), also equals the amount of total revenues reported in the first line of its income statement, shown in **Exhibit 1.6**.

ANALYSIS OF SEGMENT DISCLOSURES

We can apply the financial analysis tools described in **Chapter 7** to better understand the performance of a firm's operating segments. In particular, we can compute return on assets (ROA), profit margin, and total assets turnover for each segment using the segment disclosures. For these calculations, we use the operating income reported for each segment. **Exhibit 17.10** presents ROA, profit margin, and total assets turnover ratios for Great Deal's operating segments for fiscal 2011 and 2012.

²²Included in **Chapter 1**.

EXHIBIT 17.10**Great Deal, Inc.
Segment Profitability Analysis
(amounts in US\$)**

	2012		2011	
	Domestic	International	Domestic	International
Profit margin	5.6% (= \$2,071/\$37,314)	1.3% (= \$164/\$12,380)	5.0% (= \$1,758/\$35,070)	1.1% (= \$112/\$9,945)
Total assets turnover	3.83 (= \$37,314/ 0.5*[\$10,431 + \$9,059])	1.69 (=\$12,380/ 0.5*[\$7,871 + \$6,767])	4.07 (= \$35,070/ 0.5*[9,059 + \$8,194])	1.76 (= \$9,945/ 0.5*[6,767 + 4,564])
Return on assets (ROA)	21.3% (= \$2,071/ 0.5*[\$10,431 + \$9,059])	2.2% (= \$164/ 0.5*[\$7,871 + \$6,767])	20.4% (= \$1,758/ 0.5*[9,059 + \$8,194])	2.0% (= \$112/ 0.5*[6,767 + 4,564])

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The information in **Exhibit 17.10** suggests several inferences about the profitability of Great Deal's operating segments. First, the Domestic segment is substantially more profitable than the International segment, as indicated by a Domestic segment ROA of 21.3% in fiscal 2012 compared to an International segment ROA of 2.2%. The decomposition of the ROA calculations shows that the higher ROA for Domestic operations derives from both a higher profit margin (5.6% versus 1.3%) and a higher asset turnover ratio (3.83 versus 1.69). This information suggests that if Great Deal continues to grow internationally, it will experience a decline in its overall ROA. The decline in ROA is due to the inclusion of an increasingly higher fraction of International profitability (which has a lower ROA) in the mix of profits generated by Great Deal. At the same time, the increase in the ROA of the International segment between 2011 and 2012, from 2.0% to 2.2%, is an encouraging signal.

SOLUTIONS TO SELF-STUDY PROBLEMS**SUGGESTED SOLUTION TO PROBLEM 17.1 FOR SELF-STUDY**(Kaplan Corporation; review of **Chapters 1–16**)

a.	Cost of Marketable Securities Sold	\$180,000
	Gain on Sale (from Income Statement)	<u>30,000</u>
	Selling Price	<u>\$210,000</u>

The statement of cash flows shows the \$210,000 cash proceeds from the sale as an investing activity. The accountant must subtract the gain on sale of marketable securities from net income in the operations section to avoid overstating the amount of cash inflow from the transaction.

b.	Marketable Securities at Fair Value on December 31, 2012	\$ 450,000
	Plus Cost of Marketable Securities Purchased	?
	Less Cost of Marketable Securities Sold	(180,000)
	Less Increase in Unrealized Loss (OCI).	<u>(20,000)</u>
	Marketable Securities at Fair Value on December 31, 2013	<u>\$ 550,000</u>

The cost of marketable securities purchased during 2013 was \$300,000. The statement of cash flows reports these purchases as an investing activity. The recognition of an unrealized loss of \$20,000 from fair value declines of marketable securities classified as

available-for-sale securities did not reduce net income or use cash. Thus, the accountant need not adjust net income when computing cash flow from operations.

c.	Allowance for Uncollectibles, December 31, 2012	\$200,000
	Plus Bad Debt Expense During 2013	120,000
	Less Specific Customers' Accounts Written Off as Uncollectible During 2013	?
	Allowance for Uncollectibles, December 31, 2013	<u>\$250,000</u>

Specific customers' accounts written off as uncollectible during 2013 totaled \$70,000.

d.	Gross Accounts Receivable, December 31, 2012 ^a	\$ 2,500,000
	Plus Sales During the Year	12,000,000
	Less Gross Accounts Receivable, December 31, 2013 ^b	<u>(3,100,000)</u>
	Cash Sales Plus Accounts Collected or Written Off	\$11,400,000
	Less Write-Offs	<u>(70,000)</u>
	Cash Collected During the Year	<u>\$11,330,000</u>

^a\$2,300,000 + \$200,000.

^b\$2,850,000 + \$250,000.

Kaplan Corporation generated \$11,330,000 cash from credit customers during 2013. Net income includes \$11,880,000 from credit sales (= sales revenue of \$12,000,000 – bad debt expense of \$120,000). The accountant subtracts the \$550,000 difference (= \$11,880,000 – \$11,330,000) from net income when computing cash flow from operations. This \$550,000 amount equals the increase in accounts receivable (net) during 2013 (= \$2,850,000 – \$2,300,000).

e.	Finished Goods Inventory, December 31, 2012	\$ 1,800,000
	Plus Cost of Units Completed During the Year	?
	Less Cost of Units Sold During the Year	<u>(7,200,000)</u>
	Finished Goods Inventory, December 31, 2013	<u>\$ 2,200,000</u>

The cost of units completed was \$7,600,000.

f.	Work-in-Process Inventory, December 31, 2012	\$ 460,000
	Plus Cost of Raw Materials Used	?
	Plus Direct Labor and Manufacturing Overhead Costs Incurred	4,500,000
	Less Cost of Units Completed	<u>(7,600,000)</u>
	Work-in-Process Inventory, December 31, 2013	<u>\$ 530,000</u>

The cost of raw materials used during 2013 was \$3,170,000.

	Raw Materials Inventory, December 31, 2012	\$ 330,000
	Plus Cost of Raw Materials Purchased	?
	Less Cost of Raw Materials Used	<u>(3,170,000)</u>
	Raw Materials Inventory, December 31, 2013	<u>\$ 380,000</u>

The cost of raw materials purchased was \$3,220,000.

g.	LIFO	Difference	FIFO
	Inventory, December 31, 2012	\$ 2,590,000	\$ 3,010,000
	Purchases Plus Costs Incurred	<u>7,720,000</u>	<u>7,720,000</u>
	Goods Available for Use or Sale	\$10,310,000	\$10,730,000
	Less Inventory, December 31, 2013	<u>3,110,000</u>	<u>3,840,000</u>
	Cost of Goods Sold	<u>\$ 7,200,000</u>	<u>\$ 6,890,000</u>

Cost of goods sold under FIFO would have been \$6,890,000. Note that cost of goods sold under LIFO of \$7,200,000 is less than the cost of purchases plus costs incurred of \$7,720,000. The accountant subtracts the difference of \$520,000 ($= \$7,720,000 - \$7,200,000$), which equals the increase in inventories during 2013 ($= \$3,110,000 - \$2,590,000$), when converting net income to cash flow from operations. To compute cash flow from operations, the accountant also adds to net income the increase in accounts payable of \$355,000 because Kaplan Corporation did not make cash expenditures for the full amount of the increase in inventories.

h. Investment in Maher Corporation (Fair Value Method)

Balance, December 31, 2012	\$200,000
Plus Additional Investments	0
Less Sale of Investments	0
Less Increase in Unrealized Loss on Investments in Securities	15,000
Balance, December 31, 2013	<u>\$185,000</u>

Investment in Johnson Corporation (Equity Method)

Balance, December 31, 2012	\$310,000
Plus Additional Investments	50,000
Plus Equity in Earnings (Total Equity in Earnings of \$300,000 from Income Statement Minus Equity in Earnings of Burton Corporation of \$160,000)	140,000
Less Sale of Investments	0
Less Dividends Received (Plug)	(90,000)
Balance, December 31, 2013	<u>\$410,000</u>

Investment in Burton Corporation (Equity Method)

Balance, December 31, 2012	\$800,000
Plus Additional Investments	0
Plus Equity in Earnings ($0.40 \times \$400,000$)	160,000
Less Sale of Investments	0
Less Dividends Received ($0.40 \times \$75,000$)	(30,000)
Balance, December 31, 2013	<u>\$930,000</u>

Kaplan Corporation recognized a total of \$300,000 ($= \$140,000 + \$160,000$) equity in earnings, yet received dividends of \$120,000 ($= \$90,000 + \$30,000$). The statement of cash flows shows a subtraction from net income of \$180,000 ($= \$300,000 - \$120,000$) for the excess of revenues over dividends from investments when computing cash flow from operations. The statement of cash flows reports the additional investment in Johnson Corporation as an investing activity.

i. Land

Balance, December 31, 2012	\$ 400,000
Plus Acquisitions	100,000
Less Disposals	0
Balance, December 31, 2013	<u>\$ 500,000</u>

Building

Balance, December 31, 2012	\$ 800,000
Plus Acquisitions	300,000
Less Retirements (plug)	(160,000)
Balance, December 31, 2013	<u>\$ 940,000</u>

Equipment

Balance, December 31, 2012	\$3,300,000
Plus Acquisitions	1,400,000
Less Disposals (plug)	(900,000)
Balance, December 31, 2013	<u>\$3,800,000</u>

Accumulated Depreciation

Balance, December 31, 2012	\$1,200,000
Plus Depreciation for 2013	560,000
	(continued)

Less Accumulated Depreciation on Building Retired (plug)	(160,000)
Less Accumulated Depreciation on Equipment Sold (see below)	<u>(670,000)</u>
Balance, December 31, 2013	<u>\$ 930,000</u>
Selling Price of Equipment Sold	\$ 150,000
Loss on Sale of Equipment.	<u>80,000</u>
Carrying Value of Equipment Sold	<u>\$ 230,000</u>
Cost of Equipment Sold (from above)	\$ 900,000
Less Accumulated Depreciation on Equipment Sold (plug).	<u>(670,000)</u>
Carrying Value of Equipment Sold	<u>\$ 230,000</u>

The statement of cash flows shows the acquisitions of land, building, and equipment as investing activities. The cash proceeds from the sale of equipment of \$150,000 appear as an investing activity. The statement of cash flows shows an addback to net income of \$80,000 for the loss on sale of equipment. Depreciation expense for 2013 of \$560,000 appears as an addback to net income because this expense does not use cash.

j. Investment in Heimann Corporation	800,000	
Common Stock (20,000 × \$10)		200,000
Additional Paid-In Capital (20,000 × \$30)		<u>600,000</u>

k. Cost of Investment in Heimann Corporation	\$ 800,000
Patent, \$80,000 + (2 × \$10,000 amortization per year)	<u>(100,000)</u>
Carrying Value of Net Assets	<u>\$ 700,000</u>

l. 4% Bond Issue	
\$40,000 × 9.954	\$ 398,160
\$2,000,000 × 0.70138	<u>1,402,760</u>
Total	<u>\$1,800,920</u>
10% Bond Issue	
\$150,000 × 13.59033	\$2,038,550
\$3,000,000 × 0.45639	<u>1,369,170</u>
Total	<u>\$3,407,720</u>

	Liability, Beginning of the Period	Market Interest Rate	Interest Expense	Amount Payable	Addition to (or Reduction in) Liability	Liability, End of the Period
m. 4% Bond Issue						
January 1, 2013	\$1,800,920	0.03	\$ 54,028	\$ 40,000	\$ 14,028	\$1,814,948
July 1, 2013.	1,814,948	0.03	<u>54,448</u>	<u>40,000</u>	<u>14,448</u>	1,829,396
Total			<u>\$108,476</u>	<u>\$ 80,000</u>	<u>\$ 28,476</u>	
10% Bond Issue						
January 1, 2013	\$3,407,720	0.04	\$136,309	\$150,000	\$(13,691)	\$3,394,029
July 1, 2013.	3,394,029	0.04	<u>135,761</u>	<u>150,000</u>	<u>(14,239)</u>	3,379,790
Total			<u>\$272,070</u>	<u>\$300,000</u>	<u>\$(27,930)</u>	
8% Bond Issue						
January 1, 2013	\$1,000,000	0.04	\$ 40,000	\$ 40,000	\$ 0	\$1,000,000
July 1, 2013.	1,000,000	0.04	<u>40,000</u>	<u>40,000</u>	<u>0</u>	1,000,000
Total			<u>\$ 80,000</u>	<u>\$ 80,000</u>	<u>\$ 0</u>	

Interest expense on the 4% bonds of \$108,476 exceeds the amount payable of \$80,000. The statement of cash flows shows an addback to net income for the difference, the amortization of discount on these bonds. Interest expense on the 10% bonds of \$272,070 is less than

the amount payable of \$300,000. The statement of cash flows shows a subtraction from net income for the difference, the amortization of premium on these bonds. The statement of cash flows also shows an addition to net income for the increase in interest payable of \$100,000, indicating that cash expenditures for interest were less than the amounts accrued as payable for 2013.

n.	Income Taxes Payable, December 31, 2012	\$ 250,000
	Plus Current Income Tax Expense for 2013 (see below)	420,000
	Less Cash Payment During 2013	?
	Income Taxes Payable, December 31, 2013	<u>\$ 375,000</u>
	Total Income Tax Expense	\$ 540,000
	Less Increase in Deferred Tax Liability	<u>(120,000)</u>
	Current Income Tax Expense	<u>\$ 420,000</u>

Cash payments for income taxes totaled \$295,000 during 2013. The statement of cash flows should show an addback to net income of \$120,000 for the portion of income tax expense that does not require a current expenditure (that is, the increase in the Deferred Tax Liability account). The statement of cash flows also shows an addition to net income for the increase in income taxes payable of \$125,000, indicating that cash expenditures for income taxes were less than the amount accrued as payable for 2013.

	Common Shares		Additional Paid-In Capital	Retained Earnings	Treasury Shares
	Number of Shares	Amount			
o. Balance, December 31, 2012	50,000	\$500,000	\$ 800,000	\$1,666,000	\$ 30,000
Common Stock Issued	10,000	100,000	400,000	—	—
Treasury Stock Sold	—	—	5,000	—	(10,000)
Net Income	—	—	—	1,260,000	—
Dividends (plug) ^a	—	—	—	<u>(236,000)</u>	—
Balance, December 31, 2013	<u>60,000</u>	<u>\$600,000</u>	<u>\$1,205,000</u>	<u>\$2,690,000</u>	<u>\$ 20,000</u>

^aOr, see statement of cash flows.

The \$500,000 proceeds from issuing common stock appear as a financing activity on the statement of cash flows. The \$15,000 cash proceeds from reissuing treasury stock (= \$10,000 + \$5,000) also appears as a financing activity. Note that the excess of the \$15,000 reissue price over the \$10,000 cost of the treasury stock increases additional paid-in capital, not net income.

SUGGESTED SOLUTION TO PROBLEM 17.2 FOR SELF-STUDY

(Able Corporation; journal entries for net income and retained earnings transactions.)

a.	January 15		
	Retained Earnings	35,000	
	Accumulated Depreciation		35,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-35,000				-35,000	RE

To correct error in prior year's depreciation, increasing accumulated depreciation and reducing retained earnings.

b.	March 20		
	Loss from Earthquake	70,000	
	Building		70,000

(continued)

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-70,000				-70,000	IncSt → RE

To record loss from earthquake in an income statement account.

The firm would likely classify the loss as an extraordinary item if it reported using U.S. GAAP but not use the term *extraordinary* if it reported under IFRS.

c. December 31

Depreciation Expense	14,000	
Accumulated Depreciation		14,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-14,000				-14,000	IncSt → RE

To record a change in depreciable life of a building from 40 years to 30 years. Original depreciation: $\$400,000/40 = \$10,000$ per year. Carrying value on January 1, 2012, is $\$350,000 [= \$400,000 - (\$10,000 \times 5)]$. Depreciation for 2012 is $\$14,000 (= \$350,000/25)$.

KEY TERMS AND CONCEPTS

Relevance	Extraordinary gains and losses
Faithful representation	Corrections of errors
Comparability	Change in accounting principle
Consistency	Change in estimates
Verifiability	Earnings per share (EPS)
Understandability	Weighted-average number of outstanding common shares
Materiality	Basic earnings per share
Cost constraints	Diluted earnings per share
Income from continuing operations	Operating segments
Income, gains, and losses from discontinued operations	

EXERCISES AND PROBLEMS

EXERCISES

1. **Identifying accounting principles.** Indicate the accounting principle or method described in each of the following statements.
 - a. This inventory cost-flow assumption results in reporting the largest net income during periods of rising acquisition costs and non-decreasing inventory levels.
 - b. This method of accounting for uncollectible accounts recognizes the implied income reduction in the period of sale.
 - c. This method of accounting for long-term investments in the common stock of other corporations usually requires an adjustment to net income to calculate cash flow from operations under the indirect method in the statement of cash flows.

- d. This method of accounting for long-term leases by the lessee gives rise to a noncurrent liability.
 - e. This inventory cost-flow assumption results in approximately the same balance sheet amount as the FIFO cost-flow assumption.
 - f. This method of recognizing interest expense on bonds provides a uniform annual rate of interest expense over the life of the bond.
 - g. The accounting for this type of hedging instrument designated as a hedge results in a change in other comprehensive income each period.
 - h. This method of accounting for intercorporate investments in securities can result in a decrease in the investor's total shareholders' equity without affecting the Retained Earnings account.
 - i. This method of recognizing income from a long-term contract generally results in the least amount of fluctuation in earnings over several periods.
 - j. When a firm identifies specific customers' accounts as uncollectible and writes them off, this method of accounting results in no change in working capital.
 - k. The accounting for this type of hedging instrument designated as a hedge affects net income each period but not other comprehensive income.
 - l. This method of accounting for long-term leases of equipment by the lessor shows on the income statement an amount for depreciation expense.
 - m. This inventory cost-flow assumption results in inventory balance sheet amounts closest to current replacement cost.
 - n. This method of accounting for long-term investments in common stock results in recognizing revenue for dividends received or receivable.
 - o. This method of depreciation generally results in the largest amounts for depreciable assets on the balance sheet during the first several years of an asset's life.
 - p. This inventory cost-flow assumption results in reporting the smallest net income during periods of falling acquisition costs.
 - q. This method of accounting for long-term leases of equipment by the lessee results in showing an amount for rent expense on the income statement.
 - r. This inventory cost-flow assumption results in inventory balance sheet amounts that may differ significantly from current replacement cost.
 - s. This method of accounting for long-term leases of equipment by the lessor results in showing revenue at the time of signing a lease.
 - t. This inventory cost-flow assumption can result in substantial changes in the relation between cost of goods sold and sales if inventory quantities decrease during a period.
- 2. Identifying accounting principles.** Indicate the accounting principle or procedure apparently used to record each of the following independent transactions. Also, describe the transaction or event recorded in each case.

a. Cash X
 Dividend Revenue X

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+				+	IncSt → RE

b. Unrealized Loss on Marketable Securities Available for Sale. X
 Marketable Securities X

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-				-	OCI → AOCI

- c. Cash X
 Investment in Affiliated Company. X

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+					
-					

Dividend declared and received from affiliated company.

- d. Bad Debt Expense X
 Allowance for Uncollectibles X

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-				-	IncSt → RE

- e. Rent Expense for Lease X
 Cash X

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-				-	IncSt → RE

- f. Investment in Affiliated Company. X
 Equity in Earnings of Affiliated Company. X

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+				+	IncSt → RE

- g. Allowance for Uncollectibles X
 Accounts Receivable. X

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+					
-					

- h. Loss from Price Decline of Inventories. X
 Merchandise Inventories X

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-				-	IncSt → RE

- i. Liability Under Long-Term Lease X
 Interest Expense X
 Cash X

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-		-		-	IncSt → RE

- j. Treasury Stock X
 Cash X

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
-				-	ContriCap

k.	Interest Rate Swap Contract.	X	
	Gain on Remeasurement of Swap Contract (Income Statement)		X

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+				+	IncSt → RE

3. **Calculating earnings per share.** Campbell Incorporated reported the following information in their consolidated income statement for the years ended December 31, 2012 and 2013:

	2013	2012
Net income (in thousands)	\$1,456,091	\$1,200,472
Weighted average number of shares outstanding (in thousands)		
Basic	702,987	687,910
Diluted	713,456	699,012

- a. What was Campbell's basic earnings per share in 2012 and 2013?
 - b. What was Campbell's diluted earnings per share in 2012 and 2013?
 - c. Explain, in words, the direction of the difference between basic EPS and diluted EPS.
4. **Calculating earnings per share.** The following information pertains to Hatchet Limited for the years ended December 31, 2012 and 2013:

	2013	2012
Net Income (in millions)	?	?
Weighted Average Shares Outstanding (in millions)		
Basic	103.4	?
Diluted	?	112.7
Earnings Per Share		
Basic	\$4.13	\$3.02
Diluted	\$4.01	\$3.16

Calculate the missing amounts in the above table:

- a. Net income, 2012.
 - b. Weighted average number of shares outstanding, basic, 2012.
 - c. Net income, 2013.
 - d. Weighted average number of shares outstanding, diluted, 2013.
5. **Calculating weighted-average shares outstanding.** Kennett Corporation reported having 214.6 million shares outstanding at the end of its most recent fiscal year, ended December 31, 2012. On April 1, 2013, Kennett issued 36.2 million shares of common stock, at a price of \$18 per share. On September 1, 2013, Kennett employees exercised stock options, requiring Kennett to issue an additional 27.4 million shares of common stock. Kennett had no other common share transactions during fiscal 2013.
- a. How many shares of common stock did Kennett have outstanding at December 31, 2013?
 - b. What was Kennett's weighted-average number of shares for the year ended December 31, 2013?
6. **Calculating weighted-average shares outstanding.** Boslan Group reported having 89.1 million shares outstanding at the end of its most recent fiscal year, ended December 31, 2012. On March 1, 2013, Boslan issued 25.1 million shares of common stock, at a price of \$32 per share. On August 1, 2013, Boslan repurchased 22.2 million shares of common stock. On November 1, Boslan repurchased another 2.9 million shares of common stock. Boslan had no other common share transactions during fiscal 2013.
- a. How many common shares did Boslan have outstanding at December 31, 2013?

- b. What was Boslan's weighted-average number of shares outstanding for the year ended December 31, 2013?
7. **Interpreting changes in earnings per share.** Company A and Company B both start 2012 with \$1 million of shareholders' equity and 100,000 shares of common stock outstanding. During 2012, both companies earn net income of \$100,000, a return of 10% on common shareholders' equity at the beginning of 2012. Company A declares and pays \$100,000 of dividends to common shareholders at the end of 2012, whereas Company B retains all its earnings and declares no dividends. During 2013, both companies earn net income equal to 10% of shareholders' equity at the beginning of 2013.
- Compute earnings per share for Company A and for Company B for 2012 and for 2013.
 - Compute the rate of growth in earnings per share for Company A and Company B, comparing earnings per share in 2013 with earnings per share in 2012.
 - Using the rate of growth in earnings per share as the criterion, which company's management appears to be doing a better job for its shareholders? Comment on this result.
 - Using the change in return on equity (discussed in **Chapter 7**) as the criterion, which company's management appears to be doing a better job for its shareholders? For this purpose, use the beginning balance of shareholders' equity to calculate return on equity. Comment on this result.
8. **Treatment of accounting errors, changes in accounting principles, and changes in accounting estimates.** GenDyn computes net income for 2012 of \$1,500 and for 2013 of \$1,800, its first two years of operations. Before issuing its financial statements for 2013, GenDyn discovers that an item requires an income-reducing adjustment of \$400 after taxes. Indicate the amount of net income for 2012 and 2013 assuming (1) the item is an error in the computation of depreciation expense for 2012 (2013 depreciation expense is correct as computed), (2) the item is the change in net income for 2012 as a result of adopting a change in accounting principle (the expense in 2013 reflects the new accounting principle), and (3) the item is the change in estimated uncollectible accounts for 2012 as a result of worsened credit losses experienced in 2013; the firm included the adjustment amount in bad debt expense for 2013.
9. **Journal entries to correct errors and adjust for changes in estimates.** Prepare journal entries to record each of the following items for Union Cable Company for 2012. Union Cable Company uses a calendar year reporting period. Ignore income tax effects.
- Discovers on January 15, 2012, that it neglected to amortize a patent during 2011 in the amount of \$12,000.
 - Discovers on January 20, 2012, that it recorded the sale of a machine on December 30, 2011, for \$6,000 with the following journal entry:

Cash	6,000	
Loss on Sale of Machine	4,000	
Machine (Acquisition Cost)		10,000

Assets	=	Liabilities	+	Shareholders' Equity	(Class.)
+6,000				-4,000	IncSt → RE
-10,000					

The machine had accumulated depreciation of \$7,000 on the date of the sale.

- Changes the depreciable life of a building as of December 31, 2012, from a total useful life of 30 years to a total of 42 years. The building has an acquisition cost of \$2,400,000 and is 11 years old as of December 31, 2012. The firm has not recorded depreciation for 2012. It uses the straight-line method and zero estimated salvage value.
- The firm has used 2% of sales as its estimate of uncollectible accounts for several years. Its actual losses have averaged only 1.50% of sales. Consequently, the Allowance for Estimated Uncollectibles account has a credit balance of \$25,000 at the end of 2012 before making the provision for 2012. An aging of customers' accounts suggests that the firm needs \$35,000 in the allowance account at the end of 2012 to cover estimated uncollectibles. Sales for 2012 are \$1,000,000.

PROBLEMS

10. Comprehensive review problem. Exhibits 17.11 and 17.12 present a partial set of financial statements of Chicago Corporation for 2013, including a consolidated statement of income and retained earnings for 2013 and consolidated comparative balance sheets at December 31, 2012 and 2013. Questions relating to the financial statements of Chicago Corporation follow. You should study the financial statements before responding to these questions and problems. Additional information is as follows:

- (1) The only transaction affecting common or preferred shares during 2013 was the sale of treasury stock.
- (2) The bonds payable have a maturity (face) value of \$4 million.

Required

- a. Compute the amount of specific customers' accounts that Chicago Corporation wrote off as uncollectible during 2013, assuming that it made no recoveries during 2013 on accounts written off in years prior to 2013.
- b. Chicago Corporation uses the LIFO cost-flow assumption in computing its cost of goods sold and its beginning and ending merchandise inventory amounts. If it had used a FIFO cost-flow assumption, the beginning inventory would have been \$1,800,000

EXHIBIT 17.11

Chicago Corporation Consolidated Statement of Income and Retained Earnings for 2013 (Problem 10)

REVENUES		
Sales		\$13,920,000
Gain on Sale of Machinery and Equipment		200,000
Equity in Earnings of Affiliates:		
Chicago Finance Corporation	\$1,800,000	
Rosenwald Company	125,000	
Hutchinson Company	<u>75,000</u>	<u>2,000,000</u>
Total Revenues		<u>\$16,120,000</u>
EXPENSES		
Cost of Goods Sold		\$ 5,000,000
Employee Payroll Expense		3,000,000
Depreciation of Plant and Equipment and Amortization of Leased Property Rights		1,000,000
Amortization of Patent		125,000
Bad Debt Expense		120,000
Interest Expense		455,000
General Corporate Expenses		420,000
Income Taxes—Current		1,430,000
Income Taxes—Deferred		<u>170,000</u>
Total Expenses		<u>\$11,720,000</u>
Net Income		\$ 4,400,000
Less: Dividends on Preferred Shares		(120,000)
Dividends on Common Shares		<u>(2,080,000)</u>
Increase in Retained Earnings		\$ 2,200,000
Retained Earnings, December 31, 2012		<u>2,800,000</u>
Retained Earnings, December 31, 2013		<u>\$ 5,000,000</u>
Basic Earnings per Common Share (Based on 1,600,000 Average Shares Outstanding)		<u>\$ 2.68</u>
Diluted Earnings per Share (Assuming Conversion of Preferred Stock)		<u>\$ 2.20</u>

EXHIBIT 17.12
**Chicago Corporation
Consolidated Balance Sheets
December 31
(Problem 10)**

December 31:	2013	2012
ASSETS		
Current Assets		
Cash	\$ 100,000	\$ 200,000
Certificate of Deposit	225,000	—
Accounts Receivable (Net of Estimated Uncollectibles of \$100,000 in 2012 and \$160,000 in 2013)	600,000	500,000
Merchandise Inventory	1,800,000	1,500,000
Prepayments	200,000	200,000
Total Current Assets	\$ 2,925,000	\$ 2,400,000
Investments		
Chicago Finance Corporation (40% Owned)	\$ 4,000,000	\$ 2,200,000
Rosenwald Company (50% Owned)	1,025,000	900,000
Hutchinson Company (25% Owned)	175,000	100,000
Total Investments	\$ 5,200,000	\$ 3,200,000
Property, Plant, and Equipment		
Land	\$ 500,000	\$ 400,000
Building	4,000,000	4,000,000
Machinery and Equipment	8,000,000	7,300,000
Property Rights Acquired Under Lease	1,500,000	1,500,000
Total	\$14,000,000	\$13,200,000
Less Accumulated Depreciation and Amortization	(4,000,000)	(3,800,000)
Total Property, Plant, and Equipment	\$10,000,000	\$ 9,400,000
Intangibles (at Net Carrying Value)		
Patent	\$ 750,000	\$ 875,000
Goodwill	1,125,000	1,125,000
Total Intangibles	\$ 1,875,000	\$ 2,000,000
Total Assets	\$20,000,000	\$17,000,000
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current Liabilities		
Accounts Payable	\$ 550,000	\$ 400,000
Advances from Customers	640,000	660,000
Salaries Payable	300,000	240,000
Income Taxes Payable	430,000	300,000
Rent Received in Advance	50,000	—
Other Current Liabilities	460,000	200,000
Total Current Liabilities	\$ 2,430,000	\$ 1,800,000
Long-Term Debt		
Bonds Payable	\$ 3,648,000	\$ 3,600,000
Equipment Mortgage Indebtedness	332,000	1,300,000
Capitalized Lease Obligation	1,020,000	1,100,000
Total Long-Term Debt	\$ 5,000,000	\$ 6,000,000
Deferred Tax Liability	\$ 1,570,000	\$ 1,400,000
Shareholders' Equity		
Convertible Preferred Stock	\$ 2,000,000	\$ 2,000,000
Common Stock	2,000,000	2,000,000
Additional Paid-In Capital	3,000,000	2,400,000
Retained Earnings	5,000,000	2,800,000
Total	\$12,000,000	\$ 9,200,000
Less Cost of Treasury Shares	(1,000,000)	(1,400,000)
Total Shareholders' Equity	\$11,000,000	\$ 7,800,000
Total Liabilities and Shareholders' Equity	\$20,000,000	\$17,000,000

and the ending inventory would have been \$1,700,000. Compute the actual gross profit (net sales less cost of goods sold) of Chicago Corporation for 2013 under LIFO and the corresponding amount of gross profit if it had used FIFO (ignore income tax effects).

- c. Refer to part **b**. Did the quantity and acquisition cost of merchandise inventory increase or decrease between the beginning and the end of 2013? Explain.
- d. Chicago Corporation accounts for its three intercorporate investments in unconsolidated affiliates using the equity method. The acquisition cost of these investments equaled both the carrying value and the fair value of the assets and liabilities of the investees at the time of acquisition. How much did each of these three companies declare in dividends during 2013? How can you tell?
- e. Refer to part **d**. Give the journal entry (entries) made during 2013 to apply the equity method.
- f. Chicago Corporation acquired its only building on January 1, 2012. It estimated the building to have a 40-year useful life and zero salvage value at that time. Calculate the amount of depreciation expense on this building for 2013, assuming that the firm uses the straight-line method.
- g. Chicago Corporation sold machinery and equipment costing \$1,000,000, with a carrying value of \$200,000, for cash during 2013. Give the journal entry to record the disposition.
- h. The bonds payable carry 6% annual coupons and require the payment of interest on December 31 of each year. Give the journal entry made on December 31, 2013, to recognize interest expense for 2013, assuming that Chicago Corporation uses the effective interest method.
- i. Refer to part **h**. What was the effective or market interest rate on these bonds on the date Chicago Corporation issued them? Explain.
- j. The \$170,000 deferred portion of income tax expense for 2013 includes \$150,000 relating to the use of different depreciation methods for financial and tax reporting. If the income tax rate was 30%, calculate the difference between the depreciation deduction reported on the tax return and the depreciation expense reported on the income statement.
- k. Give the journal entry that explains the change in the treasury shares during 2013.
- l. If the original acquisition cost of the patent is \$1,250,000, and the firm amortizes that cost on a straight-line basis, how long before December 31, 2013, did the firm acquire the patent?
- m. Chicago Corporation acquired the stock of Hutchinson Company on December 31, 2012. If it held the same amount of stock during the year, but the amount represented only a 15% ownership of the Hutchinson Company, how would the financial statements have differed? Disregard income tax effects, and assume the market price of the shares exceeds their acquisition cost of \$100,000 by \$25,000 on December 31, 2013.
- n. During 2013, Chicago Corporation paid \$170,000 to the lessor of property represented on the balance sheet by "Property Rights Acquired Under Lease." Property rights acquired under lease have a 10-year life, and Chicago Corporation amortizes them on a straight-line basis. What was the total expense reported by Chicago Corporation during 2013 from using the leased property?
- o. How would the financial statements differ if Chicago Corporation accounted for inventories on the lower-of-cost-or-market basis and if the market value of these inventories had been \$1,600,000 at the end of 2013? Disregard income tax effects.
- p. Refer to the earnings-per-share amounts in the income statement of Chicago Corporation. How many shares of common stock would the firm issue if holders of the outstanding shares of preferred stock converted them into common stock?
- q. Prepare a T-account work sheet for the preparation of a statement of cash flows for Chicago Corporation for 2013. The certificate of deposit is a cash equivalent.

- 11. Comprehensive review problem. Exhibit 17.13** presents a consolidated statement of income and retained earnings for 2013, and **Exhibit 17.14** presents a consolidated balance sheet for Tuck Corporation as of December 31, 2012 and 2013. A statement of accounting policies and a set of notes to the financial statements follow these financial statements. After

EXHIBIT 17.13

Tuck Corporation
Consolidated Statement of Income and
Retained Earnings for 2013
(Problem 11)

REVENUES AND GAINS

Sales	\$4,000,000	
Gain on Sale of Equipment	3,000	
Rental Revenue	240,000	
Dividend Revenue	8,000	
Equity in Earnings of Unconsolidated Affiliates	<u>102,000</u>	
Total Revenues and Gains		\$4,353,000

EXPENSES, LOSSES, AND DEDUCTIONS

Cost of Goods Sold (Including Depreciation and Amortization)	\$2,580,000	
Selling and Administration Expenses (Including Depreciation and Amortization and Bad Debt Expense)	1,102,205	
Warranty Expense	46,800	
Interest Expense	165,995	
Loss on Sale of Marketable Equity Securities	8,000	
Income Tax Expense	<u>150,000</u>	
Total Expenses, Losses, and Deductions		4,053,000
Consolidated Net Income		\$ 300,000
Less Dividends Declared		<u>(119,500)</u>
Increase in Retained Earnings for 2013		\$ 180,500
Retained Earnings, December 31, 2012.		<u>277,000</u>
Retained Earnings, December 31, 2013.		<u>\$ 457,500</u>

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studying these financial statements and notes, respond to each of the following questions and calculation requirements.

Required

- Prepare an analysis that explains the change in the Marketable Equity Securities account during 2013.
- Calculate the proceeds from sales of marketable equity securities classified as current assets during 2013.
- Calculate the amount of the bad debt expense for 2013.
- Calculate the amount of cost of goods sold assuming Tuck Corporation used a FIFO cost-flow assumption.
- Give the journal entry (entries) to account for the change in the Investment in Thayer Corporation account during 2013.
- Calculate the amount of income or loss from the Investment in Thayer Corporation during 2013.
- Give the journal entry (entries) to account for the change in the Investment in Davis Corporation account during 2013.
- Refer to **Note 5**. Give the journal entry to record the sale of equipment during 2013.
- Refer to **Note 9**. Demonstrate that the \$106,036 is the correct amount of the leasehold asset at the beginning of the lease term.
- Calculate the amount of cash received during 2013 for rental fees.
- Calculate the actual cost incurred to service customers' warranties during 2013.
- Refer to **Note 7**. Calculate the amount of interest expense on the \$1 million, 6% bonds for 2013.

EXHIBIT 17.14

Tuck Corporation
Consolidated Comparative Balance Sheets
(Problem 11)

	December 31, 2013	December 31, 2012
ASSETS		
Current Assets		
Cash	\$ 278,000	\$ 240,000
Marketable Securities (Note 1)	141,000	125,000
Accounts Receivable—Net (Note 2)	1,509,600	1,431,200
Inventories (Note 3)	1,525,315	1,257,261
Prepayments	32,000	28,000
Total Current Assets	<u>\$3,485,915</u>	<u>\$3,081,461</u>
Investments (Note 4)		
Investment in Thayer Corporation (15% owned)	\$ 87,000	\$ 92,000
Investment in Hitchcock Corporation (30% owned)	135,000	120,000
Investment in Davis Corporation (40% owned)	298,000	215,000
Total Investments	<u>\$ 520,000</u>	<u>\$ 427,000</u>
Property, Plant, and Equipment (Note 5)		
Land	\$ 82,000	\$ 82,000
Building	843,000	843,000
Equipment	1,848,418	497,818
Leasehold	106,036	106,036
Total Plant Assets at Cost	<u>\$2,879,454</u>	<u>\$1,528,854</u>
Less Accumulated Depreciation and Amortization	(420,854)	(383,854)
Total Plant Assets—Net	<u>\$2,458,600</u>	<u>\$1,145,000</u>
Intangibles		
Goodwill—Net	\$ 36,000	\$ 36,000
Total Assets	<u>\$6,500,515</u>	<u>\$4,689,461</u>
LIABILITIES AND SHAREHOLDERS' EQUITY		
Current Liabilities		
Note Payable (Note 6)	\$ 200,000	\$ 100,000
Accounts Payable	723,700	666,100
Rental Fees Received in Advance	58,000	46,000
Estimated Warranty Liability	78,600	75,200
Interest Payable on Notes	2,000	1,500
Dividends Payable	30,000	25,000
Income Taxes Payable—Current	160,000	140,000
Mortgage Payable—Current Portion	37,383	37,383
Capitalized Lease Obligation—Current Portion	10,000	10,000
Total Current Liabilities	<u>\$1,299,683</u>	<u>\$1,101,183</u>
Noncurrent Liabilities		
Bonds Payable (Note 7)	\$1,931,143	\$1,104,650
Mortgage Payable (Note 8)	243,560	262,564
Capitalized Lease Obligation (Note 9)	46,229	52,064
Deferred Tax Liability	145,000	130,000
Total Noncurrent Liabilities	<u>\$2,365,932</u>	<u>\$1,549,278</u>
Total Liabilities	<u>\$3,665,615</u>	<u>\$2,650,461</u>
Shareholders' Equity		
Convertible Preferred Stock, \$100 par Value (Note 10)	\$ 200,000	\$ 700,000
Common Stock, \$10 par Value (Note 11)	1,650,000	1,000,000
Additional Paid-In Capital—Common	583,600	130,000
Accumulated Other Comprehensive Income:		
Unrealized Loss on Marketable Securities	(21,000)	(25,000)
Unrealized Loss on Investments in Securities	(21,000)	(16,000)
Retained Earnings	457,500	277,000
Total	<u>\$2,849,100</u>	<u>\$2,066,000</u>
Less Cost of Treasury Stock (Note 12)	(14,200)	(27,000)
Total Shareholders' Equity	<u>\$2,834,900</u>	<u>\$2,039,000</u>
Total Liabilities and Shareholders' Equity	<u>\$6,500,515</u>	<u>\$4,689,461</u>

- m. Give the journal entry (entries) for the change in the Mortgage Payable accounts during 2013. Be sure to consider the current portion.
- n. Verify that the carrying value of the combined current and noncurrent portions of the Capitalized Lease Obligation on December 31, 2012, should be \$62,064.
- o. Prepare an analysis that explains the change in the carrying value of the combined current and noncurrent portions of the Capitalized Lease Obligation during 2013.
- p. Give the journal entry to record income tax expense for 2013.
- q. Compute the amount of cash payments for income taxes during 2013.
- r. The income tax rate is 30%. Assume that during 2013, Tuck Corporation recognized \$12,000 of deferred tax expense related to differences in depreciation methods. Calculate the difference between the amount of depreciation recognized for financial reporting purposes and the amount recognized for tax purposes.
- s. Give the journal entry made on July 1, 2013, upon conversion of the preferred stock.
- t. Give the journal entry (entries) to account for the change in the Treasury Stock account during 2013.

Statement of Accounting Policies

- **Basis of consolidation.** Tuck Corporation consolidates its financial statements with those of Harvard Corporation, a 100%-owned subsidiary acquired on January 2, 2011.
- **Marketable securities.** The firm classifies marketable securities as available for sale and measures them at fair value.
- **Accounts receivable.** The firm accounts for customers' uncollectible accounts using the allowance method.
- **Inventories.** Tuck Corporation uses a last-in, first-out (LIFO) cost-flow assumption for inventories.
- **Investments.** The firm classifies investments of less than 20% of the outstanding common stock of other companies as available for sale and measures them at fair value. It accounts for investments of 20% to 50% of the outstanding common stock of affiliates using the equity method.
- **Building, equipment, and leaseholds.** Tuck Corporation calculates depreciation for financial reporting purposes using the straight-line method and an accelerated method for income tax reporting.
- **Interest expense on long-term debt.** The firm measures interest expense on long-term debt using the effective interest method.
- **Deferred income taxes.** Tuck Corporation provides for deferred income taxes arising from temporary differences between book and taxable income.

Notes to the Financial Statements

- **Note 1:** The balance sheet presents marketable equity securities, all classified as available for sale, at fair value, which is less than acquisition cost by \$25,000 on December 31, 2012, and \$21,000 on December 31, 2013. Tuck Corporation sold marketable equity securities costing \$35,000 during 2013. It received no dividends from marketable equity securities during 2013.
- **Note 2:** The balance sheet presents accounts receivable net of an allowance for uncollectibles of \$128,800 on December 31, 2012, and \$210,400 on December 31, 2013. Tuck Corporation wrote off a total of \$63,000 of accounts receivable as uncollectible during 2013.
- **Note 3:** The valuation of inventories on a FIFO basis exceeded the amounts on a LIFO basis by \$430,000 on December 31, 2012, and by \$410,000 on December 31, 2013.
- **Note 4:** Davis Corporation reported net income for 2013 of \$217,500 and declared and paid dividends totaling \$60,000 during the year. Tuck Corporation invested an additional \$20,000 in Davis Corporation during 2013, but its ownership percentage remained at 40%.
- **Note 5:** Tuck Corporation sold equipment with a cost of \$23,000 and a carrying value of \$4,000 during 2013. This was the only disposition of property, plant, or equipment during the year.

- **Note 6:** Tuck Corporation paid at maturity a 90-day, 9% note with a face amount of \$100,000 with interest on January 30, 2013. On December 1, 2013, Tuck Corporation borrowed \$200,000 from its local bank, promising to repay the principal plus interest at 12% in six months.
- **Note 7:** Bonds Payable on the balance sheet comprise the following:

	December 31, 2013	December 31, 2012
\$1,000,000, 6%, 20-Year Semiannual Coupon Bonds, Due December 31, 2024, Priced at \$1,125,510 to Yield 5%, Compounded Semiannually, at the Time of Issue	\$1,099,823	\$1,104,650
\$1,000,000, 8%, 20-Year Semiannual Coupon Bonds, Due December 31, 2031, Priced at \$828,409 to Yield 10%, Compounded Semiannually, at the Time of Issue	831,320	—
Total	<u>\$1,931,143</u>	<u>\$1,104,650</u>

- **Note 8:** Mortgage Payable represents a building mortgage requiring equal installment payments of \$40,000 on December 31 of each year. The loan underlying the mortgage bears interest of 7%, compounded annually. The final installment payment is due on December 31, 2013.
- **Note 9:** The Capitalized Lease Obligation represents a 20-year, non-cancelable lease on certain equipment. The lease requires annual payments, in advance, of \$10,000 on January 2 of each year. Tuck Corporation will make the last lease payment on January 2, 2020. Tuck Corporation capitalizes the lease at its borrowing rate (at the inception of the lease) of 8%.
- **Note 10:** Each share of preferred stock is convertible into five shares of common stock. On July 1, 2013, holders of 5,000 shares of preferred stock exercised their conversion options. Tuck Corporation recorded the conversion using carrying values.
- **Note 11:** On October 1, 2013, Tuck Corporation issued 40,000 shares of common stock on the open market for \$15 cash per share.
- **Note 12:** Treasury Stock comprises the following:

December 31, 2012: 2,250 Shares at \$12 per Share	\$27,000
December 31, 2013: 450 Shares at \$12 per Share	\$ 5,400
550 Shares at \$16 per Share	8,800
	<u>\$14,200</u>

During 2013, Tuck Corporation sold 1,800 shares of treasury stock and acquired 550 shares.

12. **Case introducing earnings-per-share calculations for a complex capital structure.** The Layton Ball Corporation has a relatively complicated capital structure—that is, it raises funds using various financing devices. In addition to common shares, it has issued stock options, warrants, and convertible bonds. **Exhibit 17.15** summarizes some pertinent information about these items. Net income for the year is \$9,500, and the income tax rate used in computing income tax expense is 40% of pretax income.
 - a. First, ignore all items of capital except for the common shares. Calculate earnings per common share.
 - b. In past years, Layton Ball has issued to employees options to purchase shares of stock. **Exhibit 17.15** indicates that the price of the common stock throughout the current year has remained steady at \$25 but that holders of the stock options could exercise them at any time for \$15 for each share. That is, the option allows the holder to surrender it along with \$15 cash and receive one share in return. Thus, the number of shares would increase, which would decrease the earnings-per-share figure. The company would, however, have more cash. Assume that the holders of options tender them, along with \$15 each, to purchase shares. Assume that the company uses the cash to purchase shares for

EXHIBIT 17.15

**Layton Ball Corporation
Information on Capital Structure
for Earnings-per-Share Calculations
(Problem 12)**

Assume the following data about the capital structure and earnings for the Layton Ball Corporation for the year:

Number of Common Shares Outstanding Throughout the Year	2,500 shares
Market Price per Common Share Throughout the Year	\$ 25
Options Outstanding During the Year:	
Number of Shares Issuable on Exercise of Options.	1,000 shares
Exercise Price per Share	\$ 15
Warrants Outstanding During the Year:	
Number of Shares Issuable on Exercise of Warrants	2,000 shares
Exercise Price per Share	\$ 30
Convertible Bonds Outstanding:	
Number (Issued 15 Years Ago)	100 bonds
Proceeds per Bond at Time of Issue (= Face Value)	\$1,000
Coupon Rate (Per Year)	4%

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its own treasury at a price of \$25 each. Compute a new earnings-per-share figure. The firm does not count shares in its own treasury in the denominator of the earnings-per-share calculation.

- c. **Exhibit 17.15** indicates that there were also warrants outstanding in the hands of the public. The warrant allows the holder to turn in that warrant, along with \$30 cash, to purchase one share of stock. If holders exercised the warrants, the number of outstanding shares would increase, which would reduce earnings per share. However, the company would have more cash, which it could use to purchase shares for the treasury, reducing the number of shares outstanding. Assume that all holders of warrants exercise them. Assume that the company uses the cash to purchase outstanding shares for the treasury. Compute a new earnings-per-share figure. Ignore the information about options and the calculations in part **b** at this point. Note however that this is an unlikely hypothetical scenario because rational warrant holders would not exercise the warrants for \$30 when they can purchase shares for \$25 each.
- d. The firm also has convertible bonds outstanding. Each convertible bond entitles the holder to exchange that bond for 10 shares. If holders convert the bonds, the number of shares would increase, which would tend to reduce earnings per share. On the other hand, the company would not have to pay interest and thus would have no interest expense on the bond because it would no longer be outstanding. This would tend to increase income and earnings per share. Assume that all holders of convertible bonds convert their bonds into shares. Compute a new net income figure (do not forget income tax effects on income of the interest saved) and a new earnings-per-share figure. Ignore the information about options and warrants and the calculations in parts **b** and **c** at this point.
- e. Now consider all the previous calculations. Which combined set of assumptions from parts **b**, **c**, and **d** would lead to the lowest possible earnings per share? Compute a new earnings per share under the most restrictive set of assumptions about reductions in earnings per share.
- f. Accountants report several earnings-per-share figures for companies with complicated capital structures and complicated events during the year. Financial publications, however, may publish only one figure. Which of the figures computed previously for earnings per share do you think financial publications should publish as the earnings-per-share figure? Why?

Time Value of Cash Flows: Compound Interest Concepts and Applications

1. Understand why cash flows that occur at different times have different values.
2. Understand the concepts of present value and future value of single amounts of cash flows and a series of cash flows.
3. Apply the concepts of present value and future value of cash flows to typical business transactions.

LEARNING OBJECTIVES

Firms engage in various transactions that involve receiving or disbursing cash over time. Consider the following examples:

1. General Electric disburses cash to the trustee of its pension fund each year. These cash payments earn interest and other income over time, accumulating amounts in the pension fund sufficient to pay pensions to retired employees in the future. General Electric needs to know how much cash it must contribute to the pension fund each year in order to accumulate sufficient amounts to pay retired employees.
2. eBay considers replacing its existing computer system with a technologically more advanced one, which will permit the firm to process more transactions and do so more quickly, as well as accumulate information on customer purchases. eBay estimates the expected additional cash flows it will receive in the future from the more sophisticated computer system and wonders if acquiring the computer is a worthwhile investment.
3. Walt Disney needs to obtain cash to build a new exhibit at Disney World. It plans to issue \$50 million of 6% long-term bonds that pay \$3 million ($= 0.06 \times \50 million) annually and require repayment of the \$50 million in 20 years. Walt Disney desires to know the likely cash it will receive today from issuing these bonds on the market.

These and other business decisions require firms to compare and aggregate cash flows that occur at different points in time. Cash flows that occur at different times are not directly comparable because cash can, and usually does, earn interest. If a firm can invest cash to earn interest of 6% for the next year, then \$1 today is equivalent to \$1.06 one year from today. This Appendix explores concepts and tools for equating cash flows over time. The combination of cash flows and timing of valuations leads to four basic patterns of analysis:

1. Future value of a single amount.
2. Present value of a single amount.
3. Future value of a series of equal amounts.
4. Present value of a series of equal amounts.

The sections that follow explore each of these four patterns.

COMPOUND INTEREST CONCEPTS

Contracts typically state interest cost as a percentage of the amount borrowed per unit of time. Examples are 12% per year and 1% per month, which differ from each other. When the statement of interest rate does not explicitly state a period, then conventional usage means an annual rate, so that “interest at the rate of 12%” means 12% per year.

The amount borrowed is the **principal**. **Compound interest** means that the amount of interest earned during a period increases the principal, which becomes larger for the next interest-earning period.

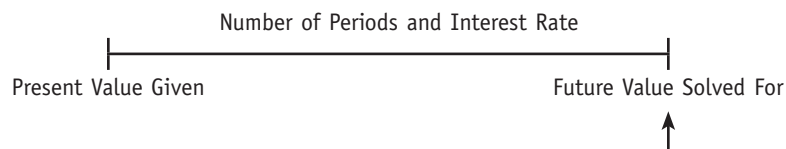
Computations Students, textbooks, and practitioners use four different approaches for calculating the time value of cash flows:

1. Formulas.
2. Compound interest tables.
3. Financial calculators.
4. Spreadsheets.

Most practitioners use financial calculators and spreadsheets, primarily Microsoft Excel®. By a “financial calculator,” we mean one with built in functions for the compound interest formulas. In this book, we use primarily compound interest tables, of the sort following this Appendix and excerpted in various places in the Appendix. We occasionally refer to the underlying formula. If you become adept at using the Tables to solve problems, you will find it easy to figure out which buttons to push on a financial calculator and which formulas to use in a spreadsheet. Having access to a calculator or spreadsheet does not relieve you of the responsibility to understand the concepts and procedures for the computations, because if you don’t understand, you won’t know what buttons to press or which formulas to use or how to use them.

FUTURE VALUE OF A SINGLE AMOUNT

The following diagram depicts the **future value** of a single amount:



Example 1 (Future Value of a Single Amount) How much will \$1,000 deposited today earning 8% grow to in 10 years? A critical assumption underlying calculations involving the time value of cash flows is that interest earned in one period earns interest the next period, a process called compound interest. Thus, in this example the initial \$1,000 deposit grows to \$1,080 ($= \$1,000 \times 1.08$) at the end of one year. The \$1,080 then grows to \$1,166.40 ($= \$1,080 \times 1.08$) at the end of the second year, and so on. From here, we’ll round computations to the nearest dollar unless you need to see the cents in order to understand the computation.

Contrast compound interest with simple interest, where only the initial investment earns interest. Simple interest does not compound. At **simple interest**, the \$1,000 grows to \$1,160 [$= \$1,000 \times (1 + (0.08 \times 2))$] at the end of the second year. The formula for simple interest is $F_n = P [1 + (r \times n)]$. From this point on unless we make an explicit contrary statement, we mean compound, not simple, interest.

Formula The future value of a single sum equals

$$F_n = P (1 + r)^n,$$

where

- F_n = Future value or accumulated amount
- P = Present value or one-time investment today
- r = Interest rate per period
- n = Number of periods from today

EXHIBIT A.1

**Future Value of \$1 at 6% and 8% per Period $F_n = P(1 + r)^n$
(Excerpt from Appendix Table 1)**

Number of Periods = n	Rate = r	
	6%	8%
1	1.06000	1.08000
2	1.12360	1.16640
3	1.19102	1.25971
10	1.79085	2.15892
20	3.20714	4.66096

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Thus, the future value of \$1,000 invested today at 8% per year for 10 years is $F_n = P(1 + r)^n = \$1,000(1 + 0.08)^{10} = \$2,159$. Most calculators have a function for y^x , which permits calculation of $(1 + r)^n$. The result of the calculation, $(1 + r)^n$, is often called the **factor**.

Compound Interest Tables Compound interest tables for the future value of \$1 compute factor values for $(1 + r)^n$ for various combinations of interest rates and numbers of periods. An excerpt of such a table appears in **Exhibit A.1**.

Exhibit A.1 shows that the factor for the future value of \$1 for 10 periods at 8% is 2.15892. Multiplying this factor times the \$1,000 initial investment yields a future value of \$2,159 ($= \$1,000 \times 2.15892$). **Appendix Table 1** provides factors for the future value of \$1 for various combinations of interest rates and number of periods.

In some settings, such as interest on bank accounts, interest compounds one or more times throughout the year. For example, the bank in **Example 1** might compound interest quarterly. The stated interest rate (8% in **Example 1**) is usually an annual interest rate. The analyst must adjust the interest rate and number of periods to accommodate compounding at an interval shorter than one year. To solve problems that require computation of interest quoted at a nominal rate r per period compounded m times per period for n periods, use the tables for rate r/m and $m \times n$ periods. For example, 8% compounded quarterly for 10 years equals 2% per period ($= 8\%/4$ compounding periods a year) for 40 periods ($= 10 \text{ years} \times 4$ compounding periods a year). Thus, the \$1,000 investment compounded quarterly at 8% for 10 years is $F_n = P(1 + r)^n = \$1,000(1 + 0.02)^{40} = \$1,000 \times 2.20804 = \$2,208$. The more frequent the compounding is, the larger the future value will be. Financial institutions often advertise the **effective annual yield** on savings accounts and certificates of deposit. The effective annual yield exceeds the stated interest rate, as **Example 1** demonstrates. The formula for the effective annual yield is $(1 + r/m)^m - 1$. The effective annual yield for quarterly compounding of an 8% annual rate is 8.24% [$= (1 + 0.08/4)^4 - 1$].

Example 2 (Future Value of a Single Amount) Suppose you inherit \$10,000 from your Aunt Bessie. You invest this amount in a certificate of deposit that pays 6% compounded quarterly for five years. How much will this certificate grow to at the end of five years? **Appendix Table 1** indicates that the factor for the future value of \$1 invested for 20 periods ($= 4$ quarterly compounding periods per year for 5 years) at 1.5% ($= 6\% \text{ annual rate}/4$ compounding periods per year) is 1.34686. Thus, the future value of \$10,000 for 20 periods at 1.5% is \$13,469 ($= \$10,000 \times 1.34686$).

PROBLEM A.1 FOR SELF-STUDY

Future value of single sums. Compute the future value of \$5,000 at the following rates:

- a. 6% for 10 years, with interest compounded annually.
- b. 6% for 10 years, with interest compounded semiannually.

Do not attempt to work the following without a financial calculator or spreadsheet. If you have access to Excel, but don't know how to use it, ask a friend for help.

(continued)

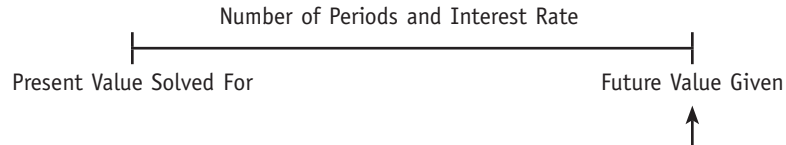
must do this on your own, open Excel and press the F1 key. You will see a menu of links to tutorials and help, from which you can learn how to use Excel.

- c. 8% for 33 years, with interest compounded annually.
- d. 8% for 33 years, with interest compounded quarterly.

PRESENT VALUE OF A SINGLE AMOUNT

The preceding section discussed the computation of the future value of a single known amount today for n periods at a stated, known interest rate r . You know P , n , and r , and you find F_n . The process involves accumulating *forward* in time from P to F_n . This section discusses the computation of the **present value** of a single known future cash flow. That is, F_n is known, and you compute P .

The following diagram depicts the present value of a single sum.



The process involves **discounting** the future amount to its present value. The discounting process removes the effect of compound interest from the future amount and leaves a present value amount that excludes the accumulation of interest over time. Common terminology refers to the interest rate as the **discount rate** when used in present value settings.

The formula for the present value of a single sum begins with the formula for the future value of a single sum but solves for P instead of F_n . Thus,

$$F_n = P(1 + r)^n$$

Dividing both sides by $(1 + r)^n$ yields

$$F_n / (1 + r)^n = P$$

or

$$P = F_n (1 + r)^{-n}$$

The amount $(1 + r)^{-n}$ equals $1/(1 + r)^n$. Thus, the factors for the present value of a single sum equal one divided by the factors for the future value of a single sum. **Exhibit A.2** shows an excerpt from a table for factors for the present value of a single sum. We use the same interest rates and number of periods as in **Exhibit A.1**. **Appendix Table 2** presents a table with the factors for the present value of \$1 for various combinations of interest rates and numbers of periods.

Example 3 (Present Value of a Single Amount) A firm issues a single-payment note in which it promises to pay \$160,000 three years from today in exchange for used equipment. What is the present value of this note if the discount rate appropriate for this note is 6%?

Formula Applying the formula for the present value of a single sum yields a present value of \$134,339 [= \$160,000 \times 1.06⁻³].

Compound Interest Table **Exhibit A.2** indicates that the factor for the present value of \$1 for three periods at 6% is 0.83962. The present value of the note is therefore \$134,339 (= \$160,000 \times 0.83962).

These calculations suggest that the value today of the used equipment is \$134,339. The seller of the used equipment who thinks 6% is the appropriate rate should be indifferent between receiving \$134,339 today or receiving \$160,000 three years from today.

EXHIBIT A.2

Present Value of \$1 at 6% and 8% per Period $P = (1 + r)^{-n}$
 (Excerpt from Appendix Table 2)

Number of Periods = n	Rate = r	
	6%	8%
1	0.94340	0.92593
2	0.89000	0.85734
3	0.83962	0.79383
10	0.55839	0.46319
20	0.31180	0.21455

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Example 4 (Present Value of a Single Amount) Joe Alumnus plans to endow a chaired professorship at his alma mater 10 years from today. The university expects to require a payment of \$2,000,000 to endow a chair at that time. Joe Alumnus can purchase a single-payment bond¹ on the market that has a maturity value in 10 years of \$2,000,000. How much would Joe Alumnus have to pay for this bond today if the discount rate is 6% compounded annually? The present value of \$2,000,000 discounted at 6% compounded annually for 10 periods is \$1,116,780 ($= 0.55839 \times \$2,000,000$).

How much would he have to pay for this bond if the discount rate of 6% compounded semiannually? The present value of \$2,000,000 discounted at 3% compounded semiannually for 20 periods is \$1,107,360 ($= 0.55368 \times \$2,000,000$). (See **Appendix Table 2**, 20-period row, 3% column.) Thus, with semiannual compounding, Joe Alumnus' cost is \$9,420 ($= \$1,116,780 - \$1,107,360$) smaller than the cash outlay to purchase a bond with annual compounding to fund the chair.

► **PROBLEM A.2 FOR SELF-STUDY**

Present value of single sums. Compute the present value of \$20,000 at the following rates:

- 6% for 3 years, with interest compounded annually.
- 6% for 3 years, with interest compounded monthly.
- 10% for 10 years, with interest compounded semiannually. Do not attempt to work the following without a financial calculator or spreadsheet.
- 8% for 13 years, with interest compounded quarterly.

ANNUITIES

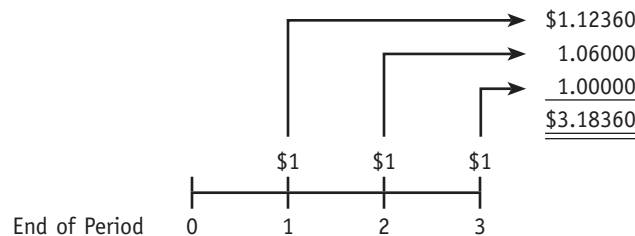
Contractual arrangements in business frequently involve periodic cash payments of equal amounts paid at equally spaced intervals. For example, a firm might lease office space and agree to pay a fixed amount per month for the three-year lease period. A firm might issue a note that promises to pay a fixed amount every six months for a 10-year period. A firm might agree to contribute a fixed amount per month to an employee retirement plan. When cash payments occur in equally spaced intervals and are of equal amount each period, common terminology refers to the stream of payments as an **annuity**. In some settings, the question asked involves the *future* value of the annuity, which the next section considers. In other settings the question asked involves the *present* value of the annuity, which a subsequent section discusses.

¹A single-payment bond is also called a *zero coupon bond*, which **Chapter 11** discusses.

The contractual arrangement might require that cash payments occur at the *end* of each period, as is typical for debt service payments on bonds. Common terminology refers to such arrangements as an **ordinary annuity**, or **annuity in arrears**. Other contractual arrangements might require payments at the *beginning* of the period, as is common for rental agreements. Common terminology refers to such arrangements as an **annuity due**, or **annuity in advance**. Less commonly, the arrangements might stipulate that the first payment occurs sometime after the end of the first period, referred to as a **deferred annuity**. We consider each type of annuity in the sections that follow.

FUTURE VALUE OF AN ANNUITY

The following diagram depicts the **future value of an ordinary annuity** (annuity in arrears) for a \$1 payment per period for three periods at a 6% interest rate.



The \$1 paid at the end of the first period earns interest for two periods, so it grows to \$1.12360 by the end of the third period. The \$1 paid at the end of the second period grows to \$1.06000 by the end of the third period. The \$1 paid at the end of the third period is, of course, worth \$1.00000 at the end of the third period. The three factors, 1.0000, 1.06000, and 1.12360, are the factors from **Appendix Table 1** for the future value of a single sum for 0, 1, and 2 periods. The factor for the future value of an ordinary annuity (3.18360 in this case) equals the sum of the factors for the future value of a single sum for the number of periods and payments specified. The summing of the factors for individual years to obtain the factor for an annuity is appropriate only because each payment is of equal amount and occurs at equally spaced intervals.

The formula for the future value of an ordinary annuity (FV_A) is as follows:

$$FV_A = \frac{(1 + r)^n - 1}{r}$$

Applying this formula to the example above yields:

$$FV_A = \frac{(1 + r)^n - 1}{r} = \frac{(1 + 0.06)^3 - 1}{0.06} = \frac{1.19102 - 1}{0.06} = 3.18360$$

Exhibit A.3 presents an excerpt from a table of factors for the future value of an ordinary annuity, such as **Appendix Table 3**.

Example 5 (Future Value of a Ordinary Annuity) You plan to invest \$1,000 at the end of each of the next 10 years in a savings account. The savings account accumulates interest of 8% compounded annually. What will be the balance in the savings account at the end of 10 years?

The time line for this example is as follows:

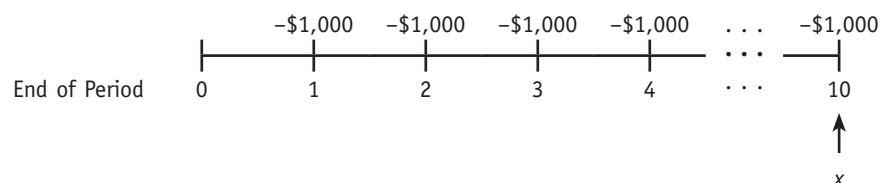


EXHIBIT A.3

Factors for the Future Value of an Ordinary Annuity at 6% and 8% per Period

$$FV_A = \frac{(1 + r)^n - 1}{r}$$

(Excerpt from Appendix Table 3)

Number of Periods = <i>n</i>	Rate = <i>r</i>	
	6%	8%
1	1.00000	1.00000
2	2.06000	2.08000
3	3.18360	3.24640
5	5.63709	5.86660
10	13.18079	14.48656
20	36.78559	45.76196

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The symbol *x* denotes the amount you desire to calculate.

We can solve annuity problems in the same ways we solve problems involving single sums: by formula, or by using compound interest tables, or by using a financial calculator or spreadsheet.

Formula Following is the formula for the future value of an ordinary annuity of \$1 for 10 periods at 8%:

$$FV_A = \frac{(1 + r)^n - 1}{r} = \frac{(1 + 0.08)^{10} - 1}{0.08} = \frac{2.158925 - 1}{0.08} = 14.48656$$

Thus,

Future Value of an Ordinary Annuity	=	Periodic Payment	×	Factor for the Future Value of an Ordinary Annuity
<i>x</i>	=	\$1,000	×	14.48656
<i>x</i>	=	\$14,487		

Compound Interest Tables Exhibit A.3 indicates that the factor for the future value of an ordinary annuity of 10 payments at 8% is 14.48656, yielding the result as to that computed from the formula.

Example 6 (Future Value of an Ordinary Annuity; Solving for Periodic Payment)

Refer to **Example 4**, where Joe Alumnus wants to fund a \$2,000,000 chaired professorship 10 years from today. Instead of investing a single amount today, he plans to contribute an equal amount at the end of each of the next 10 years in a savings account that pays 6% interest compounded annually. How much must he invest each year to accumulate \$2,000,000 at the end of 10 years? In contrast to **Example 5**, this example asks for the amount of the periodic payment instead of the future accumulated value. The problem still involves the future value of an annuity because the interest accumulating process works forward in time. The time line for this example is as follows:

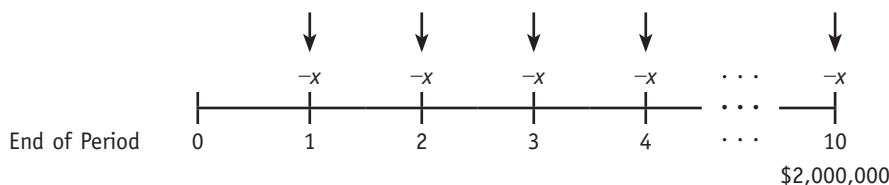
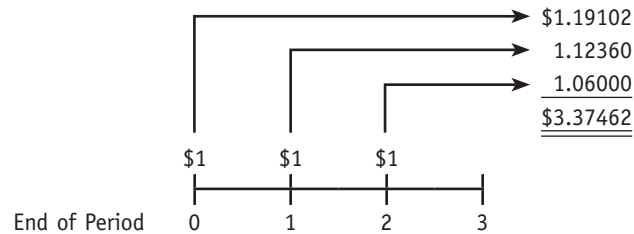


Exhibit A.3 indicates that the future value of \$1 for 10 periods at 6% is 13.18079. Thus,

$$\begin{array}{rclcl}
 \text{Future Value} & & & & \text{Factor for} \\
 \text{of an} & = & \text{Periodic} & \times & \text{the Future} \\
 \text{Ordinary Annuity} & & \text{Payment} & & \text{Value of an} \\
 & & & & \text{Ordinary Annuity} \\
 \$2,000,000 & = & x & \times & 13.18079 \\
 x & = & \$151,736 & &
 \end{array}$$

Note that solving this equation involves *dividing* the future value of \$2,000,000 by the factor for the future value of this annuity.

In some cases the payments occur at the beginning of each period instead of at the end of each period. Such problems involve the future value of an annuity in advance. The following diagram depicts the future value of an annuity in advance for three periods at 6% per period:



The first payment accumulates interest for three periods, the second payment for two periods, and the third payment for one period. Most tables of factors for the future value of an annuity assume that payments occur at the end of each period. To convert a table of factors for the future value of an ordinary annuity (annuity in arrears) to an annuity in advance, take one more period and subtract 1.00000. For example, **Appendix Table 3** indicates that the factor for the future value of an ordinary annuity for four periods at 6% is 4.37462. Subtracting 1.0000 from this value yields the factor of 3.37462, which is the factor for the future value of an annuity in advance for three periods at 6%. The subtraction of 1.0000 recognizes that no payment occurs at the end of the third period.

Example 7 (Future Value of an Annuity in Advance) Refer to **Example 6**. Assume that Joe Alumnus plans to invest an equal amount at the beginning of each of the next 10 years in order to accumulate \$2,000,000 at the end of 10 years. How much must he contribute each year? Refer to **Appendix Table 3**. The factor for the future value of an ordinary annuity for 11 periods at 6% is 14.97164. Subtracting 1.0000 from 14.97164 yields 13.97164, the factor for the future value of an annuity in advance for 10 years at 6%. Thus,

$$\begin{array}{rclcl}
 \text{Future Value} & & & & \text{Factor for} \\
 \text{of an} & = & \text{Periodic} & \times & \text{the Future} \\
 \text{Ordinary Annuity} & & \text{Payment} & & \text{Value of an} \\
 \text{in Advance} & & & & \text{Ordinary Annuity} \\
 & & & & \text{in Advance} \\
 \$2,000,000 & = & x & \times & 13.97164 \\
 x & = & \$143,147 & &
 \end{array}$$

The amount invested annually is less than when Joe made payments in at the end of each year because all payments earn an additional year of interest.

▶ PROBLEM A.3 FOR SELF-STUDY

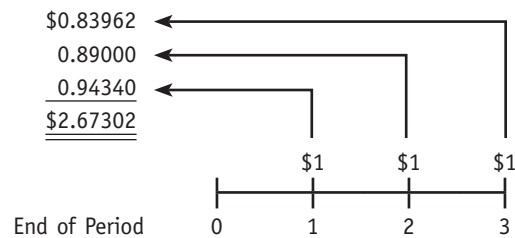
Future value of an annuity. Calculate the requested amount in each of the following scenarios. Today is January 1, 2013.

(continued)

- Jill Wilson plans to invest \$2,500 at the end of each of the next 20 years in her individual retirement account. How much will she have accumulated on December 31, 2032, if she earns 6% each year compounded annually?
- Skip this part unless you have a financial calculator or spreadsheet. Refer to part a. How much will Jill have accumulated on December 31, 2032, if she invests the \$2,500 at the beginning of each of the 20 years instead of at the end of each year? Why can't you use, without complication, the **Appendix Tables** to solve this problem?
- Assume for this part that Jill wants to accumulate \$100,000 on December 31, 2032. How much must she invest at the end of each of the next 20 years to accumulate the desired amount if the interest rate is 6% compounded annually?
- Skip this part unless you have a financial calculator or spreadsheet. Repeat part c, but assume Jill will make the investments at the beginning of each of the next 20 years. Why can't you use, without complication, the **Appendix Tables** to solve this problem?

PRESENT VALUE OF AN ANNUITY

The following diagram depicts the **present value of an ordinary annuity** at 6% for three periods.



The payment at the end of the first period when discounted back for one period at 6% yields a present value of \$0.94340. The payment at the end of the second period discounted back two periods at 6% yields a present value of \$0.89000. The payment at the end of the third period when discounted back three periods yields a present value of \$0.83962. The factor for the present value of an ordinary annuity for three periods at 6% is the sum of the factors for the three individual years. You can see that any number in **Appendix Table 4** is the sum of the numbers in the corresponding cell of **Appendix Table 2** plus all the other numbers in that column up to the cell for the first row. Note that, unlike the relation between the factors for the future value of \$1 and the present value of \$1, the factor for the present value of an annuity is not simply the reciprocal of the factor for the future value of an annuity.

The formula for the present value of an ordinary annuity is as follows:

$$PV_A = \frac{1 - (1 + r)^{-n}}{r}$$

Applying this formula to the preceding example for the present value of an ordinary annuity at 6% for three periods yields the following:

$$PV_A = \frac{1 - (1 + r)^{-n}}{r} = \frac{1 - (1.06)^{-3}}{0.06} = \frac{1 - 0.83962}{0.06} = 2.67301$$

This value differs from the one in the preceding diagram because of rounding.

Exhibit A.4 shows the factors for the present value of an ordinary annuity at 6% and 8% for various time periods from a table such as **Appendix Table 4**.

Example 8 (Present Value of an Ordinary Annuity) You want to receive \$600 every six months, starting six months hence, for the next five years. How much must you invest today if the funds accumulate at the rate of 8% compounded semiannually?

EXHIBIT A.4

Factors for the Present Value of an Ordinary Annuity at 6% and 8% per Period

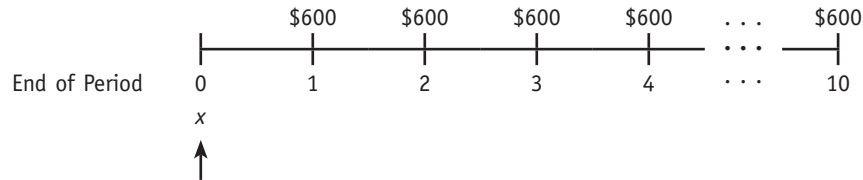
$$PV_A = \frac{1 - (1 + r)^{-n}}{r}$$

(Excerpts from Appendix Table 4)

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Number of Periods = <i>n</i>	Rate = <i>r</i>	
	6%	8%
1	0.94340	0.92593
2	1.83339	1.78326
3	2.67301	2.57710
5	4.21236	3.99271
10	7.36009	6.71008
20	11.46992	9.81815

The time line is as follows:



The factor for the present value of an annuity at 4% (= 8% per year/2 semiannual periods per year) for 10 periods (= 2 periods per year × 5 years) is 8.11090. We can compute this factor as well.

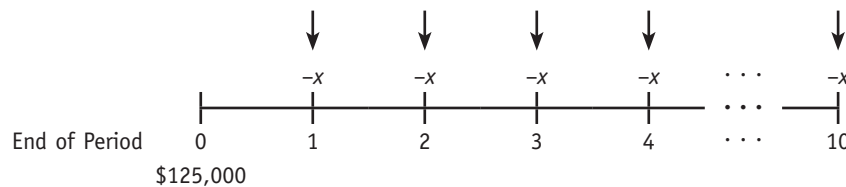
$$PV_A = \frac{1 - (1 + r)^{-n}}{r} = \frac{1 - (1.04)^{-10}}{0.04} = \frac{1 - 0.67556}{0.04} = 8.11090$$

Thus,

Present Value of an Ordinary Annuity	=	Periodic Payment	×	Factor for the Present Value of an Ordinary Annuity
<i>x</i>	=	\$600	×	8.11090
<i>x</i>	=	\$4,866.54		

Example 9 (Present Value of Ordinary Annuity; Solving for Periodic Payment)² A company borrows \$125,000 from a bank. The interest rate on the loan is 12% compounded semiannually. The company agrees to repay the loan in equal semiannual installments over the next five years, with the first payment to be made six months from now. What is the required semiannual payment?

The time line for this example is as follows:



²This example also appears as Example 1 in Chapter 11, with amortization schedule in Exhibit 11.2.

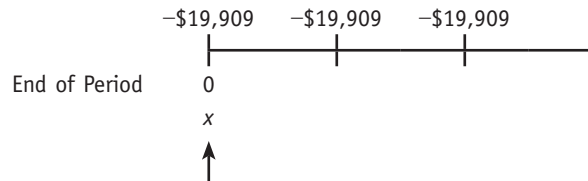
This example solves for the periodic payment that when discounted at 6% (= 12% per year/2 semiannual periods per year) for 10 periods (= 2 periods per year × 5 years) results in a present value of \$125,000. The factor for the present value of an annuity for 10 periods at 6% is 7.36009. Thus,

$$\begin{array}{rclcl}
 \text{Present Value} & & & & \text{Factor for} \\
 \text{of an} & = & \text{Periodic} & \times & \text{the Present} \\
 \text{Ordinary Annuity} & & \text{Payment} & & \text{Value of an} \\
 & & & & \text{Ordinary Annuity} \\
 \$125,000 & = & x & \times & 7.36009 \\
 x & = & \frac{\$125,000}{7.36009} \\
 x & = & \$16,983
 \end{array}$$

In **Exhibit 11.2**, we use a payment of \$17,000 per period, with a last payment of \$16,781 to compensate for the extra \$17 paid in each of the preceding periods and the interest earned on those amounts.

Example 10 (Present Value of an Annuity in Advance) Some situations involve cash flows that occur at the beginning instead of the end of a period. Leasing arrangements, for example, usually require the lessee to pay the lessor at the beginning of the period. A firm signs a lease requiring it to make lease payments of \$19,909 at the beginning of the next three years. The interest rate appropriate to this lease is 8%. What is the present value of the cash flows for this lease?

The time line is as follows:

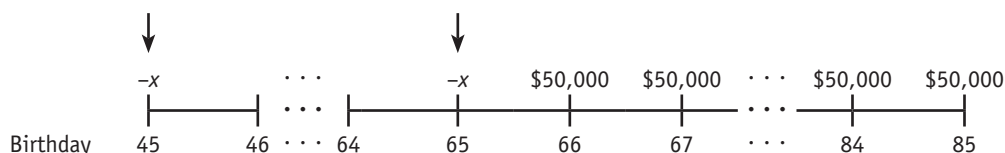


To convert a table of factors for the present value of an ordinary annuity to the factors for the present value of an annuity in advance, take one less period and add 1.0000 to the factor. Thus, we look up the factor for the present value of an annuity for two periods at 8%, which is 1.78326 (see **Exhibit A.4**) and add 1.0000 to obtain the factor of 2.78326. The 1.00000 is for the first payment at time 0 and the 1.78326 is for the present value of the payments at the beginning of the second and third years. Thus,

$$\begin{array}{rclcl}
 \text{Present Value} & & & & \text{Factor for} \\
 \text{of an} & = & \text{Periodic} & \times & \text{the Present} \\
 \text{Annuity in} & & \text{Payment} & & \text{Value of an} \\
 \text{Advance} & & & & \text{Annuity in} \\
 & & & & \text{Advance} \\
 x & = & \$19,909 & \times & 2.78326 \\
 x & = & \$55,412
 \end{array}$$

Example 11 (Present Value of a Deferred Annuity) Deferred annuities often occur in retirement planning. In a deferred annuity, the periodic payments do not begin until after at least one period beyond today. For example, assume that you expect to receive an annuity of \$50,000 per year beginning on your 66th birthday and continuing to your 85th birthday. You want to know the cost of funding such a deferred annuity on your 45th birthday. Assume an interest rate of 6%.

The time line for this example is as follows:



We compute the present value of this annuity in two steps.

1. Compute the present value of the annuity as of the 65th birthday.
2. Compute the present value of the amount in **step 1** as of the 45th birthday.

The present value of the annuity as of the 65th birthday involves 20 payments in arrears discounted at 6%. The present value factor for 20 periods and 6% is 11.46992 (see **Exhibit A.4**). Following is the present value of an ordinary annuity of \$50,000 per period for 20 periods at 6%:

$$\begin{array}{rcl}
 \text{Present Value} & & \text{Factor for} \\
 \text{of an} & = & \text{the Present} \\
 \text{Ordinary Annuity} & = & \text{Value of an} \\
 & & \text{Ordinary Annuity} \\
 x & = & \$50,000 \times 11.46992 \\
 x & = & \$573,496
 \end{array}$$

The present value of this single amount on the 45th birthday involves discounting \$573,496 back 20 periods at 6%. The factor for the present value of a single sum for 20 periods at 6% is 0.31180 (see **Exhibit A.2** or **Appendix Table 2**). Thus, the present value of the annuity on the 45th birthday is \$178,816.05 ($= \$573,496 \times 0.31180$).

Another approach to solving this deferred annuity problem is to subtract the factor for the present value of an ordinary annuity for 20 periods (birthdays 46 to 65) from the factor for the present value of an annuity for 40 periods (birthdays 46 to 85) and multiply the net factor by the \$50,000 payments. Thus,

Factor for the Present Value of an Ordinary Annuity for 40 Periods	15.04630
Factor for the Present Value of an Ordinary Annuity for 20 Periods	<u>- 11.46992</u>
Difference	3.57638
Annual Annuity	<u>× \$ 50,000</u>
Present Value of Annuity at Age 45	<u>\$178,819</u>

The difference in present value amounts on the 45th birthday in the preceding calculations results from the rounding of present value factors.

▶ PROBLEM A.4 FOR SELF-STUDY

Present value of an annuity. Calculate the requested amount in each of the following scenarios.

- a. Joan Brown wants to purchase a serial bond that pays \$10,000 at the end of each year for 20 years. If she desires a rate of return of 8%, what is the maximum amount she should be willing to pay for the bond?
- b. Paul Rainey purchased an excavator for \$150,000, which he plans to rent to construction companies for five years. He wants a rate of return of 12%. Assuming all cash flows occur at the beginning of the year, what is the required annual cash inflow?
- c. Diversified Technologies plans to invest \$20 million per year for the next three years to develop a new optical scanner. It expects that the new scanner will then generate \$15 million annually in cash flows for five years, after which it will become obsolete. Assume that all cash flows occur at the end of each year. If Diversified Technologies requires a rate of return of 12% on its investments, should it develop the scanner?

PERPETUITIES

A **perpetuity** is a series of cash flows that will last forever. For example, an alumnus of a university might wish to establish a scholarship fund that will permit the payment forever of scholarships, which bear her name. The most common setting in which the analyst will likely encounter

a perpetuity involves the valuation of a firm. Analysts typically project expected cash flows for the next 5 or 10 years and then make some assumptions about the cash flows after the projection period. The analyst assumes that the firm will continue as a going concern; this means that the analyst assumes the firm will continue operating forever. The assumption made about the continuing cash flow usually involves the valuation of a perpetuity.

The formula for the present value of a perpetuity of \$1 per period is $1/r$, where r is the discount rate per period. This formula assumes that the annual cash flow is the same in every year and occurs at the end of each year. If the cash flows occur at the beginning of each year, the formula is $1 + 1/r$. The first term values the first cash flow today, and the $1/r$ values the remaining cash flows to a present value.

Example 12 (Present Value of a Perpetuity) Western University wishes to establish a scholarship fund that will permit payment of a \$5,000 scholarship to 10 students each year forever. The university expects the scholarship fund to earn 4% per year. Compute the required amount to establish the scholarship fund today if the university pays the first scholarship at the end of the first year, one year from now, and subsequent awards at the end of every year forever. The required amount of the scholarship fund is \$1,250,000 ($= \$50,000/0.04$).

Assume now that the university will pay the first scholarships today and subsequent scholarships at the beginning of each year forever. The required amount to establish the scholarship fund is \$1,750,000 [$= \$50,000 + (\$50,000/0.04)$].

Example 13 (Present Value of a Growing Perpetuity) Refer to **Example 12**. Assume that the university wants to increase the amount of the scholarship each year to incorporate expected increases in tuition costs of 1% per year. In this case, the assumption of an equal amount in the formula for the present value of a perpetuity no longer holds. The formula for the present value of a growing perpetuity that begins at \$1 is $1/(r - g)$, where r is the interest rate and g is the growth rate in cash flows. If the university expects to pay scholarships at the end of the first year and each year thereafter, then the amount needed to establish the scholarship fund is \$1,683,333 [$= (\$50,000 \times 1.01) \times 1/(0.04 - 0.01)$]. If the university expects to award the first scholarship today and subsequent scholarships at the beginning of each year thereafter, then the amount required to establish the scholarship fund today is \$1,733,333 ($= \$50,000 + \$1,683,333$).

The formula for the present value of a growing perpetuity does not work well when the interest rate and the growth rate are approximately the same. When they are nearly equal, the value of $r - g$ in the denominator approaches zero, and the present value approaches infinity. The formula also does not work when the growth rate exceeds the discount rate. The value of $r - g$ turns negative and results in a meaningless negative number. The analyst who encounters such a situation should reconsider whether a firm can generate growth at a higher rate than its discount rate forever. Perhaps the growth rate assumption is too large or the discount rate is too low or the growth will stop at some future time.

INTERNAL RATE OF RETURN (IMPLICIT INTEREST RATE)

The examples thus far have solved for a future value or a present value of a single payment or of a series of equally spaced equal-size payments, or the amount of the periodic cash flow of an annuity. In some cases, the unknown variable is the interest rate. The **internal rate of return** for a series of cash flows is the interest rate that discounts all cash flows to a net present value of zero. Common terminology also refers to the internal rate of return as the **implicit interest rate** and, in an investment setting, as the **yield to maturity**.

Example 14 (Internal Rate of Return) Refer to question **c** in **Problem A.4 for Self-Study**. Diversified Technologies expects to pay \$20 million per year at the end of each of the next three years to develop an optical scanner and then to receive \$15 million per year at the end of the next five years from sales of the scanner. We wish to know the interest rate that will discount these cash flows to a net present value of zero. Thus, we want to solve for r in the following:

$$0 = \frac{-\$20}{(1+r)^1} + \frac{-\$20}{(1+r)^2} + \frac{-\$20}{(1+r)^3} + \frac{\$15}{(1+r)^4} + \frac{\$15}{(1+r)^5} + \frac{\$15}{(1+r)^6} + \frac{\$15}{(1+r)^7} + \frac{\$15}{(1+r)^8}$$

We could try various interest rates and, by trial and error, find the value of r that results in a zero net present value. This approach, however, is tedious. Microsoft's Excel has a built-in function to compute the internal rate of return. Many financial calculators have a built-in function as well, but some of those require equal payments at equally spaced intervals, which this example does not have. The internal rate of return in this example is 5.79%.

Example 15 (Internal Rate of Return of a Deferred Annuity) Your 60th birthday is today. With interest rates currently high, you want to purchase a deferred annuity that will begin on your 66th birthday and extend to your 85th birthday. The deferred annuity will pay you \$80,000 each year and costs you \$422,900 today. Compute the internal rate of return on this deferred annuity.

The time line for this annuity is



If you want to solve for the internal rate of return, use a spreadsheet. You should find that the internal rate of return is 10%.

► PROBLEM A.5 FOR SELF-STUDY

Finding the internal rate of return. Compute the internal rate of return in each of the following cases. Do not attempt to work these unless you have a financial calculator or spreadsheet.

- You invest \$650,000 in a bond that pays you a single amount of \$1,000,000 at the end of 10 years.
- You invest \$800,000 in a bond that pays you \$75,000 at the end of every six months for 10 years.
- You invest \$100,000 on January 1, 2008 for an annual annuity of \$25,000 paid at the end of 2011 to 2017.

SOLUTIONS TO PROBLEMS FOR SELF-STUDY

PROBLEM A.1 FOR SELF-STUDY

(Future value of single sums.)

- $\$5,000 \times (1.00 + 0.06)^{10} = \$5,000 \times 1.79085 = \$8,954$. See **Appendix Table 1**, 10-period row, 6% column.
- $\$5,000 \times (1.00 + 0.03)^{20} = \$5,000 \times 1.80611 = \$9,031$. See **Appendix Table 1**, 20-period row, 3% column.
- $\$5,000 \times (1.08)^{33} = \$5,000 \times 12.67605 = \$63,380$.
- $\$5,000 \times (1.00 + 0.08/4)^{(4 \times 33)} = \$5,000 \times (1.02)^{132} = \$5,000 \times 13.65283 = \$68,264$.

PROBLEM A.2 FOR SELF-STUDY

(Present value of single sums.)

- $\$20,000 \times (1.00 + 0.06)^{-3} = \$20,000 \times 0.83962 = \$16,792$.
- $\$20,000 \times (1.00 + 0.06/12)^{-(3 \times 12)} = \$20,000 \times (1 + 0.005)^{-360} = \$20,000 \times 0.83564 = \$16,713$.

- c. $\$20,000 \times (1.00 + 0.10/2)^{-(2 \times 10)} = \$20,000 \times (1 + 0.05)^{-20} = \$20,000 \times 0.37689 = \$7,538.$
 d. $\$20,000 \times (1.00 + 0.08/4)^{-(4 \times 13)} = \$20,000 \times (1 + 0.02)^{-52} = \$20,000 \times 0.35710 = \$7,142.$

PROBLEM A.3 FOR SELF-STUDY

(Future value of an annuity.)

a. $\$2,500 \times \frac{(1 + 0.06)^{20} - 1}{0.06} = \$2,500 \times 36.78559 = \$91,964.$

b. $\$2,500 \times \left[\frac{(1 + 0.06)^{21} - 1}{0.06} - 1 \right]; x = \$2,500 \times 38.99273 = \$97,482.$

The **Appendix Tables** do not have factors for 21 periods.

c. $\$100,000 = x \left[\frac{(1 + 0.06)^{20} - 1}{0.06} - 1 \right]; x = \$100,000/36.78559 = \$2,718.$

d. $\$100,000 = x \left[\frac{(1 + 0.06)^{21} - 1}{0.06} - 1 \right]; x = \$100,000/38.99273 = \$2,565.$

The **Appendix Tables** do not have factors for 21 periods.**PROBLEM A.4 FOR SELF-STUDY**

(Present value of an annuity.)

a. $\$10,000 \times \frac{1 - (1 + 0.08)^{-20}}{0.08} = \$10,000 \times 9.81815 = \$98,182.$

b. $\$150,000 = x \left[\frac{1 - (1 + 0.12)^{-4}}{0.12} + 1 \right]; x = \$150,000/4.03735 = \$37,153.$

c. Present Value of Development Cost: $\$20 \times \frac{1 - (1 + 0.12)^{-3}}{0.12} \times \20×2.40183
 $= \$48.036$ million.

Present Value of Deferred Annuity Cost: $\$15 \times \frac{1 - (1 + 0.12)^{-5}}{0.12} \times \frac{1}{(1.12)^3}$
 $= \$15 \times 2.56581 = \38.487 million.

The net present value is a loss of \$9,549 million, which equals $\$38.487 - \48.036 . The firm should not invest in this project.**PROBLEM A.5 FOR SELF-STUDY**

(Finding the internal rate of return.)

- a. The internal rate of return is 4.4%.
 b. The internal rate of return is 6.9%.
 c. The internal rate of return is 8.5%.

KEY TERMS AND CONCEPTS

Principal
 Compound interest
 Future value
 Simple interest

Factor
 Effective annual yield
 Present value
 Discounting

Discount rate	Present value of an ordinary annuity
Annuity	Perpetuity
Ordinary annuity or annuity in arrears	Internal rate of return
Annuity due or annuity in advance	Implicit interest (rate)
Deferred annuity	Yield to maturity
Future value of an ordinary annuity	

QUESTIONS, EXERCISES, AND PROBLEMS

QUESTIONS

1. Review the terms and concepts listed above in Key Terms and Concepts.
2. How does interest equate cash flows over time?
3. Distinguish between simple and compound interest.
4. Distinguish between the discounted present value of a stream of future payments and their net present value. If there is no distinction, then so state.
5. Distinguish between an annuity due and an ordinary annuity.
6. Describe the implicit interest rate for a series of cash flows and a procedure for finding it.
7. Does the present value of a given amount to be paid in 10 years increase or decrease if the interest rate increases? Suppose that the amount is due in 5 years? 20 years? Does the present value of an annuity to be paid for 10 years increase or decrease if the discount rate decreases? Suppose that the annuity is for 5 years? 20 years?
8. Rather than pay you \$1,000 a month for the next 20 years, the person who injured you in an automobile accident is willing to pay a single amount now to settle your claim for injuries. Would you rather use an interest rate of 6% or 12% in computing the present value of the lump-sum settlement? Comment or explain.
9. The perpetuity with growth formula involves several assumptions. Which one seems least plausible?

EXERCISES

Exercises 10 through 15 involve calculations of present and future value for single payments and for annuities. To make the exercises more realistic, we do not give specific guidance with each individual exercise.

10. Mr. Altgeldt has \$5,000 to invest. He wants to know how much it will amount to if he invests it at the following rates:
 - a. 6% per year for 21 years.
 - b. 8% per year for 33 years.
11. Mme. Barefield wishes to have \$150,000 at the end of 8 years. How much must she invest today to accomplish this purpose if the interest rate is
 - a. 6% per year?
 - b. 8% per year?
12. Mr. Case plans to set aside \$4,000 each year, the first payment to be made on January 1, 2013, and the last on January 1, 2018. How much will he have accumulated by January 1, 2018, if the interest rate is
 - a. 6% per year?
 - b. 8% per year?
13. Ms. Namura wants to have ¥45 million on her 65th birthday. She asks you to tell her how much she must deposit on each birthday from her 58th to 65th, inclusive, in order to receive this amount. Assume the following interest rates:
 - a. 8% per year

- b. 12% per year
14. If Mr. Enmetti invests €90,000 on June 1 of each year from 2008 to 2018 inclusive, how much will he have accumulated on June 1, 2019 (note that one year elapses after the last payment), if the interest rate is
- a. 5% per year?
- b. 10% per year?
15. Ms. Fleming has £145,000 with which she purchases an annuity on February 1, 2008. The annuity consists of six annual receipts, the first to be received on February 1, 2009. How much will she receive in each payment? Assume the following interest rates:
- a. 8% per year.
- b. 12% per year.
16. In the preceding **Exercises 10 through 15**, you computed a number. To do so, first you must decide on the appropriate factor from the **Appendix Tables**, and then you use that factor in the appropriate calculation. Notice that you could omit the last step. You could write an arithmetic expression showing the factor you want to use without actually copying down the number and doing the arithmetic. For example, the notation $T(i, p, r)$ means Table i (1, 2, 3, or 4), row p (periods 1 to 20, 22, 24, . . . , 40, 45, 50, 100), and column r (interest rates from $\frac{1}{2}\%$ up to 20%). Thus, $T(3, 16, 12)$ would be the factor in **Appendix Table 3** for 16 periods and an interest rate of 12% per period, which is 42.75328. Using this notation, you can write an expression for any compound interest problem. A clerk or a computer can evaluate the expression.

You can check that you understand this notation by observing that the following are true statements:

$$\begin{aligned} T(1, 20, 8) &= 4.66096 \\ T(2, 12, 5) &= 0.55684 \\ T(3, 16, 12) &= 42.75328 \\ T(4, 10, 20) &= 4.19247 \end{aligned}$$

In the following questions, write an expression for the answer using the notation introduced here, but do not attempt to evaluate the expression.

- a. Work the a parts of **Exercises 10 through 15**.
- b. How might your instructor use this notation to write examination questions on compound interest without having to supply you with tables?
17. **Effective interest rate.** State the rate per period and the number of periods in the following:
- a. 12% per year, for 5 years, compounded annually.
- b. 12% per year, for 5 years, compounded semiannually.
- c. 12% per year, for 5 years, compounded quarterly.
- d. 12% per year, for 5 years, compounded monthly.

Exercises 18 through 26 involve calculations of present and future value for single payments and for annuities. To make the exercises more realistic, we do not give specific guidance with each individual exercise.

18. Compute the future value of the following:
- a. \$100 invested for 5 years at 4% compounded annually.
- b. \$500 invested for 15 periods at 2% compounded once per period.
- c. \$200 invested for 8 years at 3% compounded semiannually.
- d. \$2,500 invested for 14 years at 8% compounded quarterly.
- e. \$600 invested for 3 years at 12% compounded monthly.
19. Compute the present value of the following:
- a. \$100 due in 30 years at 4% compounded annually.
- b. \$250 due in 8 years at 8% compounded quarterly.
- c. \$1,000 due in 2 years at 12% compounded monthly.

20. Compute the amount (future value) of an ordinary annuity (an annuity in arrears) of the following:
- 13 rental payments of \$100 at 1% per period.
 - 8 rental payments of \$850 at 6% per period.
 - 28 rental payments of \$400 at 4% per period.
21. Mr. Grady agrees to lease a certain property for 10 years, at the following annual rental, payable in advance:

Years 1 and 2—\$1,000 per year
 Years 3 to 6—\$2,000 per year
 Years 7 to 10—\$2,500 per year

- What single immediate sum will pay all of these rents, discounted at
- 6% per year?
 - 8% per year?
 - 10% per year?
22. To establish a fund that will provide a scholarship of \$3,000 per year indefinitely, with the first award to occur now, how much must a donor deposit if the fund earns
- 6% per period?
 - 8% per period?
23. Consider the scholarship fund in the preceding question. Suppose that the first scholarship award occurs one year from now and the donor wants the scholarship to grow by 2% per year. How much should the donor deposit if the fund earns
- 6% per period?
 - 8% per period?
- Suppose that the first scholarship award occurs five years from now but is to grow at 2% per year after the fifth year, the time of the first \$3,000 award. How much should the donor deposit if the fund earns
- 6% per year?
 - 8% per year?
24. An old agreement obliges the state to help a rural county maintain a bridge by paying \$60,000 now and every two years thereafter forever. The state wants to discharge its obligation by paying a single sum to the county now for the payment due and all future payments. How much should the state pay the county if the discount rate is
- 8% per year?
 - 12% per year?
25. Find the interest rate implicit in a loan of \$100,000 that the borrower discharges with two annual installments of \$55,307 each, paid at the end of each of the next two years.
26. A single-payment note promises to pay \$140,493 in three years. The issuer exchanges the note for equipment having a fair value of \$100,000. The exchange occurs three years before the maturity date on the note. What is the implicit interest rate for the single-payment note?
27. A single-payment note promises \$67,280 at maturity. The issuer of the note exchanges it for land with a fair value of \$50,000. The exchange occurs two years before the maturity date on the note.
- What is the implicit interest rate for this single-payment note?
 - Using the implicit interest rate, construct an amortization schedule for the note. Show the carrying value of the note at the start of each year, the amount of interest expense for each year, the amount reducing or increasing the carrying value each year, and the carrying value at the end of the year.
28. **Finding implicit interest rates; constructing amortization schedules.** Berman Company purchased a plot of land for possible future development. The land had fair value of \$86,000. Berman Company gave a 3-year interest-bearing note. The note had face value of \$100,000 and provided for interest at a stated rate of 8%. The note requires payments of \$8,000 at

the end of each of three years, the last payment coinciding with the maturity of the note's face value of \$100,000.

- a. What is the interest rate implicit in the note, accurate to the nearest tenth of 1%?
 - b. Construct an amortization schedule for the note for each year. Show the carrying value of the note at the start of the year, interest for the year, payment for the year, amount reducing or increasing the carrying value of the note for each payment, and the carrying value of the note at the end of each year. Use the interest rate found in part a. See **Exhibit 11.2** for an example of an amortization schedule.
- 29. Find equivalent annual rate offered for purchase discounts.** The terms of sale “2/10, net/30” mean that the buyer can take a discount of 2% from gross invoice price by paying the invoice within 10 days; otherwise, the buyer must pay the full amount within 30 days.
- a. Write an expression for the implicit annual rate of interest being offered by viewing the entire discount as interest for funds received sooner rather than later. (Note that by not taking the discount, the buyer borrows 98% of the gross invoice price for 20 days.)
 - b. The tables at the back of the book do not permit the exact evaluation of the expression derived in part a. The rate of interest implied is 44.59% per year. Use the tables or a financial calculator or a spreadsheet to convince yourself that this astounding (to some) answer must be close to correct.

PROBLEMS

Problems 30 through 44 involve using future value and present value techniques, including perpetuities, to solve a variety of realistic problems. We give no hints as to the specific calculation with the problems.

30. An oil-drilling company figures that it must spend \$30,000 for an initial supply of drill bits and that it must spend \$10,000 every month to replace the worn-out bits. What is the present value of the cost of the bits if the company plans to be in business indefinitely and discounts payments at 1% per month?
31. If you promise to leave \$30,000 on deposit at the Dime Savings Bank for four years, the bank will give you a new large, flat-screen Sony TV today and your \$30,000 back at the end of four years. How much are you paying today for the TV, in effect, if the bank pays other customers 4% interest compounded quarterly (= 1% paid four times per year)?
32. When Mr. Shafer died, his estate after taxes amounted to \$300,000. His will provided that Mrs. Shafer would receive \$24,000 per year starting immediately from the principal of the estate and that the balance of the principal would pass to the Shafers' children upon Mrs. Shafer's death. The state law governing this estate provided for a dower option. If Mrs. Shafer elects the dower option, she renounces the will and can have one-third of the estate in cash now. The remainder will then pass immediately to their children. Mrs. Shafer wants to maximize the present value of her bequest. Should she take the annuity or elect the dower option if she will receive five payments and discounts payments at
 - a. 8% per year?
 - b. 12% per year?
 (Note this problem explicitly states that Mrs. Shafer will receive five payments. In reality, life expectancy is uncertain. The correct calculation combines a mortality table with the present value tables. Actuaries deal with such calculations.)
33. Mrs. Heileman occasionally drinks beer. (Guess which brand.) She consumes one case in 20 weeks. She can buy beer in disposable cans for \$25.20 per case or for \$24.00 per case of returnable bottles if she pays a \$3.00 refundable deposit at the time of purchase. If her discount rate is $\frac{1}{2}\%$ per week, how much in present value dollars does she save by buying the returnables and thereby losing the use of the \$3.00 deposit for 20 weeks?
34. When General Electric Company first introduced the Lucalox ceramic, screw-in light bulb, the bulb cost three and one-half times as much as an ordinary bulb but lasted five times as long. An ordinary bulb cost \$1.00 and lasted about eight months. If a firm has a discount rate of 12% compounded three times a year, how much would it save in present value dollars by using one Lucalox bulb?

35. Oberweis Dairy switched from delivery trucks with regular gasoline engines to ones with diesel engines. The diesel trucks cost \$6,000 more than the ordinary gasoline trucks but costs \$1,800 per year less to operate. Assume that Oberweis saves the operating costs at the end of each month. If Oberweis uses a discount rate of 1% per month, approximately how many months, at a minimum, must the diesel trucks remain in service for the switch to be sensible?

36. **Calculating impairment.** On January 1, 2013, assume that Levi Strauss opened a new textile plant to produce synthetic fabrics. The plant is on leased land; 20 years remain on the nonrenewable lease.

The cost of the plant was \$20 million. Net cash flow to be derived from the project is estimated to be \$3,000,000 per year. The company does not normally invest in such projects unless the anticipated yield is at least 12%.

On December 31, 2013, the company calculates that cash flows from the plant were \$2,800,000 for 2013. On the same day, farm experts predict cotton production will be unusually low for the next two years. Levi Strauss estimates the resulting increase in demand for synthetic fabrics will boost cash flows to \$3,500,000 for each of the next two years. Subsequent years' estimates remain unchanged at \$3,000,000 per year. Ignore tax considerations.

- Calculate the present value of the future expected cash flows from the plant when it opened.
 - What is the present value of the plant on January 1, 2014, immediately after the re-estimation of future cash flows?
 - On January 2, 2014, the day following the cotton production news release, a competitor announces plans to build a synthetic fabrics plant to open in three years. Levi Strauss keeps its 2014 to 2016 estimates but reduces the estimated annual cash flows for subsequent years to \$2,000,000. What is the value of Levi Strauss's plant on January 1, 2014, after the new projections?
 - On January 2, 2014, an investor contacts Levi Strauss about purchasing a 20% share of the plant. If the investor expects to earn at least a 12% annual return on the investment, what is the maximum amount that the investor should pay? Assume that the investor and Levi Strauss both know all relevant information and use the same estimates of annual cash flows described in part c.
37. **Finding implicit interest rates (truth-in-lending laws reduce the type of deception suggested by this problem).** Friendly Loan Company advertises that it is willing to lend cash for five years at the low rate of 8% per year. A potential borrower discovers that a five-year, \$10,000 loan requires that the borrower pay the 8% interest in advance, with interest deducted from the loan proceeds. The borrower will collect \$6,000 [= \$10,000 - (5 × 0.08 × \$10,000)] in cash and must repay the "\$10,000" loan in five annual installments of \$2,000, one each at the end of the next 5 years.

Compute the effective interest rate implied by these loan terms.

38. **Deriving net present value of cash flows for decision to dispose of asset.** Suppose that yesterday Black & Decker Company purchased and installed a made-to-order machine tool for fabricating parts for small appliances. The machine cost \$100,000. Today, Square D Company offers a machine tool that will do exactly the same work but costs only \$50,000. Assume that the discount rate is 12%, that both machines will last for five years, that Black & Decker will depreciate both machines on a straight-line basis with no salvage value for tax purposes, that the income tax rate is and will continue to be 40%, and that Black & Decker earns sufficient income that it can use any loss from disposing of or depreciating the "old" machine to offset other taxable income.

How much, at a minimum, must the "old" machine fetch on resale at this time to make purchasing the new machine worthwhile?

39. **Computation of present value of cash flows; untaxed acquisition, no change in tax basis of assets.** The balance sheet of Lynch Company shows net assets (= total assets - total liabilities) of \$100,000 and shareholders' equity of \$100,000. The assets are all depreciable assets with remaining lives of 20 years. The income statement for the year shows revenues of \$700,000, depreciation of \$50,000 (= \$1,000,000/20 years), no other expenses, income taxes of \$260,000 (= 40% of pretax income of \$650,000), and net income of \$390,000.

Bages Company is considering purchasing all of the stock of Lynch Company. It is willing to pay an amount equal to the present value of the cash flows from operations for the next 20 years discounted at a rate of 10% per year.

The transaction will be a tax-free exchange; that is, after the purchase, the tax basis of the assets of Lynch Company will remain unchanged so that depreciation charges will remain at \$50,000 per year and income taxes will remain at \$260,000 per year. Revenues will be \$700,000 per year for the next 20 years.

- a. Compute the annual cash flows produced by Lynch Company.
 - b. Compute the maximum amount Bages Company should be willing to pay.
- 40. Computation of the present value of cash flows; taxable acquisition, changing tax basis of assets.** Refer to the data in the preceding problem. Assume now that the acquisition is taxable, so that the tax basis of the assets acquired changes after the purchase. If the purchase price is V , then depreciation charges will be $V/20$ per year for 20 years. Income taxes will be 40% of pretax income. What is the maximum Bages Company should be willing to pay for Lynch Company?
- 41. Valuation of intangibles with perpetuity formulas.** When the American Basketball Association (ABA) merged with the National Basketball Association (NBA), the owners of the ABA St. Louis Spirits agreed to dissolve their team and not enter the NBA. In return, the owners received a promise in perpetuity from the NBA that the NBA would pay to the Spirits' owners an amount each year equal to 40% of the TV revenues that the NBA paid to any one of its regular teams. At the time of the deal, the owners received \$4 million per year. The NBA wanted to pay a single amount to the owners at the time of the deal and not have to pay more in the future. Of course, the owners prefer to collect more, rather than less, but here they want to know the reasonable minimum that will make them indifferent to the single payment in lieu of receiving the annual payments in perpetuity. Ignore income tax effects.
- a. Assume the owners expect the TV revenues to remain constant, so that they can expect \$4 million per year in perpetuity and use an interest rate of 8% in their discounting calculations. What minimum price should these owners be willing to accept?
 - b. Refer to the specifications for the preceding question. If the owners use a smaller interest rate for discounting, will the minimum price they are willing to accept increase, decrease, or remain unchanged?
 - c. The owners use an 8% discount rate, and they expect TV revenues to increase by 2% per year in perpetuity, with the next collection, due one year from today, being \$4.08 (= $1.02 \times \$4.00$) million. What minimum price should the owners be willing to accept?
 - d. Refer to the specifications in c. If the owners use a smaller interest rate for discounting, will the minimum price they are willing to accept increase, decrease, or remain unchanged?
 - e. Refer to the specifications in c. If the owners assume a smaller rate for growth in future receipts from the NBA, will the minimum price they are willing to accept increase, decrease, or remain unchanged?
- 42. (Adapted from a problem by S. Zeff.) Analysis of benefits of acquisition of long-term assets.** Lexie T. Colleton is the chief financial officer of Ragazze, and one of her duties is to give advice on investment projects. Today's date is December 31, 2013. Colleton requires that, to be acceptable, new investments must provide a positive net present value after discounting cash flows at 12% per year.
- A proposed investment is the purchase of an automatic gonculator, which involves an initial cash disbursement on December 31, 2013. The useful life of the machine is nine years, through 2022. Colleton expects to be able to sell the machine for cash of \$30,000 on December 31, 2022. She expects commercial production to begin on December 31, 2013.
- Ragazze will depreciate the machine on a straight-line basis. Ignore income taxes.
- During 2014, the break-in year, Ragazze will perform test runs in order to put the machine in proper working order. Colleton expects that the total cash outlay for this purpose will be \$20,000, incurred at the end of 2014.
- Colleton expects that the cash disbursements for regular maintenance will be \$60,000 at the end of each of 2015 through 2018 inclusive, and \$100,000 at the end of each of 2019 through 2021 inclusive.
- Colleton expects the cash receipts (net of all other operating expenses) from the sale of products that the machine produces to be \$130,000 at the end of each year from 2015 through 2022, inclusive.

- a. What is the maximum price that Ragazze can pay for the automatic gongulator on December 31, 2013, and still earn a positive net present value of cash flows?
- b. Independent of your answer to part a, assume the purchase price is \$250,000, which Ragazze will pay with an installment note requiring four equal annual installments starting December 31, 2014, and an implicit interest rate of 10% per year. What is the amount of each payment?
43. (Adapted from a problem by S. Zeff.) **Choosing between investment alternatives.** William Marsh, CEO of Gulf Coast Manufacturing, wishes to know which of two strategies he has chosen for acquiring an automobile has lower present value of cost.

Strategy L. Acquire a new Lexus at the beginning of 2013, keep it until the end of 2018, then trade it in on a new car.

Strategy M. Acquire a new Mercedes-Benz at the beginning of 2013, trade it in at the end of 2015 on a second Mercedes-Benz, keep that for another three years, then trade it in on a new car at the end of 2018.

Data pertinent to these choices appear below. Assume that Marsh will receive the trade-in value in cash or as a credit toward the purchase price of a new car. Ignore income taxes and use a discount rate of 10% per year. Gulf Coast Manufacturing depreciates automobiles on a straight-line basis over 8 years for financial reporting, assuming zero salvage value at the end of eight years.

- a. Which strategy has lower present value of costs?
- b. What role, if any, do depreciation charges play in the analysis and why?

	Lexus	Mercedes-Benz
Initial Cost at the Start of 2013	\$60,000	\$45,000
Initial Cost at the Start of 2016		48,000
Trade-in Value		
End of 2015		23,000
End of 2018 ¹	16,000	24,500
Estimated Annual Cash Operating Costs		
Except Major Servicing	4,000	4,500
Estimated Cash Cost of Major Servicing		
End of 2016	6,500	
End of 2014 and End of 2017		2,500

¹At this time Lexus is 6 years old; second Mercedes-Benz is 3 years old.

44. **Valuation involving perpetuity growth model assumptions.** Fast Growth Start-Up Company (FGSUC) has a new successful Internet business. It expects to earn \$100 million of after-tax free cash flows this year. The company proposes to go public, and the company's internal financial staff suggests to the board of directors that a valuation of \$2.5 billion seems reasonable for the company. The investment banking firm's analyst and the financial staff at the company agree that the growth rate in free cash flows will be 25% per year for several years before the growth rate drops back to one more closely resembling the growth rate in the economy as a whole, which all assume to be 4% per year. Assume that the after-tax discount rate suitable for such a new venture is 15% per year.

How many years of growth in after-tax free cash flow of 25% per year will FGSUC need to earn to justify a market valuation of \$2.5 billion? Do not attempt to work this problem without using a spreadsheet program.

Compound Interest and Annuity Tables

TABLE 1

Future Value of \$1
 $F_n = P(1 + r)^n$
 $r =$ interest rate; $n =$ number of periods until valuation; $P = \$1$

Periods = n	1/2%	1%	1 1/2%	2%	3%	4%	5%	6%	7%	8%	10%	12%	15%	20%	25%
1	1.00500	1.01000	1.01500	1.02000	1.03000	1.04000	1.05000	1.06000	1.07000	1.08000	1.10000	1.12000	1.15000	1.20000	1.25000
2	1.01003	1.02010	1.03023	1.04040	1.05090	1.06160	1.07250	1.08360	1.09490	1.10640	1.11810	1.13000	1.14210	1.15440	1.16700
3	1.01508	1.03030	1.04568	1.06121	1.07703	1.09306	1.10930	1.12574	1.14238	1.15922	1.17626	1.19350	1.21094	1.22858	1.24642
4	1.02015	1.04060	1.06136	1.08243	1.10381	1.12550	1.14750	1.16981	1.19243	1.21536	1.23860	1.26214	1.28598	1.31012	1.33456
5	1.02525	1.05101	1.07728	1.10408	1.13142	1.15931	1.18775	1.21674	1.24628	1.27637	1.30691	1.33790	1.36944	1.40154	1.43420
6	1.03038	1.06152	1.09344	1.12616	1.15966	1.19392	1.22894	1.26472	1.30126	1.33856	1.37661	1.41541	1.45496	1.49526	1.53631
7	1.03553	1.07214	1.10984	1.14869	1.18870	1.22988	1.27224	1.31578	1.36050	1.40640	1.45349	1.50178	1.55127	1.60196	1.65385
8	1.04071	1.08286	1.12649	1.17166	1.21847	1.26654	1.31587	1.36647	1.41834	1.47148	1.52589	1.58157	1.63853	1.69676	1.75626
9	1.04591	1.09369	1.14339	1.19509	1.24891	1.30486	1.36296	1.42321	1.48471	1.54746	1.61146	1.67671	1.74321	1.81096	1.88006
10	1.05114	1.10462	1.16054	1.21899	1.27999	1.34356	1.40976	1.47859	1.54996	1.62387	1.69934	1.77637	1.85496	1.93511	2.01682
11	1.05640	1.11567	1.17795	1.24337	1.31194	1.38267	1.45556	1.53061	1.60782	1.68719	1.76864	1.85217	1.93778	2.02547	2.11524
12	1.06168	1.12683	1.19562	1.26824	1.34471	1.42404	1.50623	1.59128	1.67919	1.76986	1.86320	1.95929	2.05812	2.15869	2.26104
13	1.06699	1.13809	1.21355	1.29361	1.37828	1.46656	1.55846	1.65398	1.75311	1.85486	1.95924	2.06725	2.17789	2.29016	2.40407
14	1.07232	1.14947	1.23176	1.31948	1.41259	1.51108	1.61496	1.72424	1.83791	1.95596	2.07839	2.20520	2.33640	2.47199	2.61097
15	1.07768	1.16097	1.25023	1.34587	1.44681	1.55406	1.66762	1.78650	1.91069	2.04019	2.17500	2.31521	2.46082	2.61183	2.76824
16	1.08307	1.17258	1.26899	1.37279	1.48273	1.59882	1.72107	1.84948	1.98405	2.12478	2.27179	2.42508	2.58465	2.74949	2.91970
17	1.08849	1.18430	1.28802	1.40024	1.52029	1.64754	1.78190	1.92337	2.07194	2.22761	2.39039	2.56028	2.73737	2.92166	3.11224
18	1.09393	1.19615	1.30734	1.42825	1.55830	1.69455	1.83790	1.98837	2.14594	2.31061	2.48239	2.66128	2.84737	3.04066	3.24024
19	1.09940	1.20811	1.32695	1.45681	1.59786	1.74511	1.89856	2.05921	2.22706	2.40221	2.58466	2.77451	2.97176	3.17641	3.38856
20	1.10490	1.22019	1.34686	1.48595	1.63830	1.79605	1.96030	2.13105	2.30830	2.49305	2.68530	2.88515	3.09260	3.30775	3.53060
22	1.11597	1.24472	1.38756	1.54598	1.71610	1.89692	2.08937	2.29346	2.50919	2.73654	2.97559	3.22634	3.48879	3.76294	4.04879
24	1.12716	1.26973	1.42950	1.60844	1.80279	2.01320	2.23965	2.48214	2.74069	2.99534	3.25709	3.52594	3.80189	4.08484	4.37489
26	1.13846	1.29526	1.47271	1.67342	1.88589	2.11434	2.35789	2.62354	2.90129	3.18114	3.47309	3.77714	4.09329	4.42154	4.76179
28	1.14987	1.32129	1.51722	1.74102	2.07993	2.39168	2.72733	3.08798	3.46573	3.85548	4.25723	4.67198	5.09973	5.54048	6.00423
30	1.16140	1.34785	1.56308	1.81136	2.24276	2.62341	3.03816	3.47891	3.94066	4.41441	4.90116	5.40091	5.91466	6.44241	6.98416
32	1.17304	1.37494	1.61032	1.88454	2.27508	2.70063	3.16318	3.63893	4.13668	4.62743	5.13118	5.64993	6.18268	6.72943	7.29018
34	1.18480	1.40258	1.66000	1.96068	2.31914	2.80433	3.32510	3.84208	4.38183	4.94458	5.52033	6.10908	6.71178	7.32853	7.94428
36	1.19668	1.43077	1.70914	2.03989	2.89828	3.07182	3.55567	4.14225	4.73200	5.33575	5.94850	6.57925	7.22800	7.88575	8.55850
38	1.20868	1.45953	1.76080	2.12230	3.07478	3.36548	3.92013	4.51169	5.11669	5.73614	6.37089	7.02584	7.69959	8.39234	9.10409
40	1.22079	1.48886	1.81402	2.20804	3.26204	3.68102	4.32194	4.94349	5.58624	6.24949	6.93274	7.63624	8.35999	9.10474	9.87949
45	1.25162	1.56481	1.95421	2.43785	3.78160	5.84118	8.98501	13.76461	21.00245	31.92045	48.90461	72.89048	108.76927	163.9876	249.5887
50	1.28323	1.64463	2.10524	2.69159	4.38391	7.10668	11.46740	18.42015	29.45703	46.90161	77.3909	117.3909	183.65744	289.0022	438.70664
100	1.64667	2.70481	4.43205	7.24465	19.21863	50.50495	131.5013	339.3021	867.7163	2199.761	13780.61	83522.27	117 × 10 ⁴	828 × 10 ⁵	491 × 10 ⁷

TABLE 2

Present Value of \$1

$P = F_n (1 + r)^{-n}$

$r =$ discount rate; $n =$ number of periods until payment; $F_n = \$1$

Periods = n	$\frac{1}{2}\%$	1%	$1\frac{1}{2}\%$	2%	3%	4%	5%	6%	7%	8%	10%	12%	15%	20%	25%
1	.99502	.99010	.98522	.98039	.97087	.96154	.95238	.94340	.93458	.92593	.90909	.89286	.86957	.83333	.80000
2	.99007	.98030	.97066	.96117	.94260	.92456	.90703	.89000	.87344	.85734	.82645	.79719	.75614	.69444	.64000
3	.98515	.97059	.95632	.94232	.91514	.88900	.86384	.83962	.81630	.79383	.75131	.71178	.65752	.57870	.51200
4	.98025	.96098	.94218	.92385	.88849	.85480	.82270	.79209	.76290	.73503	.68301	.63552	.57175	.48225	.40960
5	.97537	.95147	.92826	.90573	.86261	.82193	.78353	.74726	.71299	.68058	.62092	.56743	.49718	.40188	.32768
6	.97052	.94205	.91454	.88797	.83748	.79031	.74622	.70496	.66634	.63017	.56447	.50663	.43233	.33490	.26214
7	.96569	.93272	.90103	.87056	.81309	.75992	.71068	.66506	.62275	.58349	.51316	.45235	.37594	.27908	.20972
8	.96089	.92348	.88771	.85349	.78941	.73069	.68484	.64271	.60201	.54027	.46651	.40388	.32690	.23257	.16777
9	.95610	.91434	.87459	.83676	.76542	.70259	.65493	.61190	.57190	.50025	.42410	.36061	.28426	.19381	.13422
10	.95135	.90529	.86167	.82035	.74409	.67556	.61391	.55839	.50835	.46319	.38554	.32197	.24718	.16151	.10737
11	.94661	.89632	.84893	.80426	.72242	.64958	.58468	.52679	.47509	.42888	.35049	.28748	.21494	.13459	.08590
12	.94191	.88745	.83639	.78849	.70138	.62460	.55684	.49687	.44401	.39711	.31863	.25668	.18691	.11216	.06872
13	.93722	.87866	.82403	.77303	.68095	.60057	.53032	.46884	.41496	.36770	.28966	.22917	.16253	.09346	.05498
14	.93256	.86996	.81185	.75788	.66112	.57748	.50507	.44230	.38782	.34046	.26333	.20462	.14133	.07789	.04398
15	.92792	.86135	.79985	.74301	.64186	.55526	.48102	.41727	.36245	.31524	.23939	.18270	.12289	.06491	.03518
16	.92330	.85282	.78803	.72845	.62317	.53391	.45811	.39365	.33873	.29189	.21763	.16312	.10686	.05409	.02815
17	.91871	.84438	.77639	.71416	.60502	.51337	.43630	.37136	.31657	.27027	.19784	.14564	.09293	.04507	.02252
18	.91414	.83602	.76491	.70016	.58739	.49363	.41552	.35034	.29586	.25025	.17986	.13004	.08081	.03756	.01801
19	.90959	.82774	.75361	.68643	.57029	.47464	.39573	.33051	.27651	.23171	.16351	.11611	.07027	.03130	.01441
20	.90506	.81954	.74247	.67297	.55368	.45639	.37689	.31180	.25842	.21455	.14864	.10367	.06110	.02608	.01153
22	.89608	.80340	.72069	.64684	.52189	.42196	.34185	.27751	.22571	.18394	.12285	.08264	.04620	.01811	.00738
24	.88719	.78757	.69954	.62172	.49193	.39012	.31077	.24698	.19715	.15770	.10153	.06588	.03493	.01258	.00472
26	.87838	.77205	.67902	.59758	.46369	.36069	.28124	.21981	.17220	.13520	.08391	.05252	.02642	.00874	.00302
28	.86966	.75684	.65910	.57437	.43708	.33348	.25509	.19563	.15040	.11591	.06934	.04187	.01997	.00607	.00193
30	.86103	.74192	.63976	.55207	.41199	.30832	.23138	.17411	.13137	.09938	.05731	.03338	.01510	.00421	.00124
32	.85248	.72730	.62099	.53063	.38834	.28506	.20987	.15496	.11474	.08520	.04736	.02661	.01142	.00293	.00079
34	.84402	.71297	.60277	.51003	.36604	.26355	.19035	.13791	.10022	.07305	.03914	.02121	.00864	.00203	.00051
36	.83564	.69892	.58509	.49022	.34503	.24367	.17266	.12274	.08754	.06262	.03235	.01691	.00653	.00141	.00032
38	.82735	.68515	.56792	.47119	.32523	.22529	.15661	.10924	.07646	.05369	.02673	.01348	.00494	.00098	.00021
40	.81914	.67165	.55126	.45289	.30656	.20829	.14205	.09722	.06678	.04603	.02209	.01075	.00373	.00068	.00013
45	.79896	.63805	.51171	.41020	.26444	.17120	.11330	.07265	.04761	.03133	.01372	.00610	.00186	.00027	.00004
50	.77929	.60804	.47500	.37153	.22811	.14071	.08720	.05429	.03395	.02132	.00852	.00346	.00092	.00011	.00001
100	.60729	.36971	.22563	.13803	.05203	.01980	.00760	.00295	.00115	.00045	.00007	.00001	.00000	.00000	.00000

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Future Value of an Annuity of \$1 in Arrears

$$P_f = \frac{(1 + r)^n - 1}{r}$$

r = interest rate; n = number of payments

TABLE 3

No. of Payments = n	½%	1%	1½%	2%	3%	4%	5%	6%	7%	8%	10%	12%	15%	20%	25%
1	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
2	2.00500	2.01000	2.02000	2.04000	2.06000	2.08000	2.10000	2.12000	2.15000	2.18000	2.22000	2.26000	2.31000	2.36000	2.41000
3	3.01503	3.03010	3.04523	3.06040	3.09090	3.12160	3.15250	3.18360	3.21490	3.24640	3.31000	3.37440	3.44830	3.52260	3.59730
4	4.03010	4.06040	4.09090	4.12161	4.18360	4.24646	4.31013	4.37462	4.43994	4.50511	4.64100	4.77683	4.91263	5.04840	5.18416
5	5.05025	5.10101	5.15227	5.20404	5.30914	5.41632	5.52563	5.63709	5.75074	5.86660	6.10510	6.35285	6.60078	6.84883	7.09698
6	6.07550	6.15202	6.22955	6.30812	6.46841	6.63298	6.80191	6.97532	7.15329	7.33593	7.71561	8.11519	8.53477	8.96435	9.40393
7	7.10588	7.21354	7.32299	7.43428	7.66246	7.89829	8.14201	8.39384	8.65402	8.92280	9.48717	10.08901	10.72682	11.40063	12.11044
8	8.14141	8.28567	8.43284	8.58297	8.89234	9.21423	9.54911	9.89747	10.25980	10.63663	11.43589	12.29969	13.22682	14.21846	15.27561
9	9.18212	9.36853	9.55933	9.75463	10.15911	10.58280	11.02656	11.49132	11.97799	12.48756	13.57948	14.77566	16.08584	17.51846	19.08363
10	10.22803	10.46221	10.70272	10.94972	11.46388	12.00611	12.57789	13.18079	13.81645	14.48656	15.93742	17.54874	20.30372	25.95868	33.25290
11	11.27917	11.56683	11.86326	12.16872	12.80780	13.48635	14.20679	14.97164	15.78360	16.64549	18.53117	20.65458	24.34928	32.15042	42.56613
12	12.33556	12.68250	13.04121	13.41209	14.19203	15.02581	15.91713	16.86994	17.88845	18.97713	21.38428	24.13313	29.00167	39.58050	54.20766
13	13.39724	13.80933	14.23683	14.68033	15.61779	16.62694	17.71298	18.88214	20.14064	21.49530	24.52271	28.02911	34.35192	48.49660	68.75958
14	14.46423	14.94742	15.45038	15.97394	17.08632	18.29191	19.59863	21.01507	22.55049	24.21492	27.92748	32.39260	40.50471	59.19592	86.94947
15	15.53655	16.09690	16.68214	17.29342	18.99891	20.82359	21.57856	23.27597	25.12902	27.15211	31.77248	37.27971	47.58041	72.03511	109.6668
16	16.61423	17.25786	17.93237	18.63929	20.15688	21.82453	23.65749	25.67253	27.88805	30.32428	35.94973	42.75328	55.71747	87.44213	138.1085
17	17.69730	18.43044	19.20136	20.01207	21.76159	23.69751	25.84037	28.21288	30.84022	33.75023	40.54470	48.88367	65.07509	105.9306	173.6357
18	18.78579	19.61475	20.48938	21.41231	23.41444	25.64541	28.13238	30.90565	33.99903	37.45024	45.59917	55.74971	75.83636	128.1167	218.0446
19	19.87972	20.81090	21.78672	22.84056	25.11687	27.67123	30.53900	33.75989	37.37896	41.44826	51.15909	63.43968	88.21181	154.7400	273.5558
20	20.97912	22.01900	23.12367	24.29737	26.87037	29.77808	33.06595	36.78559	40.99549	45.76196	57.27500	72.05244	102.44356	186.6880	342.9447
22	23.19443	24.47159	25.83758	27.29898	30.53678	34.24797	38.50521	43.39229	49.00574	55.45676	71.40275	92.50258	137.63164	271.0307	538.1011
24	25.43196	26.97346	28.63352	30.42186	34.42647	39.08260	44.50200	50.81558	58.17667	66.76476	88.49733	118.15524	184.16784	392.4842	843.0329
26	27.69191	29.52563	31.51397	33.67091	38.55304	44.31174	51.11345	59.15638	68.67647	79.95442	109.18177	150.33393	245.71197	567.3773	1319.489
28	29.97452	32.12910	34.48148	37.05121	42.93092	49.96758	58.40258	68.82811	80.69769	95.33883	134.20994	190.69889	327.10408	819.2233	2063.952
30	32.28002	34.78489	37.53868	40.56908	47.5742	56.08494	66.43985	79.05819	94.46079	113.28321	164.49402	241.33268	434.74515	1181.881	3227.174
32	34.60862	37.49407	40.68829	44.22703	52.50276	62.70147	75.29883	90.88978	110.21815	134.21354	201.13777	304.84772	577.10046	1704.109	5044.710
34	36.96058	40.25770	43.93309	48.03380	57.73018	69.85791	85.06696	104.18375	128.25876	158.62667	245.47670	384.52098	765.36535	2456.118	7884.609
36	39.33610	43.07688	47.27597	51.99437	63.75594	77.59831	95.83632	119.12087	148.91346	187.10215	299.12681	484.46312	1014.34568	3539.009	12321.95
38	41.73545	45.95272	50.71989	56.11494	69.15945	85.97094	107.70955	135.90421	172.56102	220.31595	364.04943	609.83053	1343.62216	5098.373	19255.30
40	44.15885	48.88637	54.26789	60.40198	75.40126	95.02552	120.79977	154.76197	199.63511	259.05652	442.59256	767.09142	1779.09031	7343.858	30088.66
45	50.32416	56.48107	63.61420	71.89271	92.71986	121.0294	159.7002	212.7435	285.7493	386.5056	718.9048	1358.230	3585.12846	18281.31	91831.50
50	56.64516	64.46318	73.68283	84.57940	112.7969	152.6671	209.3480	290.3359	406.5289	573.7702	1163.909	2400.018	7217.71628	45497.19	280255.7
100	129.33370	170.4814	228.8030	312.2323	607.2877	1237.624	2610.025	5638.368	12381.66	27484.52	137796.1	696010.5	783 × 10 ⁴	414 × 10 ⁶	196 × 10 ⁸

Note: To convert from this table to values of an annuity in advance, determine the annuity in arrears above for one more period and subtract 1.00000.

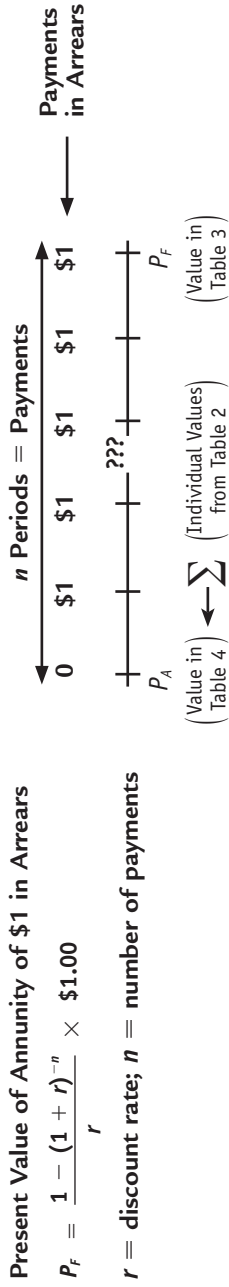


TABLE 4

No. of Payments = n	1/2%	1%	1 1/2%	2%	3%	4%	5%	6%	7%	8%	10%	12%	15%	20%	25%
1	.99502	.99010	.98522	.98039	.97087	.96154	.95238	.94340	.93458	.92593	.90909	.89286	.86957	.83333	.80000
2	1.98510	1.97040	1.95568	1.94156	1.91347	1.88609	1.85941	1.83339	1.80802	1.78326	1.73554	1.69005	1.62571	1.52778	1.44000
3	2.97025	2.94099	2.91220	2.88388	2.82861	2.77509	2.72325	2.67301	2.62432	2.57710	2.48685	2.40183	2.28323	2.10648	1.95200
4	3.95050	3.90197	3.85438	3.80773	3.71710	3.62990	3.54595	3.46511	3.38721	3.31213	3.16987	3.03735	2.85498	2.58873	2.36160
5	4.92587	4.85343	4.78264	4.71346	4.57971	4.45182	4.32948	4.21236	4.10020	3.99271	3.79079	3.60478	3.35216	2.99061	2.68928
6	5.89638	5.79548	5.69719	5.60143	5.41719	5.24214	5.07569	4.91732	4.76654	4.62288	4.35226	4.11141	3.78448	3.32551	2.95142
7	6.82296	6.72819	6.59921	6.47199	6.23028	6.00205	5.78637	5.58239	5.38929	5.20637	4.86842	4.56376	4.16042	3.60459	3.16114
8	7.72296	7.48593	7.25448	7.02548	6.68321	6.35274	6.03463	5.72979	5.43834	5.15930	4.74663	4.37342	3.85716	3.28891	2.85928
9	8.59906	8.26602	7.93906	7.61824	7.18611	6.76333	6.35033	5.94769	5.55584	5.17424	4.68226	4.23026	3.67758	3.07000	2.62114
10	9.44662	9.01330	8.58925	8.16452	7.63925	7.11353	6.59769	6.09184	5.59629	5.11133	4.56769	4.07569	3.48333	2.84000	2.35000
11	10.26662	9.73330	9.30925	8.88452	8.35925	7.83353	7.31769	6.81184	6.31629	5.83133	5.26769	4.75569	4.14333	3.47000	2.90000
12	11.06662	10.53330	10.10925	9.68452	9.15925	8.63353	8.11769	7.61184	7.11629	6.63133	6.06769	5.55569	4.89333	4.18000	3.57000
13	11.84662	11.31330	10.88925	10.46452	9.93925	9.41353	8.89769	8.39184	7.89629	7.41133	6.84769	6.33569	5.62333	4.86000	4.20000
14	12.60662	12.07330	11.64625	11.22152	10.69625	10.17053	9.65469	9.14884	8.65329	8.16833	7.59469	7.08269	6.33033	5.52000	4.81000
15	13.34662	12.81330	12.38325	11.95852	11.43325	10.90753	10.39169	9.88584	9.38929	8.90333	8.32869	7.79469	7.00233	6.15000	5.39000
16	14.06662	13.53330	13.10325	12.67852	12.15325	11.62753	11.11169	10.60584	10.10929	9.62333	9.04869	8.51469	7.68233	6.78000	5.97000
17	14.76662	14.23330	13.80325	13.37852	12.85325	12.32753	11.81169	11.30584	10.80929	10.32333	9.74869	9.21469	8.34233	7.39000	6.53000
18	15.44662	14.91330	14.48325	14.05852	13.53325	13.00753	12.49169	11.98584	11.48929	10.99333	10.41869	9.88469	8.97233	7.98000	7.07000
19	16.10662	15.59330	15.16325	14.73852	14.21325	13.68753	13.17169	12.66584	12.16929	11.68333	11.10869	10.58469	9.63233	8.59000	7.63000
20	16.74662	16.27330	15.84325	15.41852	14.89325	14.36753	13.85169	13.34584	12.84929	12.36333	11.78869	11.26469	10.27233	9.19000	8.19000
22	17.70662	17.17330	16.74325	16.31852	15.79325	15.26753	14.75169	14.24584	13.74929	13.26333	12.68869	12.16469	11.13233	10.01000	9.00000
24	18.66662	18.13330	17.70325	17.27852	16.75325	16.22753	15.71169	15.20584	14.70929	14.22333	13.64869	13.12469	12.05233	10.89000	9.85000
26	19.62662	19.09330	18.66325	18.23852	17.71325	17.18753	16.67169	16.16584	15.66929	15.18333	14.60869	14.08469	13.00233	11.81000	10.75000
28	20.58662	20.05330	19.62325	19.19852	18.67325	18.14753	17.63169	17.12584	16.62929	16.13333	15.55869	15.03469	13.93233	12.71000	11.63000
30	21.54662	21.01330	20.58325	20.15852	19.63325	19.10753	18.59169	18.08584	17.58929	17.09333	16.51869	16.00469	14.89233	13.65000	12.57000
32	22.50662	21.97330	21.54325	21.11852	20.59325	20.06753	19.55169	19.04584	18.54929	18.05333	17.47869	16.96469	15.83233	14.57000	13.49000
34	23.46662	22.93330	22.50325	22.07852	21.55325	21.02753	20.51169	20.00584	19.50929	19.01333	18.43869	17.92469	16.78233	15.45000	14.39000
36	24.42662	23.89330	23.46325	23.03852	22.51325	21.98753	21.47169	20.96584	20.46929	19.97333	19.40869	18.89469	17.73233	16.31000	15.29000
38	25.38662	24.85330	24.42325	23.99852	23.47325	22.94753	22.43169	21.92584	21.42929	20.93333	20.37869	19.86469	18.68233	17.19000	16.19000
40	26.34662	25.81330	25.38325	24.95852	24.43325	23.90753	23.39169	22.88584	22.38929	21.89333	21.33869	20.82469	19.62233	18.09000	17.09000
45	28.26662	27.67330	27.24325	26.81852	26.29325	25.76753	25.25169	24.74584	24.24929	23.75333	23.19869	22.68469	21.47233	19.89000	18.39000
50	31.18662	30.63330	30.20325	29.76852	29.24325	28.71753	28.20169	27.69584	27.19929	26.70333	26.14869	25.63469	24.41233	22.83000	21.33000
100	78.54662	78.00330	77.57325	77.14852	76.72325	76.29753	75.88169	75.46584	75.05929	74.65333	74.15869	73.67469	72.20233	70.73000	69.30000

Note: To convert from this table to values of an annuity in arrears above for one more period and subtract 1.00000.

Glossary

The definitions of many words and phrases in the glossary use other glossary terms. In a given definition, we *italicize* terms that themselves (or variants thereof) appear elsewhere under their own listings. The cross-references generally take one of two forms:

1. **absorption costing** See *full absorption costing*.
2. **ABC Activity-based costing**.

Form (1) refers you to another term for discussion of this boldfaced term. Form (2) tells you that this bold-faced term is synonymous with the *italicized* term, which you can consult for discussion if necessary.

10-K; 10-Q The name of the annual (K) or quarterly (Q) report that the *SEC* requires of nearly all publicly held *corporations*.

2/10, n(etc)/30 See *terms of sale*.

20-F Form required by the *SEC* for foreign companies issuing or trading their securities in the United States. This form reconciles specified accounting amounts resulting from using foreign *accounting principles* to amounts resulting from using *U.S. GAAP*. Since November 2007, foreign company *financial statements* prepared in accordance with *IFRS* no longer require reconciliation to *U.S. GAAP*.

A

AAA *American Accounting Association*.

abatement A complete or partial cancellation of a levy imposed by a government unit.

ABC *Activity-based costing*.

abnormal spoilage Actual *spoilage* exceeding that expected when *operations* are normally efficient. Usual practice treats this *cost* as an *expense* of the *period* rather than as a *product cost*. Contrast with *normal spoilage*.

aboriginal cost In public utility accounting, the *acquisition cost* of an *asset incurred* by the first *entity* devoting that asset to public use; the *cost basis* for most public utility regulation. If regulators used a different cost basis, then public utilities could *exchange* assets among themselves at ever-increasing *prices* in order to raise the rate base and, then, prices based on them.

absorbed overhead *Overhead costs allocated* to individual products at some *overhead rate*; also called *applied overhead*.

absorption costing See *full absorption costing*.

Abstracts of the EITF See *Emerging Issues Task Force*.

accelerated cost recovery system (ACRS) A form of *accelerated depreciation* that Congress enacted in 1981 and

amended in 1986, so that now most writers refer to it as *MACRS*, or *Modified Accelerated Cost Recovery System*. The system provides percentages of the *asset's cost* that a *firm* depreciates each year for *tax* purposes. The percentages derive, roughly, from 150%-*declining-balance depreciation* methods. ACRS ignores *salvage value*. We do not generally use these amounts for *financial accounting*.

accelerated depreciation In calculating *depreciation charges*, any method in which the charges become progressively smaller each *period*. Examples are *double declining-balance depreciation* and *sum-of-the-years'-digits depreciation methods*.

acceptance A written promise to pay; equivalent to a *promissory note*.

account A device for representing the amount (*balance*) for any line (or a part of a line) in the *balance sheet* or *income statement*. Because income statement accounts explain the changes in the *balance sheet* account *Retained Earnings*, the definition does not require the last three words of the preceding sentence. An *account* is any device for accumulating additions and subtractions relating to a single *asset*, *liability*, or *owners' equity* item, including *revenues* and *expenses*.

account analysis method A method of separating *fixed costs* from *variable costs* based on the analyst's judgment of whether the cost is fixed or variable. Based on their names alone, the analyst might classify *direct labor (material) costs* as variable and *depreciation on a factory building* as fixed. In our experience, this method results in too many fixed costs and not enough variable costs—that is, analysts have insufficient information to judge *management's* ability to reduce costs that appear to be fixed. Companies with strong unions, where layoffs can be costly, often have near-fixed labor costs. Analysts in Western Europe often treat labor costs as relatively fixed.

account form The form of *balance sheet* in which *assets* appear on the left and *equities* appear on the right. Contrast with *report form*. See *T-account*.

accountability center *Responsibility center*.

accountancy The British word for *accounting*. In the United States, it means the theory and practice of accounting.

accountant's comments Canada: a written communication issued by a *public accountant* at the conclusion of a review engagement. It consists of a description of the work performed and a statement that, under the terms of the engagement, the accountant has not performed an *audit* and consequently expresses no *opinion*. (Compare *auditor's report*; *denial of opinion*.)

accountant's opinion *Auditor's report.*

accountant's report *Auditor's report.*

accounting A system conveying information about a specific *entity*. The information is in financial terms and will appear in accounting statements only if the accountant can measure it with reasonable *precision*. The *AICPA* defines accounting as a service activity whose "function is to provide quantitative information, primarily financial in nature, about economic entities that is intended to be useful in making economic decisions."

accounting adjustments *Prior-period adjustments*, changes in *accounting principles*, and corrections of errors. See *accounting changes*. The *FASB* indicates that it will tend to call these items "accounting adjustments," not "accounting changes," when it requires the reporting of *comprehensive income*. See also *adjusting entry* for another use of this term.

accounting changes As defined by *FASB Statement No. 154 (Codification Topic 250)*, a change in (1) an *accounting principle* (such as a switch from *FIFO* to *LIFO* or from *sum-of-the-years'-digits depreciation* to *straight-line depreciation*), (2) an accounting estimate (such as estimated useful lives or *salvage value* of depreciable *assets* and estimates of *warranty costs* or *uncollectible accounts*), or (3) the reporting *entity*. If practical, the firm should restate *financial statements* retroactively for changes of type (1). The firm should treat changes of type (2) as affecting only the *period* of change and, if necessary, future periods. The firm should disclose reasons for changes of type (3) in statements reporting on *operations* of the period of the change, and it should show the effect of the change on all other periods, for comparative purposes. Correcting an error in previously issued financial statements is not an accounting change. See *all-inclusive (income) concept* and *accounting errors*.

accounting conventions Methods or procedures used in *accounting*. Writers tend to use this term when the method or procedure has not yet received official authoritative sanction by a pronouncement of a group such as the *APB*, *EITF*, *FASB*, and *SEC* for *U.S. GAAP* and the *IASB* for *IFRS*. Contrast with *accounting principles*.

accounting cycle The sequence of accounting procedures starting with *journal entries* for various *transactions* and events and ending with the *financial statements* or, perhaps, the *post-closing trial balance*.

accounting deficiency Canada: a failure to adhere to *generally accepted accounting principles* or to disclose essential information in *financial statements*.

accounting entity See *entity*.

accounting equation $Assets = Equities$; $Assets = Liabilities + Owners' equity$.

accounting errors Arithmetic errors and misapplications of *accounting principles* in previously published *financial statements*. The firm corrects these items retrospectively by adjusting *balance sheet* and *income statements* amounts beginning with the earliest *period* reported. In this regard, the firm treats them like *prior-period adjustments*, but technically *FASB Statement No.*

154 (Codification Topic 250) does not classify them as prior-period adjustments. See *accounting changes*, and contrast with changes in accounting estimates as described there.

accounting event Any occurrence that is recorded in the *accounting records*.

accounting methods *Accounting principles*; procedures for carrying out accounting principles.

accounting period (convention) The time period between consecutive *balance sheets*; the time period for which the firm prepares *financial statements* that measure *flows*, such as the *income statement* and the *statement of cash flows*. See *interim statements*.

accounting policies *Accounting principles* adopted by a specific *entity*.

accounting principles The methods or procedures used in *accounting* for events reported in the *financial statements*. We tend to use this term when the method or procedure has received official authoritative sanction from a pronouncement of a group such as the *APB*, *EITF*, *FASB*, or *SEC* for *U.S. GAAP* and the *IASB* for *IFRS*. Contrast with *accounting conventions* and *conceptual framework*.

Accounting Principles Board See *APB*.

accounting procedures See *accounting principles*. This term usually refers to the methods for implementing accounting principles.

accounting rate of return *Income* for a *period* divided by *average investment* during the period; based on income, rather than *discounted cash flows*, and hence a poor decision-making aid or tool. See *ratio* and **Exhibit 7.12**.

Accounting Research Bulletin (ARB) The name of the official pronouncements of the former *Committee on Accounting Procedure (CAP)* of the *AICPA*. The committee issued 51 bulletins between 1939 and 1959. *ARB No. 43* restated and codified the parts of the first 42 bulletins not dealing solely with definitions.

Accounting Research Study (ARS) One of a series of studies published by the Director of Accounting Research of the *AICPA* and "designed to provide professional accountants and others interested in the development of accounting with a discussion and documentation of accounting problems." The *AICPA* published 15 such studies in the period 1961–1973.

Accounting Series Release (ASR) See *SEC*.

accounting standards *Accounting principles*.

Accounting Standards Executive Committee (AcSEC) The senior technical committee of the *AICPA* authorized to speak for the *AICPA* in the areas of *financial accounting* and reporting as well as *cost accounting*.

accounting system The procedures for collecting and summarizing financial data in a *firm*.

Accounting Terminology Bulletin (ATB) One of four releases of the Committee on Terminology of the *AICPA* issued in the period 1953–1957.

Accounting Trends and Techniques An annual *AICPA* publication that surveys the reporting practices of 600 large *corporations*. It presents tabulations of specific practices, terminology, and *disclosures* along with illustrations taken from individual *annual reports*. We

- use it, for example, to see how many *firms* use the *direct method* to report *cash flow from operations*.
- accounts payable; trade payables** A *liability* representing an amount owed to a *creditor*; usually arising from the purchase of *merchandise* or materials and supplies, not necessarily due or past due; normally, a *current liability*.
- accounts payable turnover ratio** Purchases divided by *average accounts payable*. See *ratio* and **Exhibit 7.12**.
- accounts receivable** Claims against a *debtor*; usually arising from *sales* or *services* rendered, not necessarily due or past due; normally, a *current asset*. With the word *gross*, the amount owed to the holder; with the word *net*, the amount the holder expects to collect, which equals the gross amount less the *allowance for uncollectible accounts*.
- accounts receivable turnover ratio** *Net sales* on *account* divided by *average accounts receivable*. See *ratio* and **Exhibit 7.12**.
- accretion** Occurs when a *carrying value* grows over time, such as a *bond* originally issued at a *discount*; the correct technical term is “accretion,” not “amortization.” This term also refers to an increase in economic *worth* through physical change caused by natural growth, usually said of a natural resource such as timber. Contrast with *appreciation*. See *amortization*.
- accrual** Recognition of an *expense* (or *revenue*) and the related *liability* (or *asset*) resulting from an *accounting event*, frequently from the passage of time but not signaled by an explicit *cash transaction*; for example, the recognition of *interest* expense or revenue (or *wages*, *salaries*, or *rent*) at the end of a *period* even though the *firm* makes no explicit cash transaction at that time. *Cash flow* follows accounting recognition; contrast with *deferral*.
- accrual basis of accounting** The method of recognizing *revenues* as a *firm* sells *goods* (or delivers them) and as it renders *services*, independent of the time when it receives *cash*. This system *recognizes expenses* in the *period* when it recognizes the related revenue, independent of the time when it pays cash. *SFAC No. 1* says, “Accrual accounting attempts to record the financial effects on an *enterprise* of *transactions* and other events and circumstances that have cash consequences for the enterprise in the periods in which those transactions, events, and circumstances occur rather than only in the periods in which cash is received or paid by the enterprise.” Contrast with the *cash basis of accounting*. See *accrual* and *deferral*. We could more correctly call this “accrual/deferral” accounting.
- accrue** See *accrued*, and contrast with *incur*.
- accrued** Said of a *revenue* (*expense*) that the *firm* has earned (*recognized*) even though the related *receivable* (*payable*) has a future due date. We prefer not to use this adjective as part of an *account* title. Thus, we prefer to use *Interest Receivable* (*Payable*) as the account title rather than *Accrued Interest Receivable* (*Payable*). See *matching convention* and *accrual*. Contrast with *incur*.
- accrued depreciation** An incorrect term for *accumulated depreciation*. Acquiring an *asset* with *cash*, *capitalizing* it, and then *amortizing* its *cost* over *periods* of use is a process of *deferral* and *allocation*, not of *accrual*.
- accrued payable** A *payable* usually resulting from the passage of time. For example, *salaries* and *interest* *accrue* as time passes. See *accrued*.
- accrued receivable** A *receivable* usually resulting from the passage of time. See *accrued*.
- accumulated benefit obligation (ABO)** See *projected benefit obligation* for definition and contrast.
- accumulated deficit** Negative balance in the *Retained Earnings account*.
- accumulated depreciation** A preferred title for the *asset contra account* that shows the sum of *depreciation charges* on an asset since the time the *firm* acquired it. Other account titles are *allowance* for depreciation (acceptable term) and *reserve* for depreciation (unacceptable term).
- accumulated other comprehensive income (AOCI)** *Balance sheet* amount in *owners' equity* showing the total of all *other comprehensive income* amounts from all prior *periods*.
- accurate presentation** The qualitative accounting *objective* suggesting that information reported in *financial statements* should correspond as precisely as possible with the economic effects underlying *transactions* and events. See *fair presentation* and *full disclosure*.
- acid test ratio** *Quick ratio*.
- acquisition (historical) cost** Of an *asset*, the *net invoice price* plus all *expenditures* to place and ready the asset for its intended use. The other expenditures might include legal fees, transportation *charges*, and installation *costs*.
- acquisition method** Accounting for a *business combination* by recognizing the acquired company's identifiable *assets* and *liabilities* at their fair values, and recognizing the *goodwill* (if any) and non-controlling interest (if any) of the business combination.
- ACRS** *Accelerated Cost Recovery System*.
- AcSEC** *Accounting standards Executive Committee* of the *AICPA*.
- activity accounting** *Responsibility accounting*.
- activity-based costing (ABC)** Method of assigning *indirect costs*, including nonmanufacturing *overhead costs*, to *products* and *services*. *ABC* assumes that almost all overhead costs associate with activities within the *firm* and vary with respect to the *drivers* of those activities. Some practitioners suggest that *ABC* attempts to find the drivers for all indirect costs; these people note that in the *long run*, all *costs* are *variable*, so *fixed* indirect costs do not occur. This method first assigns costs to activities and then to products based on the products' usage of the activities.
- activity-based depreciation** *Production method (depreciation)*.
- activity-based management (ABM)** Analysis and *management* of activities required to make a *product* or to produce a *service*. *ABM* focuses attention to enhance activities that add *value* to the customer and to reduce activities that do not. Its goal is to satisfy customer needs while making smaller demands on costly resources. Some refer to this as “activity management.”

activity basis Costs are *variable* or *fixed* (*incremental* or *unavoidable*) with respect to some activity, such as production of units (or the undertaking of some new project). Usage calls this activity the “activity basis.”

activity center Unit of the organization that performs a set of tasks.

activity variance *Sales volume variance*.

actual cost (basis) *Acquisition* or *historical cost*. Also contrast with *standard cost*.

actual costing (system) Method of *allocating costs* to *products* using actual *direct material costs*, actual *direct labor*, and actual *factory overhead*, typically averaged over several units of *output*. Contrast with *normal costing* and *standard costing*.

actuarial An adjective describing computations or analyses that involve both *compound interest* and probabilities, such as the computation of the *present value* of a *life-contingent annuity*. Some writers use the word even for computations involving only one of the two.

ad valorem A method of levying a *tax* or duty on *goods* by using their estimated *value* as the tax base.

additional paid-in capital (APIC) An alternative acceptable title for the *capital contributed in excess of par* (or *stated*) *value account*. Because *APIC* is shorter, many writers prefer it.

additional processing cost *Costs incurred* in processing *joint products* after the *split-off point*.

adequate disclosure An *auditing standard* that, to achieve *fair presentation* of *financial statements*, requires *disclosure* of *material* items. This auditing standard does not, however, require publicizing all information detrimental to a company. For example, the company may face a lawsuit, and disclosure might require a *debit* to a *loss account* and a *credit* to an *estimated liability*. But the court might view the making of this entry as an admission of liability, which could adversely affect the outcome of the suit. The *firm* should debit *expense* or loss for the expected loss, as required by *SFAS No. 5 (Codification Topic 450)*, but need not use such accurate account titles that the court can spot an admission of liability.

adjunct account An *account* that accumulates additions to another account. For example, Premium on Bonds Payable is adjunct to the *liability* Bonds Payable; the effective liability is the sum of the two account *balances* at a given date. Contrast with *contra account*.

adjusted An adjective often used in accounting (see next several entries) whose meaning changes from term to term. There typically are no standard adjustments, so when you see this word in a financial term, you should seek out how the number presented differs from the unadjusted version. Our search of the *FASB* Web site yielded over 75 instances of the word “adjusted” in various contexts.

adjusted acquisition (historical) cost Sometimes said of the *carrying value* of a *plant asset*, that is, *acquisition cost* less *accumulated depreciation*. Also, *cost* adjusted to a *constant-dollar* amount to reflect *general price-level changes*.

adjusted bank balance of cash The *balance* shown on the statement from the bank plus or minus amounts, such

as for unrecorded *deposits* or *outstanding checks*, to reconcile the bank’s balance with the correct *cash* balance. See *adjusted book balance of cash*.

adjusted basis The *basis* used to compute *gain* or *loss* on the disposition of an *asset* for *tax* purposes. See also *book value* and *carrying value*.

adjusted book balance of cash The *balance* shown in the *firm’s account* for *cash* in bank plus or minus amounts, such as for *notes* collected by the bank or bank service charges, to reconcile the account balance with the correct cash balance. See *adjusted bank balance of cash*.

adjusted trial balance *Trial balance* taken after *adjusting entries* but before *closing entries*. Contrast with *pre- and post-closing trial balances*. See *unadjusted trial balance* and *post-closing trial balance*. See also *work sheet*.

adjusting entry An entry made at the end of an *accounting period* to record a *transaction* or other *accounting event* that the *firm* has not yet recorded or has improperly recorded during the accounting period; an entry to update the accounts. See *work sheet*.

adjustment An *account* change produced by an *adjusting entry*. Sometimes accountants use the term to refer to the process of restating *financial statement* amounts to *constant dollars* or for a *change in accounting principles*.

administrative costs (expenses) *Costs (expenses)* incurred for the *firm* as a whole, in contrast with specific functions such as manufacturing or selling; includes items such as salaries of top executives, general office *rent*, legal fees, and auditing fees.

admission of partner Occurs when a new partner joins a *partnership*. Legally, the old partnership dissolves, and a new one comes into being. In practice, however, the *firm* may keep the old *accounting* records in use, and the accounting entries reflect the manner in which the new partner joined the firm. If the new partner merely purchases the *interest* of another partner, the accounting changes the name for one *capital account*. If the new partner contributes *assets* and *liabilities* to the partnership, then the firm must recognize them. See *bonus method*.

advances from (by) customers A preferred title for the *liability account* representing *receipts of cash* in advance of delivering the *goods* or rendering the *service*. After the *firm* delivers the *goods* or services, it will *recognize revenue*. Some refer to this as *deferred revenue* or *deferred income*, terms likely to confuse the unwary because the item is not yet revenue nor *income*.

advances to affiliates *Loans* by a parent company to a *subsidiary*; frequently combined with *investment* in subsidiary as investments and advances to subsidiary and shown as a *noncurrent asset* on the parent’s *balance sheet*. The consolidation process eliminates these advances in *consolidated financial statements*.

advances to suppliers A preferred term for the *asset account* representing *disbursements of cash* in advance of receiving assets or *services*.

adverse opinion An *auditor’s report* stating that the *financial statements* are not fair or are not in accord with *U.S. GAAP*.

affiliated company A company controlling or controlled by another company. Some users of this term mean *significant influence*, not control.

AFS; Available for Sale See *Available for Sale (Securities)*.

after closing *Post-closing*; a *trial balance* at the end of the *period*.

after cost A term sometimes used for *estimated expenses*.

AG (Aktiengesellschaft) Germany: the form of a German company whose *shares* can trade on the *stock exchange*.

agency cost The *cost* to the *principal* caused by *agents* pursuing their own interests instead of the principal's interests. Includes both the costs incurred by principals to control agents' actions and the cost to the principals if agents pursue their own interests that are not in the interest of the principals.

agency fund An *account* for *assets* received by governmental units in the *capacity* of trustee or *agent*.

agency theory A branch of economics relating the behavior of *principals* (such as owner non-managers or bosses) and that of their *agents* (such as non-owner managers or subordinates). The principal assigns responsibility and authority to the agent, but the agent's own *risks* and preferences differ from those of the principal. The principal cannot observe all activities of the agent. Both the principal and the agent must consider the differing risks and preferences in designing incentive contracts.

agent One authorized to transact *business*, including executing contracts, for another.

aging accounts receivable; aging-of-accounts receivable procedure The process of classifying *accounts receivable* by the time elapsed since the claim came into existence for the purpose of estimating the amount of *uncollectible accounts receivable* as of a given date. See *sales contra*, *estimated uncollectibles*, and *allowance for uncollectibles*.

aging schedule A listing of *accounts receivable*, classified by age, used in *aging accounts receivable*.

AICPA (American Institute of Certified Public Accountants) The national organization that represents *CPAs*. See *AcSEC*. It oversees the writing and grading of the Uniform CPA Examination. Each state sets its own requirements for becoming a CPA in that state. See *certified public accountant*. Web site: www.aicpa.org. While the AICPA once set many auditing and professional standards for *public accountants*, the *PCAOB* now regulates auditing of public companies and the profession.

all-capital earnings rate *Rate of return on assets*.

all-current method *Foreign currency translation* in which all *financial statement* items are translated at the *current exchange rate*. Contrast with *monetary-nonmonetary method*.

all-inclusive (income) concept A concept that does not distinguish between *operating* and *non-operating revenues* and *expenses*. Thus, the only entries to *retained earnings* are for *net income* and *dividends*. Under this concept, the *income statement* reports all *income*, *gains*, and *losses*; thus, net income includes events usually reported as *prior-period adjustments* and as *corrections*

of errors. *U.S. GAAP* does not include this concept in its pure form.

allocate, allocation As a verb, to divide or spread a *cost* from one *account* into several accounts, to several *products* or activities, or to several *periods*. As a noun, a spreading of costs to accounts or to products or to periods.

allocation base The systematic method that assigns *joint costs* to *cost objectives*. For example, a *firm* might assign the cost of a truck to *periods* based on miles driven during the period; the allocation base is miles. Or the firm might assign the cost of a *factory* supervisor to a *product* based on *direct labor* hours; the allocation base is direct labor hours.

allocation of income taxes See *deferred income tax*.

allowance A *balance sheet contra account* generally used for *receivables* and depreciable *assets*. See *sales* (or *purchase*) *allowance* for another use of this term.

allowance for funds used during construction In *accounting* for public utilities, a *revenue account credited* for *implicit interest earnings* on *shareholders' equity balances*. One *principle* of public utility regulation and rate setting requires that customers should pay the *full costs* of producing the *services* (for example, electricity) that they use, nothing more and nothing less. Thus, an electric utility must *capitalize* into an *asset account* the full costs, but no more, of producing a new electric power-generating *plant*. One of the costs of building a new plant is the *interest cost* on *cash* tied up during construction. If *funds* are explicitly borrowed by an ordinary *business*, the *journal entry* for interest of \$1,000 is typically:

Interest Expense	1,000	
Interest Payable		1,000
Interest expense for the period.		

If the firm is constructing a new plant, then another entry would be made, capitalizing interest into the *plant-under-construction account*:

Construction Work-in-Progress	750	
Interest Expense		750
Capitalize relevant portion of interest relating to construction work in progress into the asset account.		

The cost of the *plant asset* increases; when the *firm* uses the plant, it charges *depreciation*. The interest will become an *expense* through the depreciation process in the later *periods* of use, not currently as the firm pays for interest. Thus, the firm reports the full cost of the electricity generated during a given period as expense in that period. But suppose, as is common, that the electric utility does not explicitly borrow the funds but uses some of its own funds, including funds raised from equity issues as well as from debt. Even though the firm incurs no explicit interest expense or other explicit expense for *capital*, the funds have an

opportunity cost. Put another way, the plant under construction will not have lower economic cost just because the firm used its own cash rather than borrowing. The public utility using its own funds, on which it would have to pay \$750 of interest if it had explicitly borrowed the funds, will make the following entry:

Construction Work-in-Progress	750
Allowance for Funds Used During Construction	750
Recognition of interest, an opportunity cost, on own funds used.	

The *allowance account* is a form of revenue, to appear on the *income statement*, and the firm will *close* it to *Retained Earnings*, increasing it. On the *statement of cash flows* it is an *income* or revenue item not producing funds, and so the firm must subtract it from *net income* in deriving *cash provided by operations*. *SFAS No. 34 (Codification Topic 835)* specifically prohibits nonutility companies from capitalizing, into plant under construction, the opportunity cost (interest) on their own funds used. See *allowance method* for the usual context of the word “*allowance*” as a *contra-asset account*.

allowance for uncollectibles (accounts receivable) A *contra account* that shows the estimated *accounts receivable* amount that the *firm* expects not to collect. When the firm uses such an allowance, the actual write-off of specific accounts receivable (*debit* allowance, *credit* specific customer’s account) does not affect *revenue* or *expense* at the time of the *write-off*. The firm reduces revenue when it debits *bad debt expense* (or, our preference, a revenue contra account) and credits the allowance; the firm can base the amount of the credit to the allowance on a percentage of *sales* on account for a period of time or compute it from *aging accounts receivable*. This contra account enables the firm to show an estimated receivables amount that it expects to collect without identifying specific *uncollectible accounts*. See *allowance method*.

allowance method; allowance method for uncollectibles; allowance method for warranties A method of attempting to match all *expenses* of a transaction with their associated *revenues*; usually involves a *debit* to expense and a *credit* to an *estimated liability*, such as for estimated *warranty expenditures*, or a debit to a revenue (*contra*) account and a credit to an *asset* (*contra*) account, such as in some firms’ accounting for *uncollectible accounts*. See *allowance for uncollectibles* for further explanation. When the firm uses the *allowance method* for *sales discounts*, the firm records *sales* at *gross invoice prices* (not reduced by the amounts of *discounts* made available). The firm debits an estimate of the amount of discounts to be taken to a revenue *contra account* and credits an allowance account, shown *contra* to *accounts receivable*.

American Accounting Association (AAA) An organization primarily for academic accountants but open to all interested in *accounting*.

American Institute of Certified Public Accountants See *AICPA*.

American Stock Exchange (AMEX) (ASE) A public market where various corporate *securities* are traded.

AMEX *American Stock Exchange*.

amortization Strictly speaking, the process of liquidating or extinguishing (“bringing to death”) a *debt* with a series of payments to the *creditor* (or to a *sinking fund*). From that usage has evolved a related use involving the accounting for the payments themselves: *amortization schedule* for a *mortgage*, which is a table showing the allocation between *interest* and *principal*. The term has also come to mean *writing off* (“liquidating”) the *cost* of an *asset*. In this context, it means the general process of *allocating* the *acquisition cost* of an asset either to the *periods* of benefit as an *expense* or to *inventory accounts* as a *product cost*. This is called *depreciation* for *plant assets*, *depletion* for *wasting assets (natural resources)*, and “amortization” for *intangibles*. *SFAC No. 6* refers to amortization as “the accounting process of reducing an amount by periodic payments or write-downs.” The expressions “unamortized debt discount or premium” and “to amortize debt discount or premium” relate to *accruals*, not to *deferrals*. The expressions “amortization of long-term assets” and “to amortize long-term assets” refer to *deferrals*, not *accruals*. Contrast with *accretion*.

amortization schedule A table that shows, *period* by period, the opening *balance* of an item, such as a *bond payable* (or *bond investment* held as *asset*), the *interest expense (revenue)* for the period (= beginning balance multiplied by the historical *interest rate* for this item), the *cash* payment (receipt for asset), and the ending balance (= beginning balance plus interest expense (revenue) less cash paid (received)). Some amortization schedules have other columns of redundant information.

amortized cost A measure required by *SFAS No. 115 (Codification Topic 320)* for *held-to-maturity securities*. This amount results from applying the method described at *effective interest method*. The *firm* records the *security* at its initial cost and computes the *effective interest rate* for the security. Whenever the firm receives *cash* from the issuer of the security, or whenever the firm reaches the end of one of its own *accounting periods* (that is, reaches the time for its own *adjusting entries*), it takes the following steps. It multiplies the amount currently recorded on the *books* by the effective interest rate (which remains constant over the time the firm holds the security). It *debits* that amount to the *debt security account* and *credits* the amount to *Interest Revenue*. If the firm receives cash, it debits *Cash* and credits the *debt security account*. The firm re-computes the *carrying value* of the debt security as: the carrying value before these entries; plus the increase for the interest revenue; less the decrease for the cash received. The resulting amount is the amortized cost for the end of that period.

analysis of variances See *variance analysis*.

annual report (to shareholders) A *report* prepared once a year for shareholders and other interested parties.

It includes a *balance sheet*, an *income statement*, a *statement of cash flows*, a reconciliation of changes in *owners' equity accounts*, a *summary of significant accounting principles*, other explanatory notes, the *auditor's report*, and comments from *management* about the year's events. See *10-K* and *financial statements*.

annuitant One who receives an *annuity*.

annuity A series of payments of equal amount, usually made at equally spaced time intervals.

annuity certain An *annuity* payable for a definite number of *periods*. Contrast with *contingent annuity*.

annuity due An *annuity* whose first payment occurs at the start of the first *period*. Contrast with *annuity in arrears*.

annuity in advance An *annuity due*.

annuity in arrears An *ordinary annuity* whose first payment occurs at the end of the first *period*.

annuity method of depreciation See *compound interest depreciation*.

antidilutive Said of a *potentially dilutive security* that will increase *earnings per share* if its holder *exercises* it or converts it into *common stock*. In computing *diluted earnings per share*, the *firm* must assume that holders of antidilutive securities will not exercise their *options* or convert securities into common shares. The opposite assumption would lead to increased reported earnings per share in a given period.

APB *Accounting Principles Board* of the *AICPA*. It set *accounting principles* from 1959 through 1973, issuing 31 *APB Opinions* and 4 *APB Statements*. The *FASB* superseded the APB but retained the APB's Opinions and Statements, although it has, by now, modified, or repealed, or amended many of them.

APB Opinion The name for the *APB* pronouncements that compose parts of *generally accepted accounting principles*; the APB issued 31 *APB Opinions* from 1962 through 1973.

APB Statement The *APB* issued four *APB Statements* between 1962 and 1970. The Statements were approved by at least two-thirds of the *board*, but they state recommendations, not requirements. For example, *Statement No. 3* (1969) suggested the publication of *constant-dollar financial statements* but did not require them.

APBs An abbreviation used for *APB Opinions*.

APIC Additional paid-in capital.

applied cost A *cost* that a *firm* has *allocated* to a department, product, or activity; not necessarily based on *actual costs incurred*.

applied overhead *Overhead costs* charged to departments, products, or activities. Also called *absorbed overhead*.

appraisal In valuing an *asset* or *liability*, a process that involves expert *opinion* rather than evaluation of explicit market *transactions*.

appraisal costs In *cost accounting*, *costs incurred* to detect individual units of *products* that do not conform to specifications, including end-process sampling and field-testing. Also called *detection costs*. In other contexts, a term referring to the cost of an *appraisal* of *land*, or equipment, or a building.

appraisal method of depreciation The periodic *depreciation charge* that equals the difference between the beginning-of-period and the end-of-period appraised *values* of the *asset* if that difference is positive. If negative, there is no charge. Not based on *historical cost*, this method is thus not generally accepted.

appreciation An increase in economic *value* caused by rising market prices for an *asset*. Contrast with *accretion*.

appropriated retained earnings See *retained earnings, appropriated*.

appropriation In governmental *accounting*, an *expenditure* authorized for a specified amount, purpose, and time.

appropriation account In governmental *accounting*, an *account* set up to record specific authorizations to spend. The governmental unit *credits* this account with *appropriation* amounts. At the end of the period, the unit *closes* to (*debits*) this account all *expenditures* during the *period* and all *encumbrances outstanding* at the end of the period.

approximate net realizable value method A method of assigning *joint costs* to *joint products* based on *revenues* minus *additional processing costs* of the end products.

ARB *Accounting Research Bulletin*.

arbitrage Strictly speaking, the simultaneous purchase in one market and sale in another of a *security* or commodity in hope of making a *profit* on price differences in the different markets. Often writers use this term loosely when a trader sells an item that is somewhat different from the item purchased; for example, the *sale* of shares of *common stock* and the simultaneous purchase of a *convertible bond* that is convertible into identical *common shares*. The trader hopes that the market will soon see that the similarities of the items should make them have equal *market values*. When the market values converge, the trader closes the positions and profits from the original difference in prices, less trading *costs*.

arbitrary Having no causation basis. *Accounting* theorists and practitioners often, properly, say, "Some *cost allocations* are arbitrary." In that sense, the accountant does not mean that the allocations are capricious or haphazard but does mean that theory suggests no unique solution to the allocation problem at hand. Accountants require that arbitrary allocations be systematic, rational, and consistently followed over time.

arm's length A transaction negotiated by unrelated parties, with both acting in their own self-interests; the basis for a *fair value* estimation or computation.

arrears *Cumulative dividends* on *preferred shares* that the *firm* has not yet declared; overdue *debt* payments. See *annuity in arrears* for another context.

ARS *Accounting Research Study*.

articles of incorporation Document filed with state authorities by persons forming a *corporation*. When the state returns the document with a *certificate* of incorporation, the document becomes the corporation's *charter*.

articulate The relation between any *operating* statement (for example, *income statement* or *statement of cash flows*) and comparative *balance sheets*, where the operating statement explains (or reconciles) the change in some major balance sheet category (for example, *retained earnings* or *cash*).

ASE *American Stock Exchange.*

ASR *Accounting Series Release.*

assess To value property for the purpose of property taxation; to levy a *charge* on the owner of property for *improvements* thereto, such as for sewers or sidewalks. The taxing authority computes the assessment.

assessed valuation For real estate or other property, a dollar amount that a government uses as a *basis* for levying taxes. The amount need not have some relation to *market value*.

asset definition and recognition *SFAC No. 6* defines *assets* as “*probable future economic benefits obtained or controlled by a particular entity as a result of past transactions. . . . An asset has three essential characteristics: (a) it embodies a probable future benefit that involves a capacity, singly or in combination with other assets, to contribute directly or indirectly to future net cash inflows, (b) a particular entity can obtain the benefit and control others’ access to it, and (c) the transaction or other event giving rise to the entity’s right to or control of the benefit has already occurred.*” A footnote points out that “probable” means that which we can reasonably expect or believe but that is not certain or proved. You may understand condition (c) better if you think of it as requiring that a future benefit cannot be an asset if it arises from an *executory contract*, a mere *exchange* of promises. Receiving a *purchase order* from a customer provides a future benefit, but it is an *executory contract*, so the order cannot be an asset. An asset may be *tangible* or *intangible*, short-term (current) or long-term (*noncurrent*).

asset revaluation Under some circumstances, when the *firm* can readily observe *market values*, the *IASB* allows firms to increase the *carrying value* of assets to *fair values*. The matching credit is to *other comprehensive income* for *property, plant, and equipment* (*IAS 36*, par. 39 and 40) and to profit and loss for investment property (*IAS 40*, par. 35). The *FASB* allows firms to increase the *carrying value* of *financial assets* to fair value; with the matching credit to *income*.

asset securitization *Securitization.*

asset turnover *Net sales* divided by *average assets*. See *ratio* and **Exhibit 7.12**.

assignment of accounts receivable Transfer of the legal ownership of an *account receivable* through its *sale*. Contrast with *pledging accounts receivable*, where the receivables serve as *collateral* for a *loan*.

at par A *bond* or *preferred shares* issued (or selling) at *face amount*.

ATB *Accounting Terminology Bulletin*, issued more than 50 years ago by a committee of the organization that preceded the *AICPA*.

attachment The laying claim to the *assets* of a *borrower* (or debtor) by a *lender* (or *creditor*) when the borrower has failed to pay *debts* on time.

attest An *auditor’s* rendering of an *opinion* that the *financial statements* are fair. Common usage calls this procedure the attest function of the *CPA*. See *fair presentation*.

attestor Typically independent *CPAs*, who *audit financial statements* prepared by *management* for the benefit of

users. The *FASB* describes *accounting’s* constituency as comprising preparers, attestors, and users.

attribute measured The particular attribute, such as *cost* or *fair value* reported in the *balance sheet*. When making physical measurements, such as of a person, one needs to decide the units with which to measure, such as inches or centimeters or pounds or grams. One chooses the attribute height or weight independently of the *measuring unit*, English or metric. Conventional accounting has used for many years *historical cost* as the attribute measured and *nominal dollars* as the measuring unit. Standard setters have moved toward using more fair value attributes. Some theorists argue that accounting would better serve readers if it used *constant dollars* as the measuring unit. Some, including us, think accounting should change both the measuring unit and the attribute measured. One can measure the attribute historical cost in nominal dollars or in constant dollars. One can also measure the attribute fair value in nominal dollars or constant dollars. Choosing between the two attributes and the two measuring units implies four different *accounting systems*. Each of these four has its uses.

attribute(s) sampling The use of sampling technique in which the observer selects each item in the sample on the basis of whether it has a particular qualitative characteristic, in order to ascertain the rate of occurrence of this characteristic in the *population*. See also *estimation sampling*. Compare *variables sampling*. Example of attributes sampling: take a sample population of people, note the fraction that is male (say, 40%), and then infer that the entire population contains 40% males. Example of variables sampling: take a sample population of people, observe the weight of each sample point, compute the mean of those sampled people’s weights (say, 160 pounds), and then infer that the mean weight of the entire population equals 160 pounds.

audit Systematic inspection of *accounting* records involving analyses, tests, and *confirmations*. See *internal audit*.

audit committee A committee of the *board of directors* of a *corporation*, usually comprising *outside directors*, who nominate the independent *auditors* and discuss the auditors’ work with them. If the auditors believe the shareholders should know about certain matters, the auditors first bring these matters to the attention of the audit committee; in the past, the auditors sometimes informally discussed the issues with *management* before they notified the audit committee.

Audit Guides See *Industry Audit Guides*.

audit opinion See *opinion*.

audit program The procedures followed by the *auditor* in carrying out the *audit*.

audit trail A reference accompanying an entry, or *post*, to an underlying source record or document. Efficiently checking the accuracy of accounting entries requires an audit trail. See *cross-reference*.

Auditing Research Monograph Publication series of the *AICPA*.

auditing standards Standards promulgated by the *PCAOB* or the *AICPA*, including general standards, standards

of field work, and standards of reporting. According to the AICPA, these standards “deal with the measures of the *quality* of the performance and the *objectives* to be attained” rather than with specific auditing procedures.

Auditing Standards Board *AICPA operating* committee that promulgates auditing rules for private companies. The *PCAOB* promulgates rules for public companies.

auditor Without a modifying adjective, usually refers to an external auditor—one who checks the accuracy, fairness, and general acceptability of *accounting* records and statements and then *attests* to them. See *internal auditor*.

auditor’s opinion *Auditor’s report*.

auditor’s report The *auditor’s* statement of the work done and an *opinion* of the *financial statements*. The auditor usually gives unqualified (“clean”) opinions but may qualify them, or the auditor may disclaim an opinion in the report. Often called the “*accountant’s report*.” See *adverse opinion*.

AudSEC The former Auditing Standards Executive Committee of the *AICPA*, now functioning as the *Auditing Standards Board*.

authorized capital stock The number of *shares* of stock that a *corporation* can issue; specified by the *articles of incorporation*.

available for sale financial assets *IFRS* term for *available for sale securities*.

available for sale (securities) *AFS Marketable securities* a *firm* holds that are classified as neither *trading securities* nor *held-to-maturity (debt) securities*. This classification is important in *SFAS No. 115 (Codification Topic 320)*, which requires the owner to carry marketable equity securities on the *balance sheet* at *market value*, not at *cost*. Under *SFAS No. 115 (Codification Topic 320)*, the *income statement* reports *holding gains and losses* on trading securities but not on securities available for sale. The required *accounting credits (debits)* holding gains (losses) on securities available for sale to *other comprehensive income*. On sale, the firm reports realized gain or loss as the difference between the selling price and the *original cost*, for securities available for sale, and as the difference between the selling price and the *carrying value* at the beginning of the *period* of sale, for trading securities and for debt securities held to *maturity*. By their nature, however, the firm will only rarely sell *held-to-maturity* debt securities. *U.S. GAAP* allows firms to elect to use the *fair value option* for SAS, as well as for trading securities and *held-to-maturity securities*.

average The arithmetic mean of a set of numbers; obtained by summing the items and dividing by the number of items.

average collection period of receivables See *ratio* and **Exhibit 7.12**.

average-cost flow assumption An *inventory flow assumption* in which the *cost* of units equals the *weighted average cost* of the *beginning inventory* and purchases. See *inventory equation*.

average tax rate The rate found by dividing *income tax expense* by *net income* before *taxes*. Contrast with *marginal tax rate* and *statutory tax rate*.

avoidable cost A *cost* that ceases if a *firm* discontinues an activity; an *incremental* or *variable cost*. See *programmed cost*.

B

backflush costing A method of *allocating indirect costs* and *overhead*; used by companies that hope to have zero or small *work-in-process inventory* at the end of the period. The method *debits* all *product costs* to *cost of goods sold* (or *finished goods inventory*) during the period. To the extent that work in process actually exists at the end of the period, the method then *debits* work-in-process and *credits* cost of goods sold (or finished goods inventory). This method is “backflush” in the sense that costing systems ordinarily, but not in this case, allocate first to work-in-process and then forward to cost of goods sold or to finished goods. Here, the process allocates first to cost of goods sold (or finished goods) and then, later if necessary, to work-in-process.

backlog In *financial reporting*, orders for delivery at a future date. In *managerial accounting*, orders for which a *firm* has insufficient *inventory* on hand for current delivery and will fill in a later *period*.

backlog depreciation In *current cost accounting*, a problem arising for the *accumulated depreciation* on *plant assets*. Consider an *asset* costing \$10,000 with a 10-year life depreciated with the *straight-line* method. Assume that a similar asset has a current cost of \$10,000 at the end of the first year but \$12,000 at the end of the second year. Assume that the firm bases the *depreciation charge* on the *average* current cost during the year, \$10,000 for the first year and \$11,000 for the second. The depreciation charge for the first year is \$1,000 and for the second is \$1,100 ($= 0.10 \times \$11,000$), so the accumulated depreciation *account* is \$2,100 after two years. Note that at the end of the second year, the firm has used 20% of the asset’s future benefits, so the accounting records based on current costs must show a *net carrying value* of \$9,600 ($= 0.80 \times \$12,000$), which results only if accumulated depreciation equals \$2,400, so that carrying value equals \$9,600 ($= \$12,000 - \$2,400$). But the sum of the depreciation charges equals only \$2,100 ($= \$1,000 + \$1,100$). The *journal entry* to increase the accumulated depreciation account requires a *credit* to that account of \$300. The backlog depreciation question arises: what account do we *debit*? Some theorists would *debit* an *income* account, and others would debit a *balance sheet owners’ equity* account without reducing current-period earnings. The answer to the question of what to debit interrelates with how the firm records the *holding gains* on the asset. When the firm debits the asset account for \$2,000 to increase the recorded amount from \$10,000 to \$12,000, it records a holding gain of \$2,000 with a credit. Many theorists believe that whatever account the firm credits for the holding gain is the same account that the firm should debit for backlog depreciation. This is sometimes called *catch-up depreciation*.

bad debt An *uncollectible account*; see *bad debt expense* and *sales contra, estimated uncollectibles*.

bad debt expense The name for an *account debited* in both the *allowance method* for *uncollectible accounts* and the *direct write-off method*. Under the allowance method, some prefer to treat the account as a *revenue contra*, not as an *expense*, and give it an account title such as *Uncollectible Accounts Adjustment*.

bad debt recovery Collection, perhaps partial, of a specific *account receivable* previously written off as uncollectible. If a *firm* uses the *allowance method*, it will usually *credit* the *allowance* account, assuming that it has correctly *assessed* the amount of *bad debts* but has merely misjudged the identity of one of the nonpaying customers. If the firm decides that its charges for bad debts have been too large, it will credit the *Bad Debt Expense* account. If the firm uses the *direct write-off method*, it will credit a *revenue account*.

bailout period In a *capital budgeting* context, the total time that elapses before accumulated *cash* inflows from a project, including the potential *salvage value* of *assets* at various times, equal or exceed the accumulated cash outflows. Contrast with *payback period*, which assumes completion of the project and uses terminal salvage value. Bailout, in contrast with payback, takes into *account*, at least to some degree, the *present value* of the *cash flows* after the termination date that the analyst is considering. The potential salvage value at any time includes some estimate of the flows that can occur after that time.

balance As a noun, the opening balance in an *account*, plus the amounts of increases, less the amounts of decreases. (In the absence of a modifying adjective, the term means closing balance, in contrast to opening balance. The closing balance for a period becomes the opening balance for the next period.) As a verb, “balance” means to find the closing value described above or to correct an error in an account, so that its ending balance is correct.

balance sheet Statement of *financial position* that shows $\text{Total Assets} = \text{Total Liabilities} + \text{Owners' equity}$. The *balance sheet* usually classifies Total Assets as (1) *current assets*, (2) *investments*, (3) *property, plant, and equipment*, or (4) *intangible assets*. The balance sheet accounts composing Total Liabilities usually appear under the headings Current Liabilities and Long-Term Liabilities.

balance sheet account An *account* that can appear on a *balance sheet*; a *permanent account*. Contrast with *temporary account*.

balance sheet equation $\text{Assets} = \text{Liabilities} + \text{Owners' equity}$, or $\text{Assets} = \text{All Sources of Financing}$. In some countries: $\text{Assets} - \text{Liabilities} = \text{Owners' Equity}$.

balanced scorecard A set of performance targets, not all expressed in dollar amounts, for setting an organization's goals for its individual employees or groups or divisions. A community relations employee might, for example, set targets in terms of number of employee hours devoted to local charitable purposes.

balloon Most *mortgage* and *installment loans* require relatively equal periodic payments. Sometimes the loan

requires relatively equal periodic payments with a large final payment. Usage calls the large final payment a “balloon” payment and the loan, a “balloon” loan. Although a *coupon bond* meets this definition, usage seldom, if ever, applies this term to *bond* loans.

bank balance The amount of the *balance* in a checking *account* shown on the *bank statement*. Compare with *adjusted bank balance of cash*, and see *bank reconciliation schedule*.

bank prime rate See *prime rate*.

bank reconciliation schedule A *schedule* that explains the difference between the *book balance* of the *cash* in a bank *account* and the bank's statement of that amount; takes into account the amount of items such as *checks* that have not cleared or deposits that have not been recorded by the bank, as well as errors made by the bank or the *firm*.

bank statement A statement sent by the bank to a checking account customer showing deposits, *checks* cleared, and service *charges* for a *period*, usually one month.

bankrupt Occurs when a company's *liabilities* exceed its *assets* and the *firm* or one of its *creditors* has filed a legal petition that the *bankruptcy* court has accepted under the bankruptcy law. A bankrupt firm is usually, but need not be, *insolvent*.

bankruptcy The state or condition of being *bankrupt*.

bargain purchase Said of a *purchase acquisition* when the *fair value* of the *net assets* acquired exceeds the fair value of all consideration given. Both *U.S. GAAP* and *IFRS* require the acquirer to use the fair valuations for initial *balance sheet* amounts and *recognize a gain* in *income* for the period of acquisition for the excess of fair valuations over purchase price.

base stock method A method of *inventory* valuation that assumes that a *firm* must keep on hand at all times a minimum normal, or base, stock of goods for effective *continuity of operations*. The firm *values* this base quantity at *acquisition cost* of the inventory on hand in the earliest period when inventory was on hand. Firms may not use this method, either for financial reporting or for tax reporting, but most theorists consider it to be the forerunner of the *LIFO cost-flow assumption*.

basic accounting equation *Accounting equation*.

basic cost-flow equation *Cost-flow equation*.

basic earnings per share (BEPS) *Net income* to holders of *common shares*, divided by the *weighted average* number of *common shares outstanding* during the *period*. Required by *SFAS No. 128 (Codification Topic 260)* and by *IASB*. Formerly called “primary earnings per share.”

basis *Acquisition cost*, or some substitute therefore, of an *asset* or *liability* used in computing *gain* or *loss* on disposition or retirement; *attribute measured*. This term appears in both *financial* and *income tax reporting*, but the basis of a given item need not be the same for both purposes.

basis point (bp) One one-hundredth ($= 1/100$). Terminology usually quotes *interest rates* in percentage terms, such as 5.60% or 5.67%. The difference between those two interest rates is described as “7 basis points” or 0.07%.

- Why this term? Consider “interest rates increased by one percent.” Does this mean that 6.00% increased to 7.00% or from 6.00% to 6.06% ($= 1.01 \times 6\%$)? In order to avoid confusion, we say in the first case, interest rates increased by 100 basis points and in the second, by 6 basis points. Financial writers often extend this usage to other contexts involving decimals. For example, if the mean grade point average in the class is 3.25 and a given student scores 3.30, we might say that the student scored “5 basis points” above the class average. Some pronounce the abbreviation as “bip.”
- basket purchase** Purchase of a group of *assets* (and *liabilities*) for a single *price*; the acquiring firm must assign *costs* to each item so that it can record the individual items with their separate amounts in the *accounts*.
- batch-level activities** Work required to ready equipment or people for a production run.
- bear** One who believes that *security prices* will fall. A “bear market” refers to a time when *stock prices* are generally declining. Contrast with *bull*.
- bearer bond** See *registered bond* for contrast and definition.
- beginning inventory** Measurement of *inventory* on hand at the beginning of the *accounting period*; equals *ending inventory* from the preceding period.
- behavioral congruence** *Goal congruence*.
- benchmarking** Process of measuring a *firm’s* performance, or *products*, or *services* against standards based on best levels of performance achievable or, sometimes, achieved by other firms.
- benefit element in stock option** On the *exercise* date of a *stock option*, the excess of *market price* of the stock over the *exercise price*; same as intrinsic value.
- BEPS** *Basic earnings per share*.
- betterment** An *improvement*, usually *capitalized*, not *expensed*.
- bid** An offer to purchase; the amount of an offer to purchase.
- bid-ask spread** The range in *prices* between the maximum the buyer of an item is willing to pay and the minimum the seller is willing to accept. If the buyer’s maximum exceeds the seller’s minimum, then the parties will not transact.
- Big 4; Final 4** The four largest U.S. *public accounting partnerships*; in alphabetical order: Deloitte & Touche; Ernst & Young; KPMG Peat Marwick; and PricewaterhouseCoopers. See *Big N*.
- big bath** A *write-off* of a substantial amount of *costs* previously treated as *assets*; usually occurs when a *corporation* drops a *business line* that earlier required a large *investment* but that proved to be unprofitable. The term is sometimes used to describe a situation in which a corporation takes a large write-off in one period in order to free later periods of gradual write-offs of those amounts. In this sense, it frequently occurs when the top *management* of the *firm* changes.
- Big N** The largest U.S. *public accounting partnerships*. When we first prepared this glossary, there were eight such partnerships, referred to as the “Big 8.” See *Big 4*. The term “Big N” came into use when various of the Big 8 proposed to merge with each other and the ultimate number of large partnerships was in doubt.
- Most public policy makers who address the subject think that fewer than four would pose issues of competition and conflicts of interest, so that the number will not likely decline below four in the near future.
- bill** An *invoice* of *charges* and *terms of sale* for *goods* and *services*; also, a piece of currency.
- bill of materials** A specification of the quantities of *direct materials* that a *firm* expects to use to produce a given *job* or quantity of *output*.
- blocked currency** Currency that the holder, by law, cannot withdraw from the issuing country or *exchange* for the currency of another country.
- board** *Board of directors*.
- board of directors** The governing body of a *corporation*; elected by the *shareholders*.
- bond** A *certificate* to show evidence of *debt*. The *par method* is the *principal* or *face amount* of the bond payable at *maturity*. The *coupon rate* is the amount of the yearly payments divided by the principal amount. Until 1982, *coupon bonds* had coupons attached with perforations, that the holder could detach and redeem at stated dates. Increasingly, firms issue not coupon bonds but registered bonds; the firm or its *agent* keeps track of the owners of registered bonds. Normally, bonds call for semiannual payments. Physical coupons enabled some holders to engage in *income tax evasion*, so the *tax* authorities have outlawed physical *coupon* arrangements. Even though bonds no longer have physical coupons, common terminology continues to refer to “coupon rate” as the amount of the yearly payments divided by the principal amount.
- bond conversion** The act of exchanging *convertible bonds* for *preferred* or *common shares*.
- bond discount** From the standpoint of the issuer of a *bond* at the issue date, the excess of the *par method* of a bond over its initial sales *price* and, at later dates, the excess of *par* over the sum of the following two amounts: initial issue price and the portion of *discount* already *amortized*; from the standpoint of a bondholder, the difference between *par value* and selling price when the bond sells below *par*.
- bond indenture** The contract between an issuer of *bonds* and the bondholders.
- bond premium** Exactly parallel to *bond discount* except that the issue price (or *current selling price*) exceeds *par method*.
- bond ratings** Corporate and *municipal bond* issue ratings, based on the issuer’s existing *debt* level, its previous record of payment, the *coupon rate* on the *bonds*, and the safety of the *assets* or *revenues* that are committed to paying off *principal* and *interest*. Moody’s Investors Service, Standard & Poor’s Corporation, and Fitch publish bond ratings: Moody’s top rating is *Aaa*; both Standard & Poor’s and Fitch use *AAA* for the top.
- bond redemption** Retirement of *bonds*.
- bond refunding** To *incur debt*, usually through the issue of new *bonds*, intending to use the proceeds to retire an *outstanding* bond issue.
- bond sinking fund** See *sinking fund*.
- bond table** A table showing the current price (as *present values* or percentages of *par*) of a *bond* as a function

of the *coupon rate*, current (remaining) term *maturity*, and effective *yield to maturity* (or *effective rate*). In the financial press, a bond table shows for each bond issue, the issuer, coupon, maturity date, *bid price*, and *yield* percentage based on the bid price. Some bond tables include the ask price.

Bonds Payable An *account* title for the *liability* resulting from the obligation arising from a *bond* issue.

bonus Premium over normal *wage* or *salary*, paid usually for meritorious performance.

bonus method One of two methods to recognize an excess, say, \$10,000, when a *partnership* admits a new partner and when the new partner's *capital account* is to show an amount larger than the amount of *tangible assets* that he or she contributes. First, the old partners may transfer \$10,000 from themselves to the new partner. This is the bonus method. Second, the partnership may recognize *goodwill* in the amount of \$10,000, with the credit to the new partner's capital account. This is the *goodwill method*. (Notice that the new partner's percentage of total ownership differs under the two methods.) If the new partner's capital account is to show an amount smaller than the tangible assets that he or she contributed, then the old partners will receive *bonus* or *goodwill*, depending on the method.

book As a verb, to record a transaction; as a noun, usually plural, the *journals* and *ledgers*; as an adjective, see *book value*.

book cost *Book value*.

book inventory An *inventory* amount that results not from physical count but from the amount of *beginning inventory* plus *invoice* amounts of *net purchases* less *invoice* amounts of *requisitions* or *withdrawals*; implies a *perpetual inventory method*.

book of original entry *Journal*.

book value Formerly, a nontechnical term describing the *balance sheet* amount for an item, such as an *asset* or total *owners' equity*. It often referred to *amortized cost* of a *debt* a *firm* issued or of a fixed-income *security* the firm held as an asset. It also refers to the *historical cost* of a fixed asset, less *accumulated depreciation*. *Accounting standards*, such as *SFAS 115 (Codification Topic 320)*, often require, or allow, the firm to show items at *fair value*. The balance sheet amount of an item can now mean the fair value of that item, such as a marketable security classified as *available for sale*. Thus, the "book value" of a marketable security available for sale is also the fair value of the security. Of a firm, it continues to refer to the excess of total assets over total *liabilities*; *net assets*, or *owners' equity*. Contrast with *carrying amount*.

book value per share of common stock Common *shareholders' equity* divided by the number of shares of common stock *outstanding*.

bookkeeping The process of analyzing and recording transactions in the *accounting* records.

boot The additional *cash* paid (or received), along with a used item, in a trade-in or *exchange transaction* for another item. See *trade-in*.

borrower See *loan*.

bottleneck An operation in which the work to be performed equals or exceeds the available *capacity*, thus holding up further *operations*.

branch A sales office or other unit of an enterprise physically separated from the home office of the enterprise but not organized as a legally separate *subsidiary*. Writers seldom use this term to refer to manufacturing units.

branch accounting An *accounting procedure* that enables the *firm* to report the financial position and *operations* of each *branch* separately but later combine them for published statements.

brand; brand name See *trademark* and *trademark right*.

breakeven A measure of activity at which *revenues* or other inflows equal some measure of *costs* of other outflows.

breakeven analysis See *breakeven chart*.

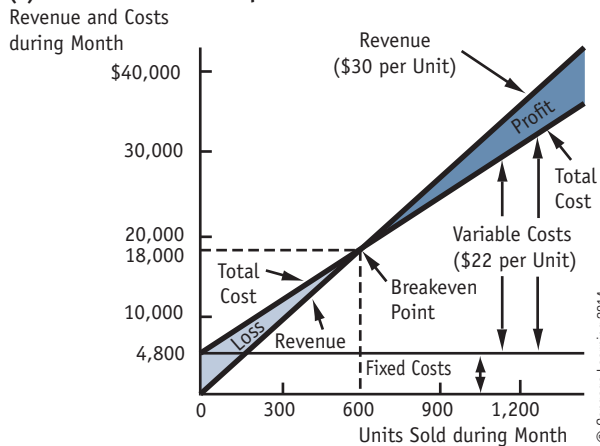
breakeven chart Two kinds of breakeven charts appear here. The charts use the following information for one month. Revenue is \$30 per unit.

Cost Classification	Variable Cost, Per Unit	Fixed Cost, Per Month
Manufacturing costs:		
Direct material	\$ 4	—
Direct labor	9	—
Overhead	4	\$3,060
Total manufacturing costs	\$17	\$3,060
Selling, general, and administrative costs		
	5	1,740
Total costs	\$22	\$4,800

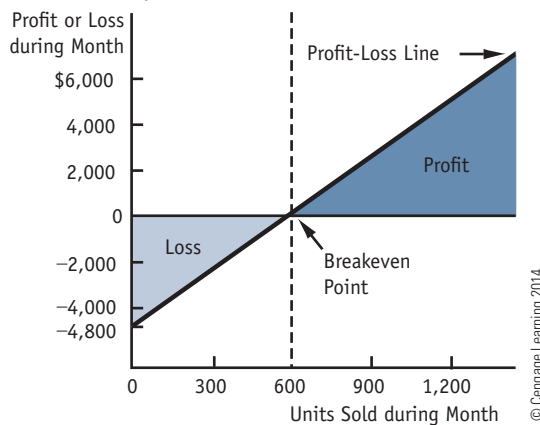
The *cost-volume-profit graph* presents the relation between changes in volume to the amount of *profit*, or *income*. Such a graph shows total *revenue* and total *costs* for each volume level, and the user reads profit or *loss* at any volume directly from the chart. The profit-volume graph does not show revenues and costs but more readily indicates profit (or loss) at various *output* levels. Keep in mind two caveats about these graphs:

1. Although the curve depicting *variable cost* and total cost appears as a straight line for its entire length, at low or high levels of output, variable cost will probably differ from \$22 per unit. The variable cost figure usually results from studies of *operations* at some broad central area of production, called the *relevant range*. The chart will not usually provide accurate results for low (or high) levels of activity. For this reason, the total cost and the profit-loss curves sometimes appear as dotted lines at lower (or higher) volume levels.
2. This chart, simplistically, assumes a single-product *firm*. For a multi-product firm, the horizontal axis would have to be stated in dollars rather than in physical units of output. Breakeven charts for multi-product firms necessarily assume that the firm sells constant proportions of the several products, so that changes in this mixture, as well as in costs or selling prices, invalidate such a chart.

(a) Cost-Volume-Profit Graph



(b) Profit-Volume Graph



breakeven point The volume of *sales* required so that total *revenues* equals total *costs*; may be expressed in units (*fixed costs* + *contribution per unit*) or in sales dollars [*selling price per unit* × (*fixed costs* + *contribution per unit*)].

breakeven time Time required before the *firm* recovers the amounts it invested in developing a new *product*.

budget A financial plan that a *firm* uses to estimate the results of future *operations*; frequently used to help control future operations. In governmental operations, budgets often become the law. See *standard costs* for further elaboration and contrast.

budgetary accounts In governmental *accounting*, the accounts that reflect estimated *operations* and financial condition, as affected by *estimated revenues*, *appropriations*, and *encumbrances*. Contrast with *proprietary accounts*, which record the *transactions*.

budgetary control Management of governmental (non-governmental) unit in accordance with an official (approved) *budget* in order to keep total *expenditures* within authorized (planned) limits.

budgeted cost; budgeted fixed cost; budgeted variable cost See *standard costs* for definition and contrast.

budgeted statements *Pro forma statements* prepared before the event or *period* occurs.

bull One who believes that *security prices* will rise. A “bull market” refers to a time when *stock prices* are generally rising. Contrast with *bear*.

burden See *overhead costs*.

burn rate A new *business* usually begins life with *cash-absorbing operating losses* but with a limited amount of cash. Analysts use the “burn rate” to measure how long the new business can survive before operating losses must stop or the firm must receive a new infusion of cash. Writers usually express the burn rate as dollars used per month.

business A set of activities comprising inputs, processes applied to the inputs, and *outputs* sold to generate *revenues*. To be a business, the set must include all the preceding, except that a unit can be a business if it can easily acquire the missing pieces, or if it is a startup that expects to acquire the missing pieces.

business combination As defined in *FASB Statement No. 141R (Codification Topic 805)*, a *transaction* or other event in which an acquirer obtains control of one or more *businesses*. The new *entity* will account for the merger with the *acquisition method*. See *conglomerate*.

business entity *Entity*; *accounting entity*.

business model In classic usage, a *model* represents a structure: a model railroad, a model house, a model car, a mathematical model. Modern business terminology often uses “business model” to mean the structure itself, an implementation of a business strategy. One classic case is the “bait and hook” model, where the company sells for low prices some basic device, such as a razor or cell phone, and then sells the critical non-durable components, such as razor blades and air time minutes, at high prices. More recently, some retailers implement a “bricks and clicks” model, with both physical and online stores.

BV (besloten vennootschap) Netherlands: a private *limited-liability* company.

bylaws The rules adopted by the *shareholders* of a *corporation*; specify the general methods for carrying out the functions of the corporation.

by-product A *joint product* whose *sales value* is so small relative to the sales value of the other joint product(s) that it does not receive normal *accounting* treatment. The *costs* assigned to by-products reduce the costs of the main *product(s)*. Accounting *allocates* by-products a share of *joint costs* such that the expected *gain* or *loss* at their sale is zero. Thus, by-products appear in the *accounts* at *net realizable value*.

C

C corporation In *tax* terminology, a *corporation* paying its own *income taxes*. Contrast with *S corporation*.

CA Chartered accountant.

call (option) An *option* to buy *shares* of a *publicly traded corporation* at a *fixed price* during a *fixed time span*. Contrast with *put*.

call premium See *callable bond*.

call price See *callable bond*. The *price* of a *call option*.

callable bond A *bond* for which the issuer reserves the right to pay a specific amount, the *call price*, to retire the obligation at specified times before its *maturity* date. If the issuer agrees to pay more than the *face amount* of the bond when called, the excess of the payment over the face amount is the *call premium*.

callable preferred shares Refer to the definition of *callable bond* and substitute the word “*shares*” for “*bond*.” Also, in the context of *preferred shares*, we’d use the word “*issue*” not “*obligation*.”

called-up share capital United Kingdom: *common stock at par method*.

Canadian Institute of Chartered Accountants (CICA)

The national organization that represents *chartered accountants* in Canada. Web site: www.cica.ca.

cancelable lease See *lease*.

CAP *Committee on Accounting Procedure*.

capacity Stated in units of *product*, the amount that a *firm* can produce per unit of time; stated in units of input, such as *direct labor* hours, the amount of input that a *firm* can use in production per unit of time. A *firm* uses this measure of *output* or input in *allocating fixed costs* if the amounts producible are normal, rather than maximum, amounts.

capacity cost A *fixed cost incurred* to provide a *firm* with the *capacity* to produce or to sell. Consists of *standby costs* and *enabling costs*. Contrast with *programmed costs*.

capacity variance *Production volume variance*.

capital *Owners’ equity* in a *business*; often used, equally correctly, to mean the total *assets* of a *business*; sometimes used to mean *long-term assets*. Sometimes used to mean *funds* raised or all *assets* or *long-term financing*. This word causes confusion in *accounting* and *finance*. Uninformed users mix up the *funds* (and their uses) with the sources of the *funds*. Consider the following *transactions*. A *firm* raises \$100 cash by issuing *shares* and uses the \$100 to acquire *inventory* and *plant assets*. Did the *investor* “invest capital” of \$100 or did the *firm* “invest capital” of \$100 or both? You will hear “invest capital” used for both sides of that transaction. Now focus on the *firm* who issued the *shares* and received the *cash*. Some would say the first transaction, the issue of *shares*, “raised capital.” (If you ask of a person who answers this way, “What is the *capital*, the increase in owners’ equity or the increased cash?” you will not get a clear answer, consistent across all such people.) Others would say only the second transaction, spending the *cash*, raised capital and only then for the *plant assets*, not the *inventory*. When a regulator focuses on a bank’s capital ratios, it looks to the right-hand side of the *balance sheet*, not to how the *firm* has invested its *funds*. Sometimes bank regulators will take the owners’ equity total and subtract from that amount the amount of intangible assets, resulting in a total with no clear conception, which they call “*tangible capital*.” See *cost of capital* for further discussion of the confusion between the cost of raising *funds* and the return to, or *opportunity cost* of, investing *funds*.

The confusion is so prevalent that we tend to avoid using the word, except to mean *shareholders’ equity*.

capital asset A term used by the *IRS* to designate the kinds of property that qualify for taxation at a *capital gains* tax rate, which is lower than the tax rate for *ordinary income*. Lower capital gains rates primarily relate to individuals. The *IRS* designates the following as capital assets: *stocks* and *bonds*, a home owned and occupied by the taxpayer, timber on home property or *investment* property, even if the individual makes *sales* of the timber, household furnishings, a car used for pleasure or commuting, coin or stamp collections, gems and jewelry, and gold, silver, and other metals. The *IRS* excludes from capital gains taxation, property that the taxpayer acquires to generate *income* as a *business*, such as: *cash*, *inventoriable assets*, *goods* held primarily for sale, most depreciable property, *real estate*, *receivables*, and certain *intangibles*. Sometimes writers use this term imprecisely to describe *plant* and *equipment*, which are clearly not capital assets under the *income tax* definition. Writers often use the term to refer to an *investment in securities*.

capital budget Plan of proposed *outlays* for acquiring long-term *assets* and the means of *financing* the acquisition.

capital budgeting The process of choosing *investment* projects for an enterprise by considering the *present value* of *cash flows* and deciding how to raise the *funds* the investment requires.

capital consumption allowance The term used for *depreciation expense* in national *income accounting* and the reporting of *funds* in the economy.

capital contributed in excess of par (or stated) value A preferred title for the *account* that shows the amount received by the issuer for *capital stock* in excess of *par (or stated) value*. Often called *additional paid-in capital* or *APIC*.

capital expenditure (outlay) An *expenditure* to acquire long-term *assets*.

capital gain The excess of *proceeds* over *cost*, or other *basis*, from the sale of a *capital asset* as defined by the Internal Revenue Code. If the taxpayer has held the capital asset for a sufficiently long time before sale, then the *gain* is *taxed* at a rate lower than that used for other gains and *ordinary income*.

capital lease (method) A *lease* treated by the *lessee* as both the borrowing of *funds* and the acquisition of an *asset* to be *amortized*. The *lessee* (tenant) recognizes both the *liability* and the *asset* on its *balance sheet*. *Expenses* consist of *interest* on the *debt* and *amortization* of the *asset*. The *lessor* (landlord) treats the lease as the sale of the *asset* in return for a series of future *cash receipts*. Same as *financing lease* (method) as used by *IFRS*. Contrast with *operating lease*.

capital loss A negative capital gain; see *capital gain*.

capital rationing In a *capital budgeting* context, the imposition of constraints on the amounts of total *capital expenditures* in each *period*.

capital stock The ownership *shares* of a *corporation*. Consists of all classes of *common* and *preferred shares*.

- capital stock contract** The legal document stating the agreements between the *corporation* and its *shareholders*.
- capital structure** The composition of a *corporation's equities*; the relative proportions of *short-term debt*, *long-term debt*, and *owners' equity*.
- capital structure leverage ratio** See *ratio* and **Exhibit 7.12**.
- capital surplus** An inferior term for *capital contributed in excess of par (or stated) value*.
- capitalization of a corporation** A term used by investment analysts to indicate *shareholders' equity* plus *bonds outstanding*.
- capitalization of earnings** The process of estimating the *fair value* of a *firm* by computing the *net present value* of the predicted *net income* (not *cash flows*) of the firm for the future. If one assumes that the future amounts are constant and persist forever, then one divides the annual amount by the *discount rate*. See *perpetuity*.
- capitalization rate** An *interest rate* used to convert a series of payments or *receipts* or earnings into a single *present value*.
- capitalize** To record an *expenditure* that may benefit a future *period* as an *asset* rather than to treat the expenditure as an *expense* of the period of its occurrence. Whether expenditures for advertising or for research and development should be *capitalized* is controversial, but *SFAS No. 2 (Codification Topic 730)* forbids capitalizing *R&D costs*. We believe *U.S. GAAP* should allow *firms* to capitalize expenditures when they lead to future benefits and thus meet the criterion to be an asset.
- carryback, carryforward, carryover** The use of *losses* or *tax credits* in one *period* to reduce *income taxes* payable in other periods. Two common kinds of *carrybacks* exist: for *net operating losses* and for *capital losses*. They apply against *taxable income*. Different tax jurisdictions have different rules for the length of the carryback and carryforward periods.
- carrying cost** *Costs* (such as property *taxes* and *insurance*) of holding, or storing, *inventory* from the time of purchase until the time of *sale* or use.
- carrying value (amount)** The *balance sheet* amount of an item. Can be an *acquisition cost*, an *amortized acquisition cost*, or a *fair value*. Whereas the term is synonymous with *book value* with respect to a single balance sheet item, when one refers the total amount of *owners' equity* of a *firm*, or that amount per *share*, common terminology uses only “book value” or “*book value per share*.”
- CASB (Cost Accounting Standards Board)** A board authorized by the U.S. Congress to “promulgate *cost-accounting* standards designed to achieve uniformity and *consistency* in the cost-accounting principles followed by defense contractors and subcontractors under federal contracts.” The *principles* the CASB promulgated since 1970 have considerable weight in practice wherever the *FASB* has not established a standard. Congress allowed the CASB to go out of existence in 1980 but reinstated it in 1990. It is a function located within the Office of Federal Procurement Policy, itself a part of the Office of Management and Budget, part of the Executive Office of the President of the United States.
- cash** Currency and coins, *negotiable checks*, and *balances* in bank accounts. For the *statement of cash flows*, “*cash*” also includes *cash equivalents*.
- cash basis of accounting** In contrast to the *accrual basis of accounting*, a system of *accounting* in which a *firm* recognizes *revenues* when it receives *cash* and recognizes *expenses* as it makes *disbursements*. The firm makes no attempt to match revenues and expenses in measuring *income*. See *modified cash basis*.
- cash budget** A *schedule* of expected *cash receipts* and *disbursements*.
- cash change equation** For any *period*, the change in *cash* equals the change in *liabilities* plus the change in *owners' equity* minus the change in non-cash *assets*.
- cash collection basis** The *installment method* for recognizing *revenue*. Do not confuse with the *cash basis of accounting*.
- cash conversion cycle** *Cash cycle*.
- cash cycle** The period of time during which a firm converts *cash* into *inventories*, *inventories* into *accounts receivable*, and *receivables* back into cash. Sometimes called *earnings cycle* or *operating cycle*.
- cash disbursements journal** A specialized *journal* used to record *expenditures* by *cash* and by *check*. If a *check register* is also used, a cash disbursements journal records only expenditures of currency and coins.
- cash discount** A *sales* or purchase price reduction allowed for prompt payment.
- cash dividend** See *dividend*.
- cash equivalent value** A term used to describe the amount for which an *asset* could be sold. Sometimes called *fair value*, *market value*, or *fair market value*.
- cash equivalents** According to *SFAS No. 95 (Codification Topic 230)*, “short-term, highly *liquid investments* that are both readily convertible to known amounts of *cash* [and] so near their *maturity* that they present insignificant risk of changes in value because of changes in interest rates. . . . Examples of items commonly considered to be cash equivalents are Treasury bills, *commercial paper*, [and] *money market funds*.”
- cash flow** *Cash receipts* minus *disbursements* from a given *asset*, or group of assets, for a given *period*. Financial analysts sometimes use this term to mean *net income + depreciation + depletion + amortization*. See also *operating cash flow* and *free cash flow*.
- cash flow from financing activities** Section of *statement of cash flows* reporting *cash* inflows related to raising *funds* through issues of *securities* and cash outflows related to retiring *securities* and for paying *dividends*.
- cash flow from investing activities** Section of *statement of cash flows* reporting *cash* outflows related to acquisitions of *non-operating assets*, such as *property*, *plant*, *equipment*, *investments*, and intellectual property purchased from others, and inflows related to selling these.
- cash flow from operations** *Receipts* from customers and from *investments*, less *expenditures* for *inventory*, labor,

- and *services* used in the usual activities of the *firm*, less *interest* expenditures. See *statement of cash flows* and *operations*. Same as *cash provided by operations*.
- cash flow from operations to current liabilities ratio** See *ratio* and **Exhibit 7.12**.
- cash flow from operations to total liabilities ratio** See *ratio* and **Exhibit 7.12**.
- cash flow hedge** A *hedge* of an exposure to variability in the *cash flows* of a recognized *asset* or *liability* or of a *forecasted transaction*, such as expected future foreign *sales*. The cash flows hedged do not themselves appear on the *balance sheet*. The hedging instrument itself is a *marketable security* and appears on the balance sheet at *fair value*. If the *firm* uses *hedge accounting* and the hedging instrument is highly effective, then it will be able to report in *other comprehensive income* the *gains* and *losses*, so these amounts will not appear in periodic *net income* until the firm settles or closes the hedging instrument.
- cash flow statement** *Statement of cash flows*.
- cash-generating unit** *IFRS* term for *reporting unit* in *U.S. GAAP*, which is a *segment* or a component of a segment that is a *business* with separate financial information that *management* regularly reviews.
- cash provided by operations** An important subtotal in the *statement of cash flows*. This amount equals revenues producing *cash* minus *expenses* requiring cash. Often, the amount appears as *net income* plus expenses not requiring cash (such as *depreciation charges*) minus *revenues* not producing cash (such as revenues recognized under the *equity method* of *accounting* for a long-term *investment*). The statement of cash flows maintains the same distinctions between *continuing operations*, *discontinued operations*, and *income* or *loss* from *extraordinary items* as does the *income statement*.
- cash receipts journal** A specialized *journal* used to record all *receipts* of *cash*.
- cash (surrender) value of life insurance** An amount equal not to the face value of the policy to be paid in the event of death but to the amount that the owner could *realize* by immediately canceling the policy and returning it to the insurance company for *cash*. A *firm* owning a life insurance policy reports it as an *asset* at an amount equal to this *value*.
- cash yield** See *yield*.
- cashier's check** A bank's own *check* drawn on itself and signed by the cashier or other authorized official. It is a direct obligation of the bank. Compare with *certified check*.
- catch-up depreciation** *Backlog depreciation*.
- cause-and-effect analysis** An identification of potential causes of defects and taking actions to cure the problem found. To use this analysis, first define the effect and then identify the causes of the problem. The potential causes fall into four categories: human factors, methods and design factors, machine-related factors, and materials or components factors. As *management* identifies the prevailing causes, it develops and implements corrective measures.
- CCA** *Current cost accounting; current value accounting*.
- central corporate expenses** General *overhead expenses* incurred in running the corporate headquarters and related supporting activities of a *corporation*. *Accounting* treats these expenses as *period expenses*. Contrast with *manufacturing overhead*. *Line-of-business reporting* must decide how to treat these expenses—whether to *allocate* them to the individual segments and, if so, how to allocate them.
- central processing unit (CPU)** The computer system component that carries out the arithmetic, logic, and data transfer.
- certificate** The document that is the physical embodiment of a *bond* or a *share of stock*; a term sometimes used for the *auditor's report*.
- certificate of deposit** A form of *deposit* in a bank or thrift institution. Federal law constrains the rate of *interest* that banks can pay to their depositors. Current law allows banks to pay a rate higher than the one allowed on a *time deposit* if the depositor promises to leave *funds* on deposit for several months or more. When the bank receives such funds, it issues a certificate of deposit. The depositor can withdraw the funds before *maturity* by paying a penalty.
- certified check** The *check* of a depositor drawn on a bank. The bank inserts the words “accepted” or “certified” on the face of the check, with the date and a signature of a bank official. The check then becomes an obligation of the bank. Compare with *cashier's check*.
- certified financial statement** A *financial statement* attested to by an independent *auditor* who is a *CPA* or who hold a similar certification such as *CA*.
- certified internal auditor** See *CIA*.
- certified management accountant** *CMA*.
- certified public accountant (CPA)** An *accountant* who has satisfied the statutory and administrative requirements of his or her jurisdiction to be registered or licensed as a *public accountant*. In addition to passing the Uniform CPA Examination administered by the *AICPA*, the CPA must meet certain educational, experience, and moral requirements that differ from jurisdiction to jurisdiction. The jurisdictions are the 50 states, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.
- CFA** *Chartered Financial Analyst*.
- CGA (Certified General Accountant)** Canada: an accountant who has satisfied the experience, education, and examination requirements of the Certified General Accountants' Association.
- chain discount** A series of *discount* percentages. For example, if a chain discount of 10% and 5% is quoted, then the actual, or *invoice, price* is the nominal, or list, price times 0.90 times 0.95, or 85.5%, of invoice price.
- change fund** Coins and currency issued to cashiers, delivery drivers, and so on.
- change in accounting principle** See *accounting changes*.
- change in estimates** See *accounting changes*.
- changes, accounting** See *accounting changes*.
- changes in financial position** See *statement of cash flows*.
- channel stuffing** Assume a company's ordinary practices record *revenue* when it ships to customers *goods*

previously ordered. A company engaging in channel stuffing will ship goods not yet ordered but record them as *sales*, as though a real customer had ordered them. It might even get permission from the customer to ship, saying it will not *bill* the customer until next *period* and that the customer will get its usual grace period to pay the bill starting from that later date, next period. Often, sales staff eager to boost their own sales *commissions* will send a letter to the customer laying out the agreement: the customer will accept the shipment and, if asked, confirm that it ordered the goods, but the seller will not send an invoice until later, and the customer need not pay until later or can return the goods. Such a letter is called a “*side letter*” and even honest *managements* have a hard time locating these. All a management can do is to be diligent and deal severely with employees found issuing side letters.

Chapter 7; Chapter 11 Provisions of the Bankruptcy Code. Chapter 7 provides for the *liquidation* of the *business*. Chapter 11 provides for its continued *operations*.

charge As a noun, a *debit* to an *account*; as a verb, to *debit*.

charge off To treat as a *loss* or *expense* an amount originally recorded as an *asset*; use of this term implies that the *charge* is not in accord with original expectations.

chart of accounts A systematic list of *account* names and numbers.

charter Document issued by a state government authorizing the creation of a *corporation*.

chartered accountant(s) (CA) The title used in British Commonwealth countries, such as Australia, Canada, India, the United Kingdom, and New Zealand, for an accountant who has satisfied the requirements of the institute of his or her jurisdiction to be qualified to serve as a *public accountant*.

Chartered Financial Analyst (CFA) A person who has passed three examinations, over at least an 18-month period, covering topics in *accounting*, economics, financial economics, portfolio *management*, and *security* analysis. The CFA Institute administers the program. Beyond passing examinations, the person needs to have approved working experience and satisfy standards of professional conduct.

check You know what a check is. The Federal Reserve Board defines a check as “a *draft* or order upon a bank or banking house purporting to be drawn upon a deposit of *funds* for the payment at all events of a certain sum of *money* to a certain person therein named or to him or his order or to bearer and payable instantly on demand.” It must contain the phrase “pay to the order of.” The amount shown on the check must be clearly readable, and the check must have the signature of the *drawer*. The drawer need not date the check. In the *accounts*, the drawer usually reduces the *balance* in the *cash* account when it issues the check, not later when the check clears the bank. See *remittance advice*.

check register A *journal* to record *checks* issued.

CIA (Certified Internal Auditor) One who has satisfied certain requirements of the *Institute of Internal Auditors*

including experience, ethics, education, and passing examinations.

CICA *Canadian Institute of Chartered Accountants*.

CIF (cost, insurance, and freight) In contracts, a term used along with the name of a given port, such as New Orleans, to indicate that the quoted *price* includes insurance, handling, and freight *charges* up to delivery by the seller at the given port.

circulating capital *Working capital*.

clean opinion See *auditor's report*.

clean surplus concept The notion that all entries to the *retained earnings account* must record *net income* and *dividends*. See *comprehensive income*. Contrast with *current operating performance concept*. This concept, with minor exceptions, now controls *U.S. GAAP*. A parallel concept provides guidance in understanding *OCI* and *AOCI*. All entries to *AOCI* must come from closing an *OCI* account. Over the life of a transaction, *AOCI* will have a zero balance as all initial increases to *AOCI* will be later offset by decreases and vice versa.

clearing account An *account* containing amounts to be transferred to another account(s) before the end of the *accounting period*. Examples are the *income summary* account (whose *balance* transfers to *retained earnings*) and the purchases account (whose balance transfers to *inventory* or to *cost of goods sold*).

close As a verb, to transfer the *balance* of a *temporary* or *contra* or *adjunct* account to the main account to which it relates; for example, to transfer *revenue* and *expense* accounts directly, or through the *income summary* account, to an *owners' equity* account or to transfer *purchase discounts* to purchases.

closed account An *account* with equal *debits* and *credits*, usually as a result of a *closing entry*.

closing entries (process) The entries that accomplish the transfer of *balances* in *temporary accounts* to the related *balance sheet accounts*. See *close*. See *work sheet*.

closing inventory *Ending inventory*.

CMA (Certified Management Accountant) certificate Awarded by the Institute of Certified Management Accountants of the *Institute of Management Accountants* to those who pass a set of examinations and meet certain experience and continuing-education requirements.

CoCoA *Continuously Contemporary Accounting*.

Codification (Project) The *FASB* has issued a compilation of *U.S. GAAP*, including *Statements of Financial Accounting standards*, *Accounting Principles Board Opinions*, *Accounting Research Bulletins*, *Staff Accounting Bulletins*, *EITF Consensuses*, *FASB Interpretations*, and several other sorts of pronouncements. This compilation, which organizes the material by topic, brings together into one place the various *accounting methods* and procedures that treat that topic. The codification does not include *Statements of Financial Accounting Concepts*, so it omits definitions of such fundamental concepts as *asset* and *revenue*. The codification does not contain the Basis for Conclusions, the nonauthoritative portion of authoritative guidance that describes the Board's reasoning in arriving at its conclusions.

- coding of accounts** The numbering of *accounts*, as for a *chart of accounts*, that is necessary for computerized accounting.
- coinsurance** Common condition of insurance policies that protect against hazards such as fire or water damage. These often specify that the owner of the property may not collect the full amount of insurance for a loss unless the insurance policy covers at least some specified “coinsurance” percentage, usually about 80%, of the *replacement cost* of the property. Coinsurance clauses induce the owner to carry full, or nearly full, coverage.
- COLA** Cost-of-living adjustment. See *indexation*.
- collateral** *Assets* pledged by a *borrower* who will surrender those assets if he or she fails to repay a *loan*.
- collectible** Capable of being converted into *cash*—now if due, later otherwise.
- collusion** *Cooperative* effort by employees to commit fraud or another unethical act.
- combination** See *business combination*.
- combined financial statements** Financial statements for a group of companies under common control, but for which there is no *parent–subsidiary* relation. Such statements eliminate *intercompany transactions* and *balances*.
- comfort letter** A letter in which an *auditor* conveys negative assurances as to unaudited *financial statements* in a *prospectus* or *draft* financial statements included in a preliminary prospectus.
- commercial paper** Short-term *notes* issued by corporate *borrowers*.
- commercial substance** Said of a transaction expected to change the future *cash flows* of a business. See *commercial transaction*.
- commercial transaction** A transaction expected to change the future *cash flows* of a business. Accounting for *trade-in transactions* depends upon whether the firm expects the new *asset* to change firm-wide cash flows from what they would have been had the firm kept the old asset.
- commission** Employee remuneration, usually expressed as a percentage, based on an activity rate, such as *sales*.
- committed costs** *Capacity costs*.
- Committee on Accounting Procedure (CAP)** Predecessor of the *APB*. The *AICPA*’s *principles*-promulgating body from 1939 through 1959. Its 51 pronouncements are *Accounting Research Bulletins*.
- common cost** *Cost* resulting from the use of *raw materials*, a facility (for example, *plant* or machines), or a *service* (for example, fire insurance) that benefits several *products* or departments. A *firm* must *allocate* this cost to those products or departments. Common costs result when two or more departments produce multiple products together even though the departments could produce them separately; joint costs occur when two or more departments must produce multiple products together. Many writers use “common costs” and “joint costs” synonymously. See *joint cost*, *indirect costs*, *overhead*, and *sterilized allocation*.
- common-dollar accounting** *Constant-dollar accounting*.
- common monetary measuring unit** For U.S. corporations, the dollar. See also *stable monetary unit assumption* and *constant-dollar accounting*.
- common shares (stock)** *Shares* representing the class of owners who have residual claims on the *assets* and *earnings* of a *corporation* after the *firm* meets all *debt* and claims of holders of *preferred shares*.
- common-size statement; common-size balance sheet; common-size income statement** A *percentage statement* usually based on total *assets* (*balance sheet*) or *net sales* or *revenues* (*income statement*).
- common-stock equivalent** A *security* whose primary *value* arises from its holder’s ability to *exchange* it for *common shares*; includes *stock options*, *warrants*, and also *convertible bonds* or *convertible preferred stock* whose *effective interest rate* at the time of issue is less than two-thirds the *average Aa corporate bond yield*. See *bond ratings*.
- company-wide control** See *control system*.
- comparable** The qualitative characteristic of *accounting* information that *firms* record like *transactions* and events similarly.
- comparative (financial) statements** *Financial statements* showing information for the same company for different times. The *SEC* requires two successive years for *balance sheets* and three for *income* and *cash flow statements*; the *IASB* requires two successive years for all financial statements. Nearly all published financial statements are in this form. Contrast with *historical summary*.
- compensating balance** The amount required to be left on deposit for a *loan*. When a bank lends *funds* to customers, it often requires that the customers keep on deposit in their checking *accounts* an amount equal to some percentage—say, 20%—of the loan. Such amounts effectively increase the *interest rate*. The *borrower* must disclose the amounts of such *balances* in *notes* to the *financial statements*.
- completed contract method** Recognizing *revenues* and *expenses* for a *job* or order only when the *firm* finishes it, except that when the firm expects a *loss* on the contract, the firm must *recognize* all revenues and expenses in the *period* when the firm first foresees a loss. *Accountants* generally use this term only for long-term contracts. This method is otherwise equivalent to the *sales basis of revenue recognition*.
- completed sale(s) basis; completed sale(s) method** See *sales basis of revenue recognition*.
- compliance audit** Obtaining and evaluating *verifiable* evidence regarding assertions, actions, and events to ascertain the degree of correspondence between them and established performance criteria.
- compliance procedure** An *audit* procedure used to gain evidence as to whether the prescribed *internal controls* are operating effectively.
- composite cost of capital** See *cost of capital*.
- composite depreciation or composite life method** *Group depreciation* when the items are of unlike kind. The term also applies when the *firm* depreciates as a whole a single item (for example, a crane, which consists of

separate units with differing service lives, such as the chassis, the motor, the lifting mechanism, and so on), rather than treating each of its components separately.

compound entry A *journal entry* with more than one *debit* or more than one *credit* or both. See *trade-in transaction* for an example.

compound interest *Interest* calculated on *principal* plus previously undistributed interest.

compound interest depreciation A method designed to hold the *rate of return* on an *asset* constant. First, find the *internal rate of return* on the *cash inflows* and *outflows* of the *asset*. The periodic *depreciation charge* equals the *cash flow* for the *period* less the *internal rate of return* multiplied by the *asset's carrying value* at the beginning of the *period*. When the *cash flows* from the *asset* are constant over time, usage sometimes refers to the method as the *annuity method of depreciation*.

compounding period The time period, usually a year or a portion of a year, for which a *firm* calculates *interest*. At the end of the *period*, the *borrower* may pay interest to the *lender* or may add the interest (that is, convert it) to the *principal* for the next interest-earning period.

comprehensive budget *Master budget*.

comprehensive income Defined in *SFAC No. 3* as “the change in *equity (net assets)* of an *entity* during a *period* from *transactions* and other events and circumstances from non-owner sources. It includes all changes in *equity* during a *period* except those resulting from *investments* by owners and distributions to owners.” In this definition, “*equity*” means *owners' equity* or *shareholders' equity*. *SFAS No. 130 (Codification Topic 220)* requires *firms* to report comprehensive income as part of a *statement* showing *earnings* (primarily from realized transactions), *other comprehensive income* (with additions for all other changes in owners' equity, primarily *holding gains and losses* and *foreign exchange gains and losses*), and comprehensive income plus *accounting adjustments*. The *FASB* encourages the discontinuation of the term “*net income*.” The terms “*earnings*” and “*comprehensive income*” denote different concepts, with totals different from that of the old “*net income*.” *SFAS No. 130 (Codification Topic 220)* requires that the firm report comprehensive income in a format having the same prominence as other *financial statements*. We cannot predict which “*income total*”—*earnings* or comprehensive income—users of *financial statements* will focus on.

comptroller Same meaning and pronunciation as *controller*. Modern users, however, tend to use this form for government and *not-for-profit entities* and *controller* for profit-seeking ones.

computer-based accounting systems Most modern record keeping systems operate on computers, not on paper and in books such as physical *ledgers* and *journals*. A database contains *journal entries*. The data entry discipline requires equal *debits* and *credits*—the system won't let you continue without them. (The data entry discipline will not correct conceptual errors in journal entries, such as *debiting* an *asset account* rather than an

expense account.) Computer programs—instructions—query this database and perform arithmetic operations to construct whatever the user requests: a *general journal* or a *general ledger* or a *special-purpose ledger* or a *budget report* comparing *actual* and budgeted expenses for a department or a single *financial statement* or a set of financial statements or *schedule*. A manual record-keeping process records transactions in journal entries, *posts* journal entry amounts into *accounts* in a ledger, totals the amounts in accounts to derive account *balances*, and uses the account balances to construct financial statements and other schedules. Even though a computer-based accounting system does not formally undertake these steps, one needs to understand the steps of manual record keeping in order to program the computer in the first place and to understand common business terminology. Students have difficulty understanding the differences between

- Temporary and *permanent accounts*,
- Transaction and adjusting entries, and
- Pre- and *post-closing* balances in the Retained Earnings account,

even when studying manual record-keeping systems. Mastering these distinctions with a computer-based system is more difficult. We recommend you master the record-keeping cycle, as presented in this book in **Chapter 2**, before thinking about how computer-based systems work.

conceptual framework A coherent system of interrelated *objectives* and fundamentals, promulgated by the *FASB* primarily through its *SFAC* publications, intended to lead to consistent standards for *financial accounting* and reporting. The *IASB* has a similar conceptual framework.

confidence level The measure of probability that the actual characteristics of the *population* lie within the stated precision of the estimate derived from a sampling process. A sample estimate may be expressed in the following terms: “Based on the sample, we are 95% sure [confidence level] that the true population value is within the range of X to Y [precision].” See *precision*.

confirmation A formal memorandum delivered by the customers or suppliers of a company to its independent *auditor* verifying the amounts shown as *receivable* or *payable*. The auditor originally sends the confirmation document to the customer. If the auditor asks that the customer return the document whether the *balance* is correct or incorrect, usage calls it a “*positive confirmation*.” If the auditor asks that the customer return the document only if it contains an error, usage calls it a “*negative confirmation*.”

conglomerate See *holding company*. This term implies that the owned companies operate in dissimilar lines of *business*. In a conglomerate, the top company often is, itself, an operation company.

conservatism A *reporting objective* that calls for anticipation of all *losses* and *expenses* but defers recognition of *gains* or *profits* until they are *realized* in *arm's length transactions*. In the absence of certainty, report

- events to minimize cumulative *income*. Conservatism does not mean reporting low income in every *accounting period*. Over long-enough time spans, income is cash-in less cash-out. If a (conservative) reporting method shows low income in early periods, it must show higher income in some later period.
- consignee** See *on consignment*.
- consignment** See *on consignment*.
- consignor** See *on consignment*.
- consistency** Treatment of like *transactions* in the same way in consecutive *periods* so that *financial statements* will be more *comparable* than otherwise; the reporting policy implying that a reporting *entity*, once it adopts specified procedures, should follow them from period to period. See *accounting changes* for the treatment of inconsistencies.
- consol** A *bond* that never matures; a *perpetuity* in the form of a bond; originally issued by Great Britain after the Napoleonic wars to consolidate *debt* issues of that period. The term arose as an abbreviation for “consolidated *annuities*.”
- consolidated entity** See *consolidated financial statements*.
- consolidated (financial) statements; consolidated balance sheet; consolidated income statement; consolidated statement of cash flows** Statements issued by legally separate companies under the control of a *parent company* and that show financial statements as they would appear if the companies were one *economic entity*, called the “*consolidated entity*.”
- consolidation policy** A company’s statement of which *entities* it includes in a particular set of *consolidated financial statements*. Sometimes *firms* have a choice as to which to consolidate, but most often in *U.S. GAAP*, the firm has little choice.
- consolidation work sheet** The paper or *software* representation thereof, which shows the *firms* being consolidated along with various additions and subtractions to eliminate double counting and intercompany *transactions*.
- constant dollar** A hypothetical unit of *general purchasing power*, denoted “C\$” by the *FASB*.
- constant-dollar accounting** Accounting that measures items in *constant dollars*. See *historical cost/constant-dollar accounting* and *current cost/nominal-dollar accounting*. Sometimes called “*general price level-adjusted accounting*” or “*general purchasing-power accounting*.”
- constant-dollar date** The time at which the *general purchasing power* of one *constant dollar* exactly equals the general purchasing power of one *nominal dollar*; that is, the date when C\$1 = \$1. When the constant-dollar date is midperiod, the *nominal amounts of revenues and expenses* spread evenly throughout the *period* equal their constant-dollar amounts but end-of-period *balance sheet* amounts measured in constant midperiod dollars differ from their nominal-dollar amounts. When the constant-dollar date is at the end of the period, the constant-dollar amounts equal the nominal-dollar amounts on a balance sheet for that date.
- constrained share company** Canada: a public company whose *charter* specifies that people who are Canadian citizens or who are *corporations* resident in Canada must own a prescribed percentage of the shares.
- Construction in Progress account; Construction in Process account** Analogous to *work-in-progress (process) inventory*, except that firms use work-in-process for items typically produced in quantity and with short (less than a few months) production times. When the firm produces items with long production times, such as a bridge or building, the *inventory account* that accumulates costs during production in accounts with titles such as these. These accounts accumulate costs of production until the firm completes the items and transfers the costs to an account such as *Finished Goods Inventory* or *Buildings Constructed*.
- constructive capitalization** Some long-term *noncancellable leases* are *operating leases*. Consider, for example, a ten-year lease on a shopping center store site. An analyst might want to see the effect on the *lessee’s financial statements* of treating the *present value* of the contractual commitments as *balance sheet* items, an *asset* for the *leasehold* and a *liability* for the obligations to pay. This term refers to the process of *debiting* the present value of the lease commitments to an asset and *crediting* the amount to a *liability*, for analysis.
- constructive liability** *FASB’s* term for an item recorded as an *accounting liability*, which the firm has no obligation to pay but intends to pay. An example is the liability with related *expense* that *management* establishes for future *cash* payments for severance payments for employees it intends to discharge in a *restructuring*.
- constructive receipt** An item included in *taxable income* when the taxpayer can control *funds* whether or not it has received cash. For example, *interest* added to *principal* in a *savings account* is constructively received.
- Consumer Price Index (CPI)** A *price index* computed and issued monthly by the Bureau of Labor Statistics of the U.S. Department of Labor. The index attempts to track the price level of a group of *goods and services* purchased by the average consumer. The CPI is used in *constant-dollar accounting*.
- contingency** A potential *liability*. If a specified event occurs, such as a *firm’s* losing a lawsuit, it would *recognize* a liability. The *notes* disclose the contingency, but so long as it remains contingent, it does not appear in the *balance sheet*. *SFAS No. 5 (Codification Topic 450)* requires treatment as a contingency until the outcome is “probable” (interpreted to mean 75% to 80% likely to occur) and the amount of payment can be reasonably estimated, perhaps within a range. When the outcome becomes probable (the future event is “likely” to occur) and the firm can reasonably estimate the amount (using the lower end of a range if it can estimate only a range), then the firm recognizes a liability in the accounts, rather than just disclosing it. A *material* contingency may lead to a qualified, “*subject to*” *auditor’s opinion*. Firms do not record *gain* contingencies in the *accounts* but merely disclose them in notes.
- contingent annuity** An *annuity* whose number of payments depends on the outcome of an event whose timing is uncertain at the time the annuity begins; for example, an annuity payable until death of the *annuitant*. Contrast with *annuity certain*.

- contingent asset** An item that meets some, but not all, the tests to be an *asset* and, hence, is not an asset, but might become one, such as the potential *proceeds* from winning a lawsuit or other lottery.
- contingent issue (securities)** *Securities* issuable to specific individuals at the occurrence of some event, such as the *firm's* attaining a specified level of earnings.
- contingent liability; contingent obligation; contingent provision** *Contingency*. Avoid the term “*contingent liability*” because it refers to something not (yet) a *liability* on the *balance sheet*. The *IASB* has said it will formally express disapproval of the term “contingent liability.” See *provision*.
- continuing appropriation** A governmental *appropriation* automatically renewed without further legislative action until altered or revoked or expended.
- continuing operations** See *income from continuing operations*.
- continuity of operations** The assumption in *accounting* that the *business entity* will continue to operate long enough to carry out its current plans. The *going concern assumption*.
- continuous budget** A *budget* that adds a future *period* as the current period ends. This budget, then, always reports on the same number of periods.
- continuous compounding** *Compound interest* in which the *compounding period* is every instant of time. See *e* for the computation of the equivalent annual or periodic rate.
- continuous flow processing** Mass production of homogeneous *products* in a continuous flow, such as chemicals or petroleum products. Companies manufacturing with continuous flow processes use *process costing* to account for *product costs*.
- continuous improvement** Modern *total quality management (TQM)* practitioners believe that the process of seeking quality is never complete. This attitude reflects that assumption, seeking always to improve activities.
- continuous inventory method** The *perpetual inventory method*.
- Continuously Contemporary Accounting (CoCoA)** A name coined by the Australian theorist Raymond J. Chambers to indicate a *combination* of *current value accounting* in which the *measuring unit* is *constant dollars* and the *attribute measured* is *exit value*.
- contra account** An *account*, such as *accumulated depreciation*, that accumulates subtractions from another account, such as machinery. Contrast with *adjunct account*.
- contributed capital** Name for the *owners' equity account* that represents amounts paid in, usually in *cash*, by owners; the sum of the *balances in capital stock accounts plus capital contributed in excess of par (or stated) value accounts*. Contrast with *donated capital*.
- contributed surplus** An inferior term for *capital contributed in excess of par method*.
- contribution approach** *Income statement* preparation method that reports *contribution margin*, by separating *variable costs* from *fixed costs*, in order to emphasize the importance of cost-behavior patterns for purposes of planning and control.
- contribution margin** *Revenue* from *sales* less all *variable expenses*. Contrast with *gross margin*.
- contribution margin ratio** *Contribution margin* divided by *net sales*; usually measured from the *price* and *cost* of a single unit; sometimes measured in total for companies with multiple *products*.
- contribution per unit** Selling price less *variable costs* per unit.
- contributory** Said of a *pension plan* in which employees, as well as employers, make payments to a *pension fund*. Note that the *provisions* for *vesting* apply only to the employer's payments. Whatever the degree of vesting of the employer's payments, employees typically gets back all their payments, with *interest*, in case of death or other cessation of employment before retirement.
- control (controlling) account** A summary *account* with totals equal to those of entries and *balances* that appear in individual accounts in a *subsidiary ledger*. *Accounts Receivable* is a control account backed up with an account for each customer. Do not change the balance in a control account unless you make a corresponding change in one of the *subsidiary accounts*. A control account in a computerized *accounting system* is programmed to be the sum of individual accounts that comprise the subsidiary ledger for that control account.
- control charts** Presentations of *warning signals* that help *management* distinguish between random or routine variations in *quality* and variations that it should investigate. The presentations show the results of statistical process-control measures for a sample, batch, or some other unit. These presentations depict variation in a process and its behavior over time. Management specifies an acceptable level of variation and plans to investigate the causes of deviations beyond that level.
- control system** A device used by top *management* to ensure that lower-level management carries out its plans or to safeguard *assets*. Control designed for a single function within the *firm* is “*operational control*”; control designed for autonomous segments that generally have responsibility for both *revenues* and *costs* is “*divisional control*”; control designed for activities of the firm as a whole is “*company-wide control*.” “*Internal control*” systems include those designed for safeguarding assets and to ensure that *financial statements* and their components are correct.
- controllable cost** A *cost* influenced by the way a *firm* carries out operations. For example, marketing executives control advertising costs. These costs can be *fixed* or *variable*. See *programmed costs* and managed costs.
- controlled company** A company in which an individual or *corporation* holds a majority of the voting *shares*. An owner can sometimes exercise effective control even though it owns less than 50% of the shares.
- controller** A title for the chief *accountant* of an organization; often spelled *comptroller* when used to identify that person in a government or not-for-profit *entity*.
- convergence** The process by which the *International Accounting Standards Board (IASB)* collaborates with selected national standard setters around the world to reduce or eliminate substantive differences between

- the international and national standards at a high level of *quality*. The national standard setter with which the IASB works most proactively in the convergence process is the *Financial Accounting Standards Board (FASB)*.
- convergence (process)** The intention of the *FASB* and *IASB* to eliminate differences between *U.S. GAAP* and *IFRS*.
- conversion** The act of exchanging a convertible *security* for another security.
- conversion audit** An examination of changeover procedures, and new *accounting procedures* and files, that takes place when a significant change in the *accounting system* (for example, a change from a manual to a computerized system or a change of computers or computer systems) occurs.
- conversion cost** *Direct labor costs* plus *factory overhead costs incurred* in producing a *product*; that is, the cost to convert raw materials to finished products. *Manufacturing cost*.
- conversion period** *Compounding period*; also, period during which the holder of a *convertible bond* or *convertible preferred stock* can convert it into *common shares*.
- convertible bond** A *bond* whose owner may convert it into a specified number of *shares* of *capital stock* during the *conversion period*.
- convertible preferred shares (stock)** *Preferred shares* whose owner may convert them into a specified number of *common shares*.
- cookie-jar accounting** A name, most prominently used by a chairman of the *SEC*, to indicate the practice of reporting lower *income* in an early *period*, so that *management* at its discretion can report higher income in a later period. Consider, for example, the entry to estimate normal *warranty costs* for *products* sold. The *journal entry debits an expense account*, reducing income, and *credits a liability account*. In some later period, the *firm* can *debit* a warranty cost to the liability account, not to an expense account, relieving that later period of the income reduction that an expense would have caused. Cookie-jar accounting occurs when the amount debited is larger than necessary, resulting in lower-than-correct income in the current period. In a later period, income can be higher as the debit for warranty costs can be to the liability account, rather than to expense, which would reduce income in that period. See *quality of earnings*. Often, users refer to the excess liability amount, the amount in the cookie jar, later available for income enhancement, as a “reserve.” See *reserve* for our warnings about using that word in any context.
- cooperative** An incorporated organization formed for the benefit of its members (owners), who are either producers or consumers, in order to acquire for them *profits* or savings that otherwise *accrue* to middlemen. Members exercise control on the basis of one vote per member.
- coproduct** A *product* sharing production facilities with another product. For example, if an apparel manufacturer produces shirts and jeans on the same line, these are coproducts. Distinguish coproducts from *joint products* and *by-products* that, by their very nature, a *firm* must produce together, such as the various grades of wood a lumber factory produces.
- copyright** Exclusive right granted by the government to an individual author, composer, playwright, or the like for the life of the individual plus 70 years. *Corporations* and anonymous authors get copyrights for varying *periods* set out in the law. The *economic life* of a copyright can be less than the legal life, such as, for example, the copyright of this book.
- core deposit intangible** A bank borrows *funds* from its customers, called “depositors,” who open checking and savings *accounts*. Those depositors can take out their funds at any time, but usually don’t. The amount that depositors leave on deposit for long periods of time are called core deposits. The bank lends those funds to other customers, called *borrowers*, at *interest rates* larger than the amount it pays the depositors for the funds. (For checking accounts, the rate the bank pays depositors is often zero.) The fact that the depositors can remove their funds at any time, but, on average, leave amounts on deposit relatively permanently means that the bank can lend those funds for relatively long periods of time, usually at higher interest rates, than it can *charge* for shorter-term *loans*. (See *yield curve*.) The bank’s ability to borrow from some customers at a low rate and lend to other customers at a high rate creates wealth for the bank. Bankers and banking analysts call this wealth the “core deposit intangible.” It represents an *asset* not *recognized* in the *financial statements* by the bank that created the wealth, although some *SEC* commissioners have expressed the thought that *accounting* should recognize such items as assets. When one bank buys another in a *purchase*, however, it will pay for this asset and will record it as an asset. Usually, the acquiring bank does not use the specific account title Core Deposit Intangible, but instead uses the account title *Goodwill*.
- corner** The control of a quantity of *shares*, or a commodity, sufficiently large that the holder can control the *market price*.
- corporate bylaws** The set of rules and procedures for the *operations* of the *corporation* enacted by its founders or *board of directors*.
- corporate charter** The document provided by a state, such as Delaware, to a corporate to operate as a *corporation*.
- corporation** A *legal entity* authorized by a state to operate under the rules of the entity’s *charter*.
- correcting entry** An *adjusting entry* that results in the proper entry for a previously, improperly recorded *transaction*. If one were to reverse the original, incorrect, entry, then record the correct entry, and then reduce the two previous entries to a single one, perhaps with multiple *debit* and credit parts, one has the correcting entry. Do not confuse with entries that correct *accounting errors*.
- correction of errors** See *accounting errors*.
- cost** The sacrifice, measured by the *price* paid or to be paid, to acquire *goods* or *services*. See *acquisition cost* and

- replacement cost.* Terminology often uses “cost” when referring to the valuation of a good or service acquired. When writers use the word in this sense, a cost is an *asset*. When the benefits of the acquisition (the goods or services acquired) expire, the cost becomes an *expense* or *loss*. Some writers, however, use “cost” and “expense” as synonyms. Contrast with expense. The word “cost” appears in more than 50 *accounting* terms, each with sometimes subtle distinctions in meaning. See *cost terminology* for elaboration. Clarity requires that the user include with the word “cost” an adjective or phrase to be clear about intended meaning.
- cost accounting** Classifying, summarizing, recording, reporting, and *allocating* current or predicted *costs*; a subset of *managerial accounting*.
- Cost Accounting Standards Board** See *CASB*.
- cost accumulation** Bringing together, usually in a single *account*, all *costs* of a specified activity. Contrast with *cost allocation*.
- cost allocation** Assigning *costs* to individual *products*, organizational units, or time periods. Contrast with *cost accumulation*.
- cost basis** *Cost* in contrast to *fair value* or other measurement.
- cost-based transfer price** A *transfer price* based on *historical costs*.
- cost behavior** The functional relation between changes in activity and changes in *cost*; for example, *fixed* versus *variable costs*; linear versus *curvilinear cost*.
- cost/benefit criterion** Some measure of *costs* compared with some measure of benefits for a proposed undertaking. If the costs exceed the benefits, then the analyst judges the undertaking not worthwhile. This criterion will not yield good decisions unless the analyst estimates all costs and benefits flowing from the undertaking.
- cost center** A unit of activity for which a *firm* accumulates *expenditures* and *expenses*.
- cost constraints** A pervasive consideration in *financial reporting*, capturing the idea that the costs of preparing and using financial information must be justified by the benefits of reporting that information.
- cost driver** A *factor* that causes an activity’s costs. See *driver* and *activity basis*.
- cost driver rate** Rate at which the *cost driver* causes *costs*.
- cost-effective** Among alternatives, the one whose benefit, or payoff, per unit of *cost* is highest; sometimes said of an action whose expected benefits exceed expected costs whether or not other alternatives exist with larger benefit–cost *ratios*.
- cost estimation** The process of measuring the functional relation between changes in activity levels and changes in *cost*.
- cost-flow assumption** See *flow assumption*.
- cost-flow equation** Beginning Balance + Transfers In = Transfers Out + Ending Balance; $BB + TI = TO + EB$. Equivalent to: $BB + TI - TO = EB$.
- cost flows** *Costs* passing through various classifications within an *entity*. See *flow of costs* for a diagram.
- cost hierarchy** Categorizes *costs* according to whether they are *capacity*, *product*, *customer*, batch, or unit costs.
- cost method (for investments)** In accounting for an *investment* in the *capital stock* or *bonds* of another company, method in which the *firm* shows the investment at *acquisition cost* and treats only *dividends* declared or *interest receivable* as *revenue*; not allowed by *U.S. GAAP*.
- cost method (for treasury stock)** The method of showing *treasury stock* in a *contra account* to all other items of *shareholders’ equity* in an amount equal to that paid to reacquire the stock.
- cost object(ive)** Any activity for which *management* desires a separate measurement of *costs*. Examples include departments, *products*, and territories.
- cost of capital** *Opportunity cost* of *funds* invested in a *business*; the rate of return that rational owners require an asset to earn before they will devote that *asset* to a particular purpose; sometimes measured as the *average* annual rate that a company must pay for its *equities*. In *efficient capital markets*, this *cost* is the *discount rate* that equates the expected *present value* of all future *cash flows* to common shareholders with the market value of *common stock* at a given time. Analysts often measure the cost of capital by taking a *weighted average* of the *firm’s debt* and various *equity securities*. We sometimes call the measurement so derived the *composite cost of capital*, and some analysts confuse this measurement of the cost of capital with the cost of capital itself. For example, if the equities of a firm include substantial amounts for the *deferred income tax liability*, the composite cost of capital will underestimate the true cost of capital, the required rate of return on a firm’s assets, because the deferred income tax liability has no explicit cost.
- cost of goods manufactured** The sum of all *costs allocated* to *products* completed during a *period*, including *materials*, labor, and *overhead*.
- cost of goods purchased** *Net purchase price* of goods acquired plus *costs* of storage and delivery to the place where the owner can productively use the items.
- cost of goods sold** *Inventoriable costs* that *firms* expense because they sold the units; equals *beginning inventory* plus *cost of goods purchased* or *manufactured* minus *ending inventory*.
- cost of goods sold percentage** See *ratio* and **Exhibit 7.12**.
- cost of sales** Generally refers to *cost of goods sold*, occasionally to *selling expenses*.
- cost of services rendered** *Costs* the *firm* incurs to provide *services*, in contrast to selling *goods*, to its customers.
- cost or market, whichever is lower** See *lower of cost or market*.
- cost percentage** One minus the *markup percentage*; *cost of goods available for sale* divided by *selling prices* of goods available for sale (when *FIFO* is used); *cost of purchases* divided by *selling prices* of purchases (when *LIFO* is used). See *markup* for further detail on inclusions in the calculation of cost percentage.
- cost-plus transfer pricing** *Transfer price* equal to the *cost* of the *product* transferred to another company in an affiliated group, plus a *markup*.
- cost pool** *Indirect cost pool*; groupings or aggregations of costs, usually for subsequent analysis or *allocation*.

- cost principle** The *principle* that requires reporting *assets* at *historical* or *acquisition cost*, less accumulated *amortization*. This principle relies on the assumption that *cost* equals *fair value* at the date of acquisition and that subsequent changes are not likely to be significant.
- cost recovery method; cost-recovery-first method** A method of *revenue* recognition that *credits inventory* as the *firm* receives *cash* collections and continues until the firm has collected cash equal to the sum of all costs. Only after the firm has collected cash equal to costs does it recognize *income*. A firm may not use this method in financial reporting unless the total amount of collections is highly uncertain. It is never allowed for income tax reporting. Contrast with the *installment method*, allowed for both *book* and tax, in which the firm credits constant proportions of each cash collection both to cost and to income.
- cost sheet** Statement that shows all the elements composing the total *cost* of an item.
- cost structure** For a given set of total *costs*, the percentages of *fixed* and *variable costs*, typically two percentages that add to 100%.
- cost terminology** The word “*cost*” appears in many accounting terms. The exhibit starting on the next page classifies some of these terms according to the distinctions between the terms in *accounting* usage. Joel Dean was, to our knowledge, the first to attempt such distinctions; we have used some of his ideas here. We discuss some of the terms in more detail under their own listings.
- cost-to-cost** The *percentage-of-completion method* in which the *firm* estimates the fraction of completion as the *ratio* of *costs incurred* to date divided by the total costs the firm expects to incur for the entire project.
- cost-volume-profit analysis** A study of the sensitivity of *profits* to changes in units sold (or produced) or *costs* or *prices*, often done with a *cost-volume-profit graph*.
- cost-volume-profit graph (chart)** A graph that shows the relation between *fixed costs*, *contribution per unit*, *breakeven point*, and *sales*. See *breakeven chart*.
- costing** The process of calculating the *cost* of activities, *products*, or *services*; the British word for *cost accounting*.
- counterparty** The term refers to the opposite party in a legal contract. In *accounting* and *finance*, a frequent usage arises when an *entity* purchases (or sells) a *derivative* financial contract, such as an *option*, *swap*, *forward contract*, and *futures contract*.
- coupon** That portion of a *bond* document redeemable at a specified date for payments. Its physical form resembles a series of tickets; each coupon has a date, and the holder either deposits it at a bank, just like a check, for collection or mails it to the issuer’s *agent* for collection. Coupons have been made illegal in the United States since 1982 because of the possibility of tax fraud.
- coupon bond** A *bond* that promises periodic payments. See *coupon*.
- coupon (interest) rate** Of a *bond*, the total dollar amount of *coupons* paid in any one year divided by *par value*. Contrast with *effective rate*. Better not to use the word “*interest*” in this term. See *interest payment* for discussion of why.
- covenant** A promise with legal validity. A loan covenant specifies the terms under which the *lender* can force the *borrower* to repay *funds* otherwise not yet due. For example, a *bond* covenant might say that the *principal* of a bond issue falls due on December 31, 2010, unless the firm’s *debt-equity ratio* falls below 40%, in which case the amount becomes due immediately.
- CPA** See *certified public accountant*. The *AICPA* suggests that no periods appear in the abbreviation.
- CPI** *Consumer price index*.
- CPP** Current purchasing power; usually used, primarily in the United Kingdom, as an adjective modifying the word “*accounting*” to mean the accounting that produces *constant-dollar financial statements*.
- Cr.** Abbreviation for *credit*, always with initial capital letter. Quiz: what do you suppose Cr. stands for? For the answer, see *Dr.*
- creative accounting** Selection of *accounting principles* and interpretation of *transactions* or events designed to manipulate, typically to increase but sometimes merely to smooth, reported *income from continuing operations*; one form of *fraudulent financial reporting*. Many attempts at creative accounting involve premature *revenue recognition*.
- credit** As a noun, an entry on the right-hand side of an *account*; as a verb, to make an entry on the right-hand side of an account; records increases in *liabilities*, *owners’ equity*, *revenues*, and *gains*; records decreases in *assets* and *expenses*. See *debit and credit conventions*. This term also refers to the ability or right to buy or borrow in return for a promise to pay later.
- credit bureau** An organization that gathers and evaluates data on the ability of a person to meet financial obligations and sells this information to its clients.
- credit loss** The amount of *accounts receivable* that the *firm* finds, or expects to find, *uncollectible*.
- credit memorandum** A document used by a seller to inform a buyer that the seller is crediting (reducing) the buyer’s *account receivable* because of errors, *returns*, or *allowances*; also, the document provided by a bank to a depositor to indicate that the bank is increasing the depositor’s *balance* because of some event other than a deposit, such as the collection by the bank of the depositor’s *note receivable*.
- creditor** One who lends. In the United Kingdom, *account payable*.
- critical accounting judgments** All numbers on a *balance sheet*, except the date, require some judgment or estimate. (The previous sentence passes for a joke in *accounting*.) The *SEC* requires that *management* in its *annual report to shareholders* identify the accounting issues whose judgments and estimates have potential for significant effect on *earnings* and *financial position*. Examples include *inventory* valuation, measurement of *goodwill impairment*, accounting for *hedges*, and *revenue recognition*.
- critical path method (CPM)** A method of *network analysis* in which the analyst estimates normal duration time for each activity within a project. The critical

Cost Terminology Distinctions Among Terms Containing the Word “Cost”

Terms (Synonyms Given in Parentheses)		Distinctions and Comments
Historical Cost (Acquisition Cost)	vs. Current Cost	1. The following pairs of terms distinguish the basis measured in accounting. A distinction used in financial accounting. Current cost can be used more specifically to mean replacement cost, net realizable value, or present value of cash flows. “Current cost” is often used narrowly to mean replacement cost.
Historical Cost (Actual Cost)	vs. Standard Cost	The distinction between historical and standard costs arises in product costing for inventory valuation. Some systems record actual costs; others record the standard costs.
Variable Cost	vs. Fixed Cost (Constant Cost)	2. The following pairs of terms denote various distinctions among <i>historical costs</i> . For each pair of terms, the sum of the two kinds of costs equals total historical cost used in financial reporting. Distinction used in breakeven analysis and in the design of cost <i>accounting systems</i> , particularly for product costing. See (4), below, for a further subdivision of fixed costs and (5), below, for the economic distinction between marginal and average cost closely paralleling this one.
Traceable Cost	vs. Common Cost (Joint Cost)	Distinction arises in allocating manufacturing costs to product. Common costs are allocated to product, but the allocations are more or less <i>arbitrary</i> . The distinction also arises in preparing segment reports and in separating manufacturing from nonmanufacturing costs.
Direct Cost	vs. Indirect Cost	Distinction arises in designing cost <i>accounting systems</i> and in product costing. Direct costs can be traced directly to a cost object (for example, a product, a responsibility center), whereas indirect costs cannot.
Out-of-Pocket Cost (Outlay Cost; Cash Cost)	vs. Book Cost	Virtually all costs recorded in financial statements require a cash <i>outlay</i> at one time or another. The distinction here separates expenditures to occur in the future from those already made and is used in making decisions. Book costs, such as for depreciation, reduce income without requiring a future outlay of cash. The cash has already been spent. See future cost vs. past cost in (5), below.
Incremental Cost (Marginal Cost; Differential Cost)	vs. Unavoidable Cost (Inescapable Cost; Sunk Cost)	Distinction used in making decisions. Incremental costs will be incurred (or saved) if a decision is made to go ahead (or to stop) some activity, but not otherwise. <i>Unavoidable costs</i> will be reported in financial statements whether the decision is made to go ahead or not because cash has already been spent or committed. Not all unavoidable costs are book costs, such as, for example, a salary that is promised but not yet earned and that will be paid even if a no-go decision is made. The economist restricts the term marginal cost to the cost of producing one more unit. Thus, the next unit has a marginal cost; the next week’s output has an incremental cost. If a firm produces and sells a new product, the related new costs would properly be called incremental, not marginal. If a factory is closed, the costs saved are incremental, not marginal.
Escapable Cost	vs. Inescapable Cost (Unavoidable Cost)	Same distinction as incremental cost vs. unavoidable cost, but this pair is used only when the decision maker is considering stopping something—ceasing to produce a product, closing a factory, or the like. See next pair.
Avoidable Cost	vs. Unavoidable Cost	A distinction sometimes used in discussing the merits of variable and <i>absorption costing</i> . Avoidable costs are treated as product costs, and unavoidable costs are treated as <i>period expenses</i> under <i>variable costing</i> .
Controllable Cost	vs. Uncontrollable Cost	The distinction here is used in assigning responsibility and in setting bonus or incentive plans. All costs can be affected by someone in the entity; those who design incentive schemes attempt to hold a person responsible for a cost only if that person can influence the amount of the cost.
Expired Cost	vs. Unexpired Cost	3. In each of the following pairs, used in historical cost accounting, the word “cost” appears in one of the terms where “expense” is meant. The distinction is between expense and asset.
Product Cost	vs. Period Cost	The terms distinguish product cost from period expense. When a given asset is used, is its cost converted into <i>work-in-process</i> and then finished goods on the balance sheet until the goods are sold, or is it an expense shown on this period’s income statement? Product costs appear on the income statement as part of cost of goods sold in the period when the goods are sold. Period expenses appear on the income statement with an appropriate caption for the item in the period when the cost is incurred or recognized.
		4. The following subdivisions of fixed (historical) costs are used in analyzing operations. The relation between the components of fixed costs is as follows:
		$ \begin{array}{c} \text{Fixed Costs} \\ \hline \text{Semifixed Costs} + \text{Fixed Portions of Semi-variable Costs} \\ + \\ \text{“Pure” Fixed Costs} \end{array} = \begin{array}{c} \text{Capacity Costs} + \text{Programmed Costs} \\ \hline \text{Standby Costs} + \text{Enabling Costs} \end{array} $

(continued on next page)

Cost Terminology Distinctions Among Terms Containing the Word “Cost”

(continued from previous page)

Terms (Synonyms Given in Parentheses)		Distinctions and Comments
Capacity Cost (Committed Cost)	vs. Programmed Cost (Managed Cost; Discretionary Cost)	Capacity costs give a firm the capability to produce or to sell. <i>Programmed costs</i> , such as for advertising or research and development, may not be essential, but once a decision to incur them is made, they become fixed costs.
Standby Cost	vs. Enabling Cost	<i>Standby costs</i> will be incurred whether capacity, once acquired, is used or not, such as property taxes and depreciation on a factory. Enabling costs, such as for a security force, can be avoided if the capacity is unused.
Semifixed Cost	vs. Semivariable Cost	A cost that is fixed over a wide range but that can change at various levels is a <i>semifixed cost</i> or <i>step cost</i> . An example is the cost of rail lines from the factory to the main rail line, where fixed cost depends on whether there are one or two parallel lines but is independent of the number of trains run per day. <i>Semivariable costs</i> combine a strictly fixed component cost plus a variable component. Telephone charges usually have a fixed monthly component plus a charge related to usage.
Fully Absorbed Cost	vs. Variable Cost (Direct Cost)	5. The following pairs of terms distinguish among economic uses or decision-making uses or regulatory uses of cost terms. Fully absorbed costs refer to costs where fixed costs have been allocated to units or departments as required by <i>generally accepted accounting principles</i> . <i>Variable costs</i> , in contrast, may be more relevant for making decisions, such as setting prices.
Fully Absorbed Cost	vs. Full Cost	In <i>full costing</i> , all costs, manufacturing costs as well as central corporate expenses (including financing expenses), are allocated to products or divisions. In <i>full absorption costing</i> , only manufacturing costs are allocated to products. Only in full costing will revenues, expenses, and income summed over all products or divisions equal corporate revenues, expenses, and income.
Opportunity Cost	vs. Outlay Cost (Out-of-Pocket Cost)	Opportunity cost refers to the economic benefit forgone by using a resource for one purpose instead of for another. The outlay cost of the resource will be recorded in financial records. The distinction arises because a resource is already in the possession of the entity with a recorded historical cost. Its economic value to the firm, opportunity cost, generally differs from the historical cost; it can be either larger or smaller.
Future Cost	vs. Past Cost	Effective decision making analyzes only present and future outlay costs, or <i>out-of-pocket costs</i> . Opportunity costs are relevant for profit maximizing; past costs are used in financial reporting.
Short-Run Cost	vs. Long-Run Cost	Short-run costs vary as output is varied for a given configuration of plant and equipment. Long-run costs can be incurred to change that configuration. This pair of terms is the economic analog of the accounting pair, see (2) above, variable and fixed costs. The analogy is not perfect because some short-run costs are fixed, such as property taxes on the factory, from the point of view of breakeven analysis.
Imputed Cost	vs. Book Cost	In a regulatory setting some costs, for example the cost of owners' equity capital, are calculated and used for various purposes; these are imputed costs. Imputed costs are not recorded in the historical costs accounting records for financial reporting. Book costs are recorded.
Average Cost	vs. Marginal Cost	The economic distinction equivalent to fully absorbed cost of product and variable cost of product. Average cost is total cost divided by number of units. Marginal cost is the cost to produce the next unit (or the last unit).
Differential Cost (Incremental Cost)	vs. Variable Cost	Whether a cost changes or remains fixed depends on the activity basis being considered. Typically, but not invariably, costs are said to be variable or with respect to an activity basis such as changes in production levels. Typically, but not invariably, costs are said to be incremental or not with respect to an activity basis such as the undertaking of some new venture. For example, consider the decision to undertake the production of food processors, rather than food blenders, which the manufacturer has been making. To produce processors requires the acquisition of a new machine tool. The cost of the new machine tool is incremental with respect to a decision to produce food processors instead of food blenders but, once acquired, becomes a fixed cost of producing food processors. If costs of direct labor hours are going to be incurred for the production of food processors or food blenders, whichever is produced (in a scenario when not both are to be produced), such costs are variable with respect to production measured in units but are not incremental with respect to the decision to produce processors rather than blenders. This distinction is often blurred in practice, so a careful understanding of the activity basis being considered is necessary to understand the concepts being used in a particular application.

path identifies the shortest completion period possible based on the most time-consuming sequence of activities from the beginning to the end of the network. Compare *PERT*.

critical success factors The important things a company must do to be successful; may vary from one company to another.

cross-reference (index) A number placed beside each *account* in a *journal entry* indicating the *ledger* account to which the record keeper posted the entry and placing in the ledger the page number of the *journal*, or the journal entry number, where the record keeper first recorded the journal entry; used to link the *debit* and *credit* parts of an entry in the ledger accounts back

- to the *original entry* in the journal. Nearly every *firm* now uses a computerized *accounting system* which provides *cross-references*. See *audit trail*.
- cross-section analysis** Analysis of *financial statements* of various *firms* for a single period of time; contrast with *time-series analysis*, in which analysts examine statements of a given firm for several periods of time.
- Crown corporation** Canada and United Kingdom: a *corporation* that is ultimately accountable, through a minister of the Crown, to Parliament or a legislature for the conduct of its affairs.
- cum div. (dividend)** The condition of *shares* whose quoted *market price* includes a declared but unpaid *dividend*. This condition pertains between the *declaration date* of the dividend and the record date. Compare *ex div (dividend)*.
- cum rights** The condition of *securities* whose quoted *market price* includes the right to purchase new securities. Compare *ex rights*.
- cumulative dividend (rights)** Preferred *stock dividends* that, if not paid, *accrue* as a commitment that the *firm* must pay before it can declare dividends to common *shareholders*.
- cumulative preferred shares** Preferred *shares* with *cumulative dividend rights*.
- current** An adjective referring to something that will require cash inflow or outflow within the company's *operating cycle*, usually one year.
- current amount** A valuation or *basis* using *fair values* or *market values* as of the *balance sheet* date, in contrast an *historical cost*.
- current assets** *Cash* and other *assets* that a *firm* expects to turn into cash, sell, or exchange within the normal *operating cycle* of the firm or one year, whichever is longer. One year is the usual period for classifying asset *balances* on the *balance sheet*. Current assets include cash, *marketable securities*, *receivables*, *inventory*, and *current prepayments*.
- current cost** *Cost* stated in terms of current values (of *productive capacity*) rather than in terms of *acquisition cost*. See *net realizable value* and *current selling price*.
- current cost accounting** The *FASB's* term for *financial statements* in which the *attribute measured* is *current cost*.
- current cost/nominal-dollar accounting** *Accounting* based on *current cost* valuations measured in *nominal dollars*. Components of *income* include an *operating margin* and *holding gains and losses*.
- current exchange rate** The rate at which the holder of one unit of currency can convert it into another at the end of the *accounting period* being reported on or, for *revenues*, *expenses*, *gains*, and *losses*, the date of recognition of the *transaction*.
- current exit value** *Exit value*.
- current fund** In governmental *accounting*, a synonym for *general fund*.
- current funds** *Cash* and other *assets* readily convertible into cash; in governmental *accounting*, *funds* spent for *operating purposes* during the *current period*; includes *general*, *special revenue*, *debt service*, and *enterprise funds*.
- current (gross) margin** See *operating margin based on current costs*.
- current liability** A *debt* or other obligation that a *firm* must discharge within a short time, usually the *earnings cycle* or one year, normally by expending *current assets*.
- current market interest rate** At a given time, the rate the market charges a *borrower*. Pertinent for *fair value accounting for debt*.
- current operating performance concept** The notion that reported *income* for a *period* ought to reflect only ordinary, normal, and recurring *operations* of that period. A consequence is that *extraordinary* and *nonrecurring* items are entered directly in the *Retained Earnings account*. Contrast with *clean surplus concept*. This concept is no longer acceptable. (See *APB Opinion No. 9* and *No. 30*.)
- current ratio** Sum of *current assets* divided by sum of *current liabilities*. See *ratio* and **Exhibit 7.12**.
- current realizable value** *Realizable value*.
- current replacement cost** Of an *asset*, the amount currently required to acquire an identical asset (in the same condition and with the same *service potential*) or an asset capable of rendering the same service at a current *fair market value*. If these two amounts differ, use the lower. Contrast with *reproduction cost*.
- current selling price** The amount for which an *asset* could be sold as of a given time in an *arm's length transaction* rather than in a forced sale.
- current service costs** *Service costs* of a *pension plan*.
- current value accounting** The form of *accounting* in which all *assets* appear at *current replacement cost (entry value)* or *current selling price* or *net realizable value (exit value)* and all *liabilities* appear at *present value*. Entry and exit values may differ from each other, so theorists have not agreed on the precise meaning of "current value accounting."
- current yield** Of a *bond*, the annual amount of *coupons* divided by the current *market price* of the bond. Contrast with *yield to maturity*.
- currently attainable standard cost** *Normal standard cost*.
- curvilinear (variable) cost** A continuous, but not necessarily linear (straight-line), functional relation between activity levels and *costs*.
- customer-level activities** Work performed to meet the needs of a specific customer, aggregated over all customers.
- customer response time** *Period* that elapses from the moment a customer places an order for a *product* or requests *service* to the moment the *firm* delivers the product or service to the customer.
- customers' ledger** The *ledger* that shows *accounts receivable* of individual customers. It is the *subsidiary ledger* for the *control account Accounts Receivable*.
- cutoff rate** *Hurdle rate*.

D

- data bank** An organized file of information, such as a customer name and address file, used in and kept up to date by a processing system.
- database** A comprehensive collection of interrelated information stored together in computerized form to serve several applications.

database management system Generalized *software* programs used to handle physical storage and manipulation of *databases*.

days of average inventory on hand See *ratio* and **Exhibit 7.12**.

days of grace The days allowed by law or contract for payment of a *debt* after its due date.

days receivables outstanding *Accounts receivable turnover ratio* divided into 365.

DCF *Discounted cash flow*.

DDB *Double declining-balance depreciation*.

debenture bond A *bond* not secured with *collateral*.

debit As a noun, an *entry* on the left-hand side of an *account*; as a verb, to make an entry on the left-hand side of an account; records increases in *assets* and *expenses*; records decreases in *liabilities*, *owners' equity*, and *revenues*. See *debit and credit conventions*.

debit and credit conventions The conventional use of the *T-account* form and the rules for *debit* and *credit* in *balance sheet accounts* (see below). The equality of the two sides of the *accounting equation* results from recording equal amounts of debits and credits for each *transaction*.

Typical Asset Account

Opening Balance	
Increase	Decrease
+	-
Dr.	Cr.
Ending Balance	

Typical Liability Account

	Opening Balance
Decrease	Increase
-	+
Dr.	Cr.
	Ending Balance

Typical Owners' Equity Account

	Opening Balance
Decrease	Increase
-	+
Dr.	Cr.
	Ending Balance

Revenue and *expense accounts* belong to the owners' equity group. The relation and the rules for debit and credit in these accounts take the following form:

Owners' Equity

Decrease		Increase	
-		+	
Dr.		Cr.	
Expenses		Revenues	
Dr.	Cr.	Dr.	Cr.
+	-	-	+
*			*

*Normal balance before closing.

debit memorandum A document used by a seller to inform a buyer that the seller is *debiting* (increasing) the amount of the buyer's *accounts receivable*. Also, the document provided by a bank to a depositor to indicate that the bank is decreasing the depositor's *balance* because of some event other than payment for a *check*, such as monthly *service charges* or the printing of checks.

debt An amount owed. The general name for *notes*, *bonds*, *mortgages*, and the like that provide evidence of amounts owed and have definite payment dates.

debt capital *Noncurrent liabilities*. See *debt financing*, and contrast with *equity financing*.

debt-equity ratio Long-term *debt* divided by *shareholders' equity*. See *ratio* and **Exhibit 7.12**. Some analysts put long-term debt and total shareholders' equity in the denominator. Sometimes debt includes all *liabilities*.

debt financing *Leverage*. Raising *funds* by issuing *bonds*, *mortgages*, or *notes*. Contrast with *equity financing*.

debt guarantee See *guarantee*.

debt ratio *Debt-equity ratio*.

debt retirement The issuer of *debt* gives *cash* or *shares* or other *assets* to the holder of the obligation and then removes the associated *liability* from the *balance sheet*.

debt securities held to maturity A *debt* issue held by an *investor* who has both the ability and intent to hold the *security* until it matures. See *security held to maturity* for *accounting procedures*.

debt service fund In governmental *accounting*, a *fund* established to account for payment of *interest* and *principal* on all general-obligation *debt* other than that *payable* from *special assessments*.

debt service payment The payment required by a lending agreement, such as periodic *coupon* payment on a *bond* or *installment* payment on a *loan* or a *lease* payment. It is sometimes called *interest payment*, but this term will mislead the unwary. Only rarely will the amount of a debt service payment equal the *interest expense* for the *period* preceding the payment. A debt service payment will always include some amount for interest, but the payment will usually differ from the interest expense.

debt service requirement The amount of *cash* required for payments of *interest*, current maturities of *principal* on *outstanding debt*, and payments to *sinking funds* (*corporations*) or to the *debt service fund* (governmental).

debtor One who borrows; in the United Kingdom, *account receivable*.

decentralized decision making *Management* practice in which a *firm* gives a *manager* of a *business unit* responsibility for that unit's *revenues* and *costs*, and sometimes for *investments*, freeing the manager to make decisions about *prices*, sources of supply, and the like, as though the unit were a separate business that the manager owns. See *responsibility accounting* and *transfer price*.

declaration date Time when the *board of directors* declares a *dividend*.

declining-balance (methods) depreciation The method of calculating the periodic *depreciation charge* by multiplying the *carrying value* at the start of the *period* by a

constant percentage. In pure declining-balance depreciation, the constant percentage is $1 - ns/c$, where n is the *depreciable life*, s is *salvage value*, and c is *acquisition cost*. See *double declining-balance depreciation*.

deep discount bonds Said of *bonds* selling much below (exactly how much is not clear) *par method*.

defalcation Embezzlement.

default Failure to pay *interest* or *principal* on a *debt* when due.

defeasance *Transaction* with the economic effect of *debt retirement* that does not retire the debt. When *interest rates* increase, many *firms* find that the *market value* of their *outstanding debt* has dropped substantially below its *carrying value*. In *historical cost accounting* for debt retirements, retiring debt with a *cash* payment less than the carrying value of the debt results in a *gain* (generally, an *extraordinary item*). Many firms would like to retire the *outstanding debt* issues and report the gain. Two factors impede doing so: (1) the gain can be a taxable event generating adverse *income tax* consequences; and (2) the transaction *costs* in retiring all the debt can be large, in part because the firm cannot easily locate all the debt holders or persuade them to sell back their *bonds* to the issuer. The process of defeasance serves as the economic equivalent to retiring a debt issue while it saves the issuer from experiencing adverse tax consequences and from actually having to locate and retire the bonds. The process works as follows. The debt-issuing firm turns over to an independent trustee, such as a bank, amounts of cash or low-risk government bonds sufficient to make all debt service payments on the outstanding debt, including bond retirements, in return for the trustee's commitment to make all debt service payments. The debt issuer effectively retires the outstanding debt. It debits the *liability account*, credits *Cash* or *Marketable Securities* as appropriate, and credits *Extraordinary Gain on Debt Retirement*. The trustee can retire debt or make debt service payments, whichever it chooses. For income tax purposes, however, the firm's debt remains outstanding. The firm will have taxable interest *deductions* for its still-outstanding debt and taxable interest *revenue* on the *investments* held by the trustee for debt service. In law, the term defeasance means "a rendering null and void." This process renders the outstanding debt economically null and void, without causing a taxable event.

defensive interval A *financial ratio* equal to the number of days of normal *cash expenditures* covered by *quick assets*. It is defined as follows:

$$\frac{\text{Quick Assets}}{(\text{All Expenses Except Amortization and Others Not Using Funds} \div 365)}$$

The denominator of the ratio is the cash expenditure per day. Analysts have found this ratio useful in predicting *bankruptcy*.

deferral The *accounting* process concerned with past *cash receipts* and *payments*; in contrast to *accrual*; recognizing a liability resulting from a current cash receipt (as for magazines to be delivered) or recognizing an

asset from a current cash payment (as for prepaid *insurance* or a long-term depreciable asset).

deferral method See *flow-through method* (of *accounting* for the *investment credit*) for definition and contrast.

deferred annuity An *annuity* whose first payment occurs sometime after the end of the first *period*.

deferred asset *Deferred charge*.

deferred charge *Expenditure* not recognized as an *expense* of the *period* when made but carried forward as an *asset* to be *written off* in future periods, such as for advance *rent* payments or *insurance premiums*. See *deferral*.

deferred compensation Compensation earned by an employee in the current *period*, but not paid by employer until a later period, sometimes many years later.

deferred cost *Deferred charge*.

deferred credit Sometimes used to indicate *advances from customers*.

deferred debit *Deferred charge*.

deferred expense *Deferred charge*.

deferred gross margin *Unrealized gross margin*.

deferred income *Advances from customers*.

deferred income tax (liability) A *liability* that arises when the *pretax income* shown on the *tax return* is less than what it would have been had the *firm* used the same *accounting principles* and *cost basis* for *assets* and *liabilities* in tax returns as it used for financial reporting. *SFAS No. 109 (Codification Topic 740)* requires that the firm *debit income tax expense* and *credit* deferred income tax liability with the amount of the taxes delayed by using accounting principles in tax returns different from those used in financial reports. See *temporary difference*, *timing difference*, *permanent difference*, and *installment sales*. If, as a result of temporary differences, cumulative *taxable income* exceeds cumulative reported income before taxes, the deferred income tax account will have a debit *balance*, which the firm will report as a "*deferred tax asset*."

deferred performance obligations The seller has promised the buyer that after the *sale* seller will provide further *goods* or *services* as part of the initial sale. Examples are *warranty repairs*, technical support, and *software upgrades*.

deferred revenue Sometimes used to indicate *advances from customers*.

deferred tax See *deferred income tax*.

deferred tax asset See *deferred income tax*. The taxpayer will not report a deferred tax asset unless it believes that it will have future *taxable income* sufficiently high so that it can offset that income with the *expenses subject to temporary differences*—appearing in the *financial statements* in a *period* before they appear as deductions on the *tax return*. To the extent the taxpayer thinks future income will be insufficient for it to be able to offset taxable income with the items generating the deferred tax asset, it will report the effect of the shortfall in an *account*, contra to the deferred tax asset, called *deferred tax asset valuation allowance*.

deferred tax asset valuation allowance See *deferred tax asset*.

deficit A *debit balance* in the *Retained Earnings account*; presented on the *balance sheet* in a *contra account* to *shareholders' equity*; sometimes used to mean negative *net income* for a *period*.

defined benefit (pension) plan A *pension plan* in which the employer promises specific dollar amounts per month to each *eligible* employee, usually until death of the employee, or at a reduced amount until death of both the employee and the employee's spouse; the amounts usually depend on a formula that takes into account such things as the employee's earnings, years of employment, and age at retirement. The employer adjusts its *cash* contributions and *pension expense* to *actuarial* experience in the eligible employee group and investment performance of the *pension fund*. This is sometimes called a "fixed-benefit" pension plan. Contrast with *money purchase plan* or *defined-contribution plan*.

defined contribution plan A *money purchase (pension) plan* or other arrangement, based on formula or discretion, in which the employer makes *cash* contributions to *eligible* individual employee *accounts* under the terms of a written plan document. The employee or trustee of the *funds* in the account manages the funds, and the employee-beneficiary receives at retirement (or at some other agreed time) the amount in the fund. The employer makes no promise about that amount. Profit-sharing pension plans are of this type.

deflation A *period* of declining *general price-level changes*.

Delphi technique Forecasting method in which members of the forecasting group prepare individual *forecasts*, share them anonymously with the rest of the group, and only then compare forecasts and resolve differences.

demand deposit *Funds* in a checking *account* at a bank. See *check*.

demand loan See *term loan* for definition and contrast.

denial of opinion Canada: the statement that an *auditor*, for reasons arising in the *audit*, is unable to express an *opinion* on whether the *financial statements* provide *fair presentation*.

denominator volume *Capacity* measured in the number of units the *firm* expects to produce this *period*; when divided into *budgeted fixed costs*, results in fixed costs applied per unit of *product*.

department(al) allocation Obtained by first accumulating *costs* in *cost pools* for each department and then, using separate rates, or sets of rates, for each department, *allocating* from each cost pool to *products* produced in that department.

dependent variable See *regression analysis*.

depletion Exhaustion or *amortization* of a *wasting asset* or *natural resource*. Also see *percentage depletion*.

depletion allowance See *percentage depletion*.

deposit intangible See *core deposit intangible*.

deposit, sinking fund Payments made to a *sinking fund*.

deposit method (of revenue recognition) A method of *revenue* recognition that is the same as the *completed sale* or *completed contract method*. In some contexts, such as when the customer has the right to return *goods* for a full refund or in retail *land sales*, the customer must

make substantial payments while still having the right to back out of the deal and receive a refund. When the seller cannot predict with reasonable *precision* the amount of *cash* it will ultimately collect and when it will receive cash, the seller must *credit* Deposits, a *liability account*, rather than *revenue*. (In this regard, the *accounting* differs from that in the completed contract method, in which the account credited offsets the *Work-in-Process Inventory* account.) When the sale becomes complete, the *firm* credits a revenue account and *debits* the Deposits account.

deposits (by customers) A *liability* that the *firm* *credits* when receiving *cash* (as in a bank, or in a grocery store when the customer pays for soda-pop bottles with cash to be repaid when the customer returns the bottles) and when the firm intends to discharge the *liability* by returning the cash. Contrast with the *liability account* *Advances from Customers*, which the firm credits on *receipt* of cash, expecting later to discharge the liability by delivering *goods* or *services*. When the firm delivers the goods or services, it credits a *revenue* account.

deposits in transit Deposits made by a *firm* but not yet reflected on the *bank statement*.

depreciable cost That part of the *cost* of an asset, usually *acquisition cost* less *salvage value*, that the firm will *charge off* over the life of the asset through the process of *depreciation*.

depreciable life For an *asset*, the time period or units of activity (such as miles driven for a truck) over which the *firm* *allocates* the *depreciable cost*. For *tax returns*, depreciable life may be shorter than estimated *service life*.

depreciation *Amortization* of *plant assets*; the process of *allocating* the *cost* of an *asset* to the *periods* of benefit—the *depreciable life*; classified as a *production cost* or a *period expense*, depending on the asset and whether the *firm* uses *full absorption* or *variable costing*. Depreciation methods described in this glossary include the *annuity method*, *appraisal method*, *composite method*, *compound interest method*, *declining-balance method*, *production method*, *replacement method*, *retirement method*, *straight-line method*, *sinking fund method*, and *sum-of-the-years'-digits method*.

depreciation reserve An inferior term for *accumulated depreciation*. See *reserve*. Do not confuse with a replacement *fund*.

derecognize Remove an *asset* or *liability* from the *balance sheet*.

derivative (financial instrument) A *financial instrument*, such as an *option* to purchase a *share* of *stock*, whose value depends on the underlying value of another financial instrument, such as a share of stock, or some variable, such as an *interest rate* or currency; an instrument, such as a *swap*, whose value depends on the value of another *asset* called the "underlying"—for example, the right to receive the difference between the *interest payments* on a fixed-rate five-year *loan* for \$1 million and the interest payments on a floating-rate five-year loan for \$1 million. To qualify as a derivative under *FASB* rules, *SFAS No. 133 (Codification Topic 815)*, the instrument has one or more *underlyings*, and one or more *notional amounts* or *payment provisions*

or both, it either does not require an initial *net investment* or it requires one smaller than would be required for other types of contracts expected to have a similar response to changes in market factors, and its terms permit settlement for *cash* in lieu of physical delivery or the instrument itself trades on an *exchange*. See also *forward contract* and *futures contract*.

Descartes's rule of signs In a *capital budgeting* context, a rule that says a series of *cash flows* will have a non-negative number of *internal rates of return*. The number equals the number of variations in the sign of the cash flow series or is less than that number by an even integer. Consider the following series of cash flows, the first occurring now and the others at subsequent yearly intervals: -100, -100, +50, +175, -50, +100. The internal rates of return are the numbers for r that satisfy the following equation:

$$-100 - \frac{100}{(1+r)} + \frac{50}{(1+r)^2} + \frac{175}{(1+r)^3} - \frac{50}{(1+r)^4} + \frac{100}{(1+r)^5} = 0$$

The series of cash flows has three variations in sign: a change from minus to plus, a change from plus to minus, and a change from minus to plus. The rule says that this series must have either one or three internal rates of return; in fact, it has only one, about 12%. But also see *reinvestment rate*.

detection costs See *appraisal costs*.

detective controls *Internal controls* designed to detect, or maximize the chance of detecting errors and other irregularities.

determination See *determine*.

determine A term often used (in our opinion, overused) by *accountants* and those who describe the *accounting* process. A leading dictionary associates the following meanings with the verb "determine": settle, decide, conclude, ascertain, cause, affect, control, impel, terminate, and decide upon. In addition, accounting writers can mean any one of the following: measure, *allocate*, report, calculate, compute, observe, choose, and legislate. In accounting, there are two distinct sets of meanings: those encompassed by the synonym "cause or legislate" and those encompassed by the synonym "measure." The first set of uses conveys the active notion of causing something to happen, and the second set of uses conveys the more passive notion of observing something that someone else has caused to happen.

An accountant who speaks of *cost* or *income determination* generally means measurement or observation, not causation; *management* and economic conditions cause costs and income to be what they are. One who speaks of *accounting principles* determination can mean choosing or applying (as in "determining *depreciation charges*" from an allowable set) or causing to be acceptable (as in the *FASB's* determining the accounting for *leases*). In the *long run*, income is cash-in less cash-out, so management and economic conditions determine (cause) income to be what it is. In the *short run*, reported income is a function of accounting principles chosen and applied, so the accountant "determines" (measures) income. A question such as "Who determines income?" has, therefore,

no unambiguous answer. The meaning of "an accountant determining acceptable accounting principles" is also vague. Does the clause mean merely choosing one principle from the set of generally acceptable principles, or does it mean using professional judgment to decide that some of the generally accepted principles are not correct under the current circumstances? We try never to use "determine" unless we mean "cause." Otherwise, we use "measure," "report," "calculate," "compute," or whatever specific verb seems appropriate. We suggest that careful writers will always determine to use the most specific verb to convey meaning. "Determine" seldom best describes a process in which those who make decisions often differ from those who apply technique. The term *predetermined (factory) overhead rate* contains an appropriate use of the word.

development stage enterprise As defined in *SFAS No. 7 (Codification Topic 915)*, a *firm* whose planned principal operations have not commenced or, having commenced, have not generated significant *revenue*. The *financial statements* should identify such enterprises, but no special *accounting principles* apply to them.

diagnostic signal See *warning signal* for definition and contrast.

differentiable cost The *cost* increments associated with infinitesimal changes in volume. If a total cost curve is smooth (in mathematical terms, differentiable), then we say that the curve graphing the *derivative* of the total cost curve shows differentiable costs.

differential An adjective used to describe the change (increase or decrease) in a *cost*, *expense*, *investment*, *cash flow*, *revenue*, *profit*, and the like as the *firm* produces or sells one or more additional (or fewer) units or undertakes (or ceases) an activity. This term has virtually the same meaning as *incremental*, but if the item declines, "decremental" better describes the change. Contrast with "marginal," which means the change in cost or other item for a small (one unit or even less) change in number of units produced or sold.

differential analysis Analysis of differential costs, revenues, profits, investment, cash flow, and the like.

differential cost See *differential*.

differential cost analysis See *relevant cost analysis*.

diluted earnings per share For *common stock*, smallest *earnings per share* figure that one can obtain by computing an earnings per share for all possible combinations of assumed *exercise* or *conversion* of *potentially dilutive securities*.

dilution A potential reduction in *earnings per share* or *book value per share* by the potential *conversion* of *securities* or by the potential *exercise* of *warrants* or *options*.

dilutive Said of a *security* that will reduce earnings per share if it is *exchanged* for *common shares*.

dip(ping) into LIFO layers See *LIFO inventory layer*.

direct access Access to computer storage where information can be located directly, regardless of its position in the storage file. Compare *sequential access*.

direct cost *Cost of direct materials* and *direct labor* incurred in producing a *product*. See *prime cost*. In some *accounting* literature, writers use this term to mean the same thing as *variable cost*.

direct costing Another, less-preferred, term for *variable costing*.

direct-financing (capital) lease See *sales-type (capital) lease* for definition and contrast.

direct labor (material) cost Cost of labor (*material*) applied and assigned directly to a *product*; contrast with *indirect labor (material)*.

direct labor variance Difference between actual and *standard direct labor* allowed.

direct method See *statement of cash flows*.

direct posting A method of *bookkeeping* in which the *firm* makes *entries* directly in *ledger accounts*, without using a *journal*.

direct write-off method See *write-off method*.

disbursement Payment by *cash* or by *check*. See *expenditure*.

disclaimer of opinion An *auditor's report* stating that the auditor cannot give an *opinion* on the *financial statements*. Usually results from *material* restrictions on the scope of the *audit* or from material uncertainties, which the *firm* has been unable to resolve by the time of the audit, about the *accounts*.

disclosure The showing of facts in *financial statements, notes* thereto, or the *auditor's report*.

discontinued operations See *income from discontinued operations*.

discount In the context of *compound interest, bonds* and *notes*, the difference between *face amount* (or *future value*) and *present value* of a payment; in the context of *sales* and *purchases*, a reduction in *price* granted for prompt payment. See also *chain discount, quantity discount, and trade discount*.

discount factor The reciprocal of one plus the *discount rate*. If the discount rate is 10% per period, the discount factor for three *periods* is $1/(1.10)^3 = (1.10)^{-3} = 0.75131$.

discount rate *Interest rate* used to convert future payments to *present values*.

discount to face value; premium to face value See *discount* and *premium*.

discounted bailout period In a *capital budgeting* context, the total time that must elapse before discounted *value* of *net* accumulated *cash flows* from a project, including potential *salvage value* at various times of assets, equals or exceeds the *present value* of net accumulated cash outflows. Contrast with *discounted payback period*.

discounted (future) cash flow(s) (DCF) Using either the *net present value* or the *internal rate of return* in an analysis to measure the *value* of future expected *cash expenditures* and *receipts* at a common date. In discounted cash flow analysis, choosing the alternative with the largest *internal rate of return* may yield wrong answers given *mutually exclusive projects* with differing amounts of initial *investment* for two of the projects. Consider, to take an unrealistic example, a project involving an initial investment of \$1, with an *IRR* of 60%, and another project involving an initial investment of \$1 million, with an *IRR* of 40%. Under most conditions, most *firms* will prefer the second project to the first, but choosing the project with the

larger *IRR* will lead to undertaking the first, not the second. Usage calls this shortcoming of choosing between alternatives based on the magnitude of the internal rate of return, rather than based on the magnitude of the *net present value* of the *cash flows*, the *scale effect*.

discounted payback period The shortest amount of time that must elapse before the discounted *present value* of *cash* inflows from a project, excluding potential *salvage value*, equals the discounted present value of the cash outflows.

discounting a note See *note receivable discounted* and *factoring*. See also *discounted cash flow*.

discounts lapsed (lost) The sum of *discounts* offered for prompt payment that the purchaser did not take because the *discount period* expired. See *terms of sale*.

discovery sampling *Acceptance* sampling in which the analyst accepts an entire *population* if and only if the sample contains no disparities.

discovery value accounting See *reserve recognition accounting*.

discretionary cost center See *engineered cost center* for definition and contrast.

discretionary costs *Programmed costs*.

Discussion Memorandum A neutral discussion of all the issues concerning an *accounting* problem of current concern to the *FASB*. The publication of such a document usually signals that the *FASB* will consider issuing a new pronouncement on this particular problem. The discussion memorandum brings together *material* about the particular problem to facilitate interaction and comment by those interested in the matter. A public hearing follows before the *FASB* will issue an *Exposure Draft*.

dishonored note A *promissory note* whose maker does not repay the *loan* at *maturity*, for a *term loan*, or on demand, for a *demand loan*.

disintermediation Moving *funds* from one *interest-earning account* to another, typically one promising a higher rate. Federal law regulates the maximum *interest rate* that both banks and savings-and-loan associations can pay for *time deposits*. When free-market *interest rates* exceed the regulated interest ceiling for such time deposits, some depositors withdraw their funds and invest them elsewhere at a higher interest rate. This process is known as disintermediation.

distributable income The portion of conventional *accounting net income* that the *firm* can distribute to owners (usually in the form of *dividends*) without impairing the physical *capacity* of the firm to continue *operations* at current levels. *Pretax distributable income* is conventional *pretax income* less the excess of *current cost* of goods sold and *depreciation charges* based on the *replacement cost* of *productive capacity* over cost of goods sold and *depreciation* on an *acquisition cost basis*. Contrast with *sustainable income*. See *inventory profit*.

distributable surplus Canada and the United Kingdom: the statutory designation to describe the portion of the *proceeds* of the issue of *shares* without not *allocated* to share *capital*.

- distribution expense** *Expense* of selling, advertising, and delivery activities.
- dividend** A distribution of *assets* generated from *earnings* to owners of a *corporation*. The *firm* may distribute *cash* (*cash dividend*), *stock* (*stock dividend*), property, or other *securities* (dividend in kind). Dividends, except stock dividends, become a legal *liability* of the corporation when the corporation's board declares them. Hence, the owner of stock ordinarily recognizes *revenue* when the board of the corporation declares the dividend, except for stock dividends. See also *liquidating dividend* and *stock dividend*.
- dividend yield** *Dividends* declared for the year divided by *market price* of the *stock* as of the time for which the analyst computes the *yield*.
- dividends in arrears** *Dividends* on *cumulative preferred shares* that the *corporation's board* has not yet declared in accordance with the preferred stock contract. The corporation must usually clear such arrearages before it can declare dividends on *common shares*.
- dividends in kind** See *dividend*. Sometimes called a *property dividend*.
- division** A more or less self-contained *business* that is part of a larger family of business units under common control. A division may be, but need not be, a separate *legal entity*.
- division return on investment (ROI)** Equals the *division profit* divided by the *investment* in the division.
- divisional control** See *control system*.
- divisional reporting** See *segment reporting*.
- dollar sign rules** In *accounting* statements or *schedules* (but not in journal entries), place a dollar sign beside the first figure in each column and beside any figure below a horizontal line drawn under the preceding figure. This rule applies for other currency symbols and the percentage sign, as well.
- dollar-value LIFO method** A form of *LIFO inventory accounting* with inventory quantities (*layers*) measured in dollar, rather than physical, terms. The method adjusts for changing *prices* by using specific *price indexes* appropriate for the kinds of items in the inventory.
- donated capital** A *shareholders' equity account* credited when the company receives gifts, such as *land* or buildings, without issuing *shares* or other *owners' equity interest* in return. A city might donate a *plant site* hoping the *firm* will build a *factory* and employ local residents. Do not confuse with *contributed capital*.
- double declining-balance depreciation (DDB)** *Declining-balance depreciation* in which the constant percentage used to multiply by *carrying value* in computing the *depreciation charge* for the year is $2/n$, where n is the *depreciable life* in *periods*. Omit *salvage value* from the depreciable amount. Thus, if the *asset* cost \$100 and has a depreciable life of five years, the depreciation in the first year would be $\$40 = 2/5 \times \100 , in the second year would be $\$24 = 2/5 \times (\$100 - \$40)$, and in the third year would be $\$14.40 = 2/5 \times (\$100 - \$40 - \$24)$. By the fourth year, the remaining undepreciated *cost* could be depreciated under the *straight-line method* at $\$10.80 = 1/2 \times (\$100 - \$40 - \$24 - \$14.40)$ per year for *tax* purposes. Note that *salvage value* does not affect these computations except that the method will depreciate the carrying value to *salvage value*.
- double entry** In recording *transactions*, a system that maintains the equality of the *accounting equation* or the *balance sheet*. Each *entry* results in recording equal amounts of *debits* and *credits*.
- double taxation** Occurs when the taxing authority (U.S. or state) *taxes corporate income* as earned (first tax) and then the same taxing authority taxes the after-tax income, distributed to owners as *dividends*, again as *personal income tax* (second tax).
- doubtful accounts** *Accounts receivable* that the *firm* estimates to be *uncollectible*.
- Dr.** The abbreviation for *debit*, always with the initial capital letter. *Dr.* is a shortened form of the word "debitor," and *Cr.* comes from the word *creditor*. In the early days of double-entry record keeping in the United Kingdom, the major *asset* was *accounts receivable*, called *creditors*, and the major *liability* was *accounts payable*, called *debtors*. Thus the r in *Cr.* does not refer to the r in *credit* but to the second r in *creditor*.
- draft** A written order by the first party, called the *drawer*, instructing a second party, called the *drawee* (such as a bank) to pay a third party, called the *payee*. See also *check*, *cashier's check*, *certified check*, *NOW account*, *sight draft*, and *trade acceptance*.
- drawee** See *draft*.
- drawer** See *draft*.
- drawing account** A *temporary account* used in *sole proprietorships* and *partnerships* to record payments to owners or partners during a *period*. At the end of the period, the *firm* closes the drawing account by *crediting* it and *debiting* the owner's or partner's share of *income* or, perhaps, his or her *capital account*.
- drawings** Payments made to a *sole proprietor* or to a *partner* during a period. See *drawing account*.
- driver, cost driver** A cause of *costs incurred*. Examples include processing orders, issuing an engineering change order, changing the production *schedule*, and stopping production to change machine settings. The notion arises primarily in *product costing*, particularly *activity-based costing*.
- drop ship(ment)** Occurs when a distributor asks a manufacturer to send an order directly to the customer (ordinarily a manufacturer sends *goods* to a distributor, who sends the goods to its customer). Usage calls the shipment a "drop shipment" and refers to the goods as "drop shipped."
- dry-hole accounting** See *reserve recognition accounting* for definition and contrast.
- dual effects of transactions** The proper recording of any *transaction* in *accounting* records results in equal amounts *debited* to various *accounts* as *credited* to various accounts.
- dual-transactions assumption (fiction)** Occurs when an analyst, in understanding *cash flows*, views *transactions*

not involving *cash* as though the *firm* first generated cash and then used it. For example, the analyst might view the issue of *capital stock* in return for the *asset land* as though the firm issued *stock* for *cash* and then used cash to acquire the land. Other examples of transactions that could involve the dual-transaction assumption are the issue of a *mortgage* in return for a *noncurrent* asset and the issue of stock to bondholders on *conversion* of their *convertible bonds*.

dual transfer prices Occurs when the *transfer price* charged to the buying *division* differs from that *credited* to the selling *division*. Such *prices* make sense when the selling *division* needs to recover *full costs*, which exceed *market price*, while the buying *division* wants not to pay more than market price. Seldom seen in practice when the two *divisions* operate in different *income tax* jurisdictions, as the differences in price lead to arguments with at least one of the taxing authorities. An exception occurs when the minimum selling price required by regulatory authorities in the selling country exceeds the maximum buying price allowed by the regulatory authorities in the purchasing country.

duality The *double entry* record-keeping axiom that every *transaction* must result in equal *debit* and *credit* amounts.

due diligence An investigation of the financial affairs of a company for the purpose of disclosing matters that may influence the terms or conclusion of a potential acquisition.

dumping A foreign *firm's* selling a *good* or *service* in one country at a *price* below *market price* at home or, in some contexts, below some measure of *cost* (which concept is not clearly defined). The practice is illegal in the United States if it harms (or threatens to harm) a U.S. industry.

DuPont decomposition analysis The ratio A/B is algebraically equal to A/C × C/B, so long as B and C are both not zero. The splitting of A/B into A/C × C/B is referred to as a “decomposition.” Often, in understanding changes to the financial ratio A/B, such as Rate of Return on Assets, across time or across companies, one understands better by examining separately the changes in A/C and C/B. Analysts at the DuPont Corporation in the 1950s discovered that they could better understand changes in financial ratios by decomposing into components. Consider, for example,

$$\text{Rate of Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}}$$

This is equivalent to:

$$\text{Rate of Return on Assets} = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}}$$

The first term on the right measures profitability of sales, and the second term measures how efficiently a firm uses its assets to generate sales. Analysts at DuPont decomposed several financial ratios and, in the intervening years, other analysts have decomposed other ratios but used the term “DuPont decomposition analysis” to refer to the general principle.

E

e The base of natural logarithms; 2.71828. . . . If interest compounds continuously during a period at stated rate of *r* per period, then the effective interest rate is equivalent to interest compounded once per period at rate *i* where $i = e^r - 1$. Tables of e^r are widely available. If 12% annual interest compounds continuously, the effective annual rate is $e^{0.12} - 1 = 12.75\%$. The Excel function is = exp(number). The formula for the effective annual rate is $r = \exp(0.12) - 1 = 12.75\%$. Interest compounded continuously at rate *r* for *d* days is $e^{rd/365} - 1$. For example, interest compounded for 92 days at 12% is $e^{12 \times 92/365} - 1 = 3.07\%$ [= exp(0.12*92/365) - 1 = 3.07%].

earn-out For two merging *firms*, an agreement in which the amount paid by the acquiring firm to the acquired firm's shareholders depends on the future *earnings* of the acquired firm or, perhaps, of the *consolidated entity*.

earned surplus A term that writers once used, but no longer use, for *retained earnings*.

earnings A term with no precise meaning but used to mean *income* or sometimes *profit*. The *FASB*, in requiring that *firms* report *comprehensive income*, encouraged firms to use the term “earnings” for the total formerly reported as *net income*. Firms will likely only slowly change from using the term “net income” to the term “earnings.”

earnings, retained See *retained earnings*.

earnings cycle The period of time, or the series of *transactions*, during which a given *firm* converts *cash* into *goods* and *services*, then sells goods and services to customers, and finally collects cash from customers. *Cash cycle*.

earnings per (common) share (of common stock) *Net income* to common shareholders (net income minus *preferred dividends*) divided by the *average* number of *common shares outstanding*; see also *basic earnings per share* and *diluted earnings per share*. See *ratio* and **Exhibit 7.12**.

earnings per share (of preferred stock) *Net income* divided by the *average* number of *preferred shares outstanding* during the *period*. This *ratio* indicates how well *income* covers (or protects) the preferred *dividends*; it does not indicate a legal share of *earnings*.

earnings statement *Income statement*.

easement The acquired *right* or privilege of one person to use, or have access to, certain property of another. For example, a public utility's right to lay pipes or lines under the property of another and to service those facilities.

EBIT Earnings before *interest* and (*income*) *taxes*; acronym used by analysts.

EBITDA Earnings before *interest*, (*income*) *taxes*, *depreciation*, and *amortization*; acronym used by analysts to focus on a particular measure of *cash flow*; used in valuation. This is not the same as, but is similar in concept to, *cash flow from operations*. Some analysts exclude *nonrecurring* items from this total.

economic consequences The *FASB* says that in setting *accounting principles*, it should take into account the

real effects on various participants in the business world. It calls these effects “economic consequences.”
economic depreciation Decline in *current cost* (or *fair value*) of an *asset* during a *period*.

economic entity See *entity*.

economic life The time span over which the *firm* expects to receive the benefits of an *asset*. The economic life of a *patent*, *copyright*, or *franchise* may be less than the legal life. *Service life*.

economic order quantity (EOQ) In mathematical *inventory* analysis, the optimal amount of *stock* to order when demand reduces inventory to a level called the “reorder point.” If *A* represents the *incremental cost* of placing a single order, *D* represents the total demand for a *period* of time in units, and *H* represents the *incremental* holding cost during the period per unit of inventory, then the economic order quantity is Usage sometimes calls *EOQ* the “optimal lot size.”

economic transfer pricing rule Transfer at the *differential outlay cost* to the selling division (typically *variable costs*), plus the *opportunity cost* to the company of making the internal transfers (\$0 if the seller has idle capacity, or selling price minus variable costs if the seller is operating at capacity).

economic value added (EVA®) The amount of *earnings* generated above the *cost of funds* invested to generate those earnings. To calculate *economic value added*, find the difference between (the *net after-tax operating profit*) and (the product of the *weighted-average cost of capital* multiplied by the *investment* in the economic unit).

ED *Exposure Draft*.

EDP *Electronic data processing*.

effective interest method In computing *interest expense* (or *revenue*), a systematic method that makes the interest expense (revenue) for each *period* divided by the amount of the *net liability (asset)* at the beginning of the period equal to the *yield rate* on the liability (asset) at the time of issue (acquisition). Interest for a period is the yield rate (at time of *issue*) multiplied by the net liability (asset) at the start of the period. The *amortization of discount or premium* is the *plug* to give equal *debits* and *credits*. (Interest expense is a debit, and the amount of *debt service payment* is a credit.)

effective annual yield See *effective (interest) rate*.

effective (income) tax rate For a taxpayer, the amount of *income tax expense* (not amount *payable*) divided by *pretax income*.

effective (interest) rate Of a *liability* such as a *bond*, the *internal rate of return* or *yield to maturity* at the time of issue. Contrast with *coupon rate*. If the borrower issues the bond for a price below *par*, the effective rate is higher than the coupon rate; if it issues the bond for a price greater than *par*, the effective rate is lower than the coupon rate.

In the context of *compound interest*, the effective rate occurs when the *compounding period* on a *loan* differs from one year, such as a *nominal interest rate* of 12% compounded monthly. The effective *interest* is the single rate that one could use at the end of the year to multiply the *principal* at the beginning of the year

and give the same amount as results from compound interest each period during the year. For example, if 12% per year compounds monthly, the effective annual *interest rate* is 12.683%. That is, if you compound \$100 each month at 1% per month, the \$100 will grow to \$112.68 at the end of the year. In general, if the nominal rate of *r%* per year compounds *m* times per year, then the effective rate is $(1 + r/m)^m - 1$.

efficiency variance A term used for the *quantity variance* for *materials* or labor or *variable overhead costs* in a *standard costing system*.

efficient capital market A market in which *security prices* reflect all available information and react nearly instantaneously and in an unbiased fashion to new information.

efficient market hypothesis The *finance* supposition that *security prices* trade in *efficient capital markets*.

EITF *Emerging Issues Task Force*.

electronic data processing Performing computations and other data-organizing steps in a computer, in contrast to doing these steps by hand or with mechanical calculators.

eligible Under *income tax* legislation, a term that restricts or otherwise alters the meaning of another *tax* or *accounting* term, generally to signify that the related *assets* or *operations* may receive a specified tax treatment.

eliminations In preparing *consolidated statements*, *work sheet entries* made to avoid duplicating the amounts of *assets*, *liabilities*, *owners' equity*, *revenues*, and *expenses* of the *consolidated entity* when the *firm* sums the *accounts* of the *parent* and *subsidiaries*. These entries eliminate any *intercompany profit* in *beginning inventory*, if any.

Emerging Issues Task Force (EITF) A group convened by the *FASB* to deal more rapidly with accounting issues than the *FASB's* due-process procedures can allow. The task force comprises about 15 members from *public accounting*, industry, and several trade associations. Several *FASB board* members usually attend and participate. The chief *accountant* of the *SEC* has indicated that the *SEC* will require that published *financial statements* follow guidelines set by a consensus of the *EITF*. The *EITF* requires that nearly all its members agree on a position before that position receives the label of “consensus.” Such positions appear in *Abstracts of the EITF*, published by the *FASB* and now included in its *Codification*. Since 1984, the *EITF* has become one of the promulgators of *U.S. GAAP*.

employee stock option (ESO) See *stock option*.

Employee Stock Ownership Trust (or Plan) See *ESOT*.

employer, employee payroll taxes See *payroll taxes*.

enabling costs A type of *capacity cost* that a *firm* will stop *incurring* if it shuts down *operations* completely but will incur in full if it carries out operations at any level. Examples include *costs* of a security force or of a quality-control inspector for an assembly line. Contrast with *standby costs*.

encumbrance In governmental *accounting*, an anticipated *expenditure* or *funds* restricted for an anticipated

- expenditure, such as for *outstanding purchase orders*. *Appropriations less expenditures less outstanding encumbrances yields unencumbered balance.*
- ending inventory** The *cost* of *inventory* on hand at the end of the *accounting period*; often called *closing inventory*. *Ending inventory* from the end of one *period* becomes the *beginning inventory* for the next period.
- endorsee** See *endorser*.
- endorsement** See *draft*. The *payee* signs the *draft* and *transfers* it to a fourth party, such as the payee's bank.
- endorser** A *note* or *draft payee*, who signs the note after writing "Pay to the order of X," *transfers* the note to person X, and presumably receives some benefit, such as *cash*, in return. Usage refers to person X as the *endorsee*. The endorsee then has the *rights* of the payee and may in turn become an endorser by endorsing the note to another endorsee.
- engineered cost center** Responsibility center with sufficiently well-established relations between inputs and *outputs* that the analyst, given data on inputs, can predict the outputs or, conversely, given the outputs, can estimate the amounts of inputs that the process should have used. Consider the relation between pounds of flour (input) and loaves of bread (output). Contrast *discretionary cost center*, where such relations are so imprecise that analysts have no reliable way to relate inputs to outputs. Consider the relation between advertising the corporate logo or *trademark* (input) and future revenues (*output*).
- engineering method (of cost estimation)** To estimate unit *cost of product* from study of the *materials*, labor, and *overhead* components of the *production* process.
- enterprise** Any *business* organization, usually defining the *accounting entity*.
- enterprise fund** A *fund* that a governmental unit establishes to account for acquisition, operation, and *maintenance* of governmental *services* that the government intends to be self-supporting from user *charges*, such as for water or airports and some toll roads.
- entity** A person, *partnership*, *corporation*, or other organization. The *accounting entity* that issues *accounting* statements may not be the same as the *entity* defined by law. For example, a *sole proprietorship* is an accounting entity, but the individual's combined *business* and personal *assets* are the *legal entity* in most jurisdictions. Several affiliated corporations may be separate legal entities but issue *consolidated financial statements* for the group of companies *operating* as a single *economic entity*.
- entity theory** The *corporation* view that emphasizes the form of the *accounting equation* that says *Assets = Equities*. Contrast with *proprietorship theory*. The entity theory focuses less on the distinction between *liabilities* and *shareholders' equity* than does the proprietorship theory. The entity theory views all equities as coming to the corporation from outsiders who have claims of differing legal standings.
- entry value** The *current cost* of acquiring an *asset* or *service* at a *fair market value*. *Replacement cost*.
- EOQ** *Economic order quantity*.
- EPS** *Earnings per share*.
- EPVI** *Excess present value index*.
- equalization reserve** An inferior title for the *allowance* or *estimated liability account* when the *firm* uses the *allowance method* for such things as *maintenance expenses*. Periodically, the *accountant* will *debit* maintenance expense and *credit* the allowance. As the firm makes *expenditures* for maintenance, it will debit the allowance and credit *cash* or the other *asset* used in maintenance.
- equities** *Liabilities plus owners' equity*. See *equity*.
- equity** A claim to *assets*; a source of assets. *SFAC No. 3* defines *equity* as "the residual *interest* in the assets of an entity that remains after deducting its *liabilities*." Thus, many knowledgeable people use "equity" to exclude liabilities and count only *owners' equities*. We prefer to use the term to mean all liabilities plus all owners' equity because there is no other single word that serves this useful purpose. We fight a losing battle.
- equity financing** Raising *funds* by issuing *capital stock*. Contrast with *debt financing*.
- equity method** In *accounting* for an *investment* in the *stock* of another company, a method that *debits* the proportionate *share* of the *earnings* of the other company to the investment *account* and *credits* that amount to a *revenue* account as earned. When the *investor* receives *dividends*, it debits *cash* and credits the investment account. An investor who owns sufficient shares of stock of an unconsolidated company to exercise significant control over the actions of that company must use the equity method. It is one of the few instances in which the *firm* recognizes revenue without an increase in *working capital*.
- equity method investment** An *investment* accounted for with the *equity method*.
- equity ratio** *Shareholders' equity* divided by total *assets*. See *ratio*.
- equivalent production** *Equivalent units*.
- equivalent units (of work)** The number of units of completed *output* that would require the same *costs* that a *firm* would actually *incur* for the production of completed and partially completed units during a *period*. For example, if at the beginning of a period the firm starts 100 units and by the end of the period has incurred costs for each of these equal to 75% of total costs to complete the units, then the *equivalent units* of work for the period would be 75. This is used primarily in *process costing* calculations to measure in uniform terms the output of a continuous process.
- ERISA (Employee Retirement Income Security Act of 1974)** The federal law that sets most *pension plan* requirements.
- error accounting** See *accounting errors*.
- escalator clause** Inserted in a purchase or rental contract, a clause that permits, under specified conditions, upward *adjustments* of *price*.
- escapable cost** *Avoidable cost*.

ESOP (Employee Stock Ownership Plan) See *ESOT*.

ESOT (Employee Stock Ownership Trust) A trust *fund* that is created by a corporate employer and that can provide certain *tax* benefits to the *corporation* while providing for employee *stock* ownership. The corporate employer can contribute up to 25% of its payroll per year to the trust. The corporation may deduct the amount of the contribution from otherwise *taxable income* for *federal income tax* purposes. The trustee of the *assets* must use them for the benefit of employees—for example, to fund death or retirement benefits. The assets of the trust are usually the *common shares*, sometimes nonvoting, of the corporate employer. For an example of the potential *tax shelter*, consider the case of a corporation with \$1 million of *debt outstanding*, which it wants to retire, and an annual payroll of \$2 million. The corporation sells \$1 million of common stock to the ESOT. The ESOT borrows \$1 million with the *loan guaranteed* by, and therefore a *contingency* of, the corporation. The corporation uses the \$1 million *proceeds* of the stock *issue* to retire its outstanding debt. (The debt of the corporation has been replaced with the debt of the ESOT.) The corporation can contribute \$500,000 ($= 0.25 \times \2 million payroll) to the ESOT each year and treat the contribution as a deduction for tax purposes. After a little more than two years, the ESOT has received sufficient funds to retire its loan. The corporation has effectively repaid its original \$1 million debt with *pretax* dollars. Assuming an income tax rate of 40%, it has saved \$400,000 ($= 0.40 \times \1 million) of after-tax dollars if the \$500,000 expense for the contribution to the ESOT for the pension benefits of employees would have been made, in one form or another, anyway. Observe that the corporation could use the proceeds (\$1 million in the example) of the stock issued to the ESOT for any of several different purposes: financing expansion, replacing *plant assets*, or acquiring another company. Basically this same form of pretax-dollar financing through pensions is available with almost any corporate *pension plan*, with one important exception. The trustees of an ordinary pension trust must invest the assets prudently, and if they do not, they are personally liable to the employees. Current judgment about prudent *investment* requires diversification—trustees should invest pension trust assets in a wide variety of investment opportunities. (The trustee may not ordinarily invest more than 10% of a pension trust's assets in the *parent's* common stock.) Thus, the ordinary pension trust cannot, in practice, invest all, or even most, of its assets in the parent corporation's stock. This constraint does not apply to the investments of an ESOT. The trustee may invest all ESOT assets in the parent company's stock. The ESOT also provides a means for closely held corporations to achieve wider ownership of shares without *going public*. The laws enabling ESOTs provide for the independent professional *appraisal* of shares not traded in public markets and for transactions between the corporation and the

ESOT or between the ESOT and the employees to be based on the appraised values of the shares.

estate planning The arrangement of an individual's affairs to facilitate the passage of *assets* to beneficiaries and to minimize *taxes* at death.

estimated expenses *Expenditures* to be made after *revenue* recognition. For example, expenditures for *repairs* under *warranty* are after *cost*. Proper recognition of after cost involves a *debit* to *expense* at the time of the sale and a *credit* to an *estimated liability*. When the *firm* discharges the *liability*, it debits the estimated liability and credits the assets consumed. Sometimes called *after cost*.

estimated liability The preferred terminology for estimated *costs* the *firm* will *incur* for such uncertain things as *repairs* under *warranty*. An *estimated liability* appears on the *balance sheet*. Contrast with *contingency*.

estimated revenue A term used in governmental *accounting* to designate *revenue* expected to *accrue* during a *period* independent of whether the government will collect it during the period. The governmental unit usually establishes a *budgetary account* at the beginning of the *budget period*.

estimated salvage value Synonymous with *salvage value* of an *asset* before its retirement.

estimates, changes in See *accounting changes*.

estimation sampling The use of sampling technique in which the sampler infers a qualitative (for example, fraction female) or quantitative (for example, mean weight) characteristic of the *population* from the occurrence of that characteristic in the sample drawn. See *attribute(s) sampling*; *variables sampling*.

EURL (entreprise unipersonnelle à responsabilité limitée) France: similar to *SARL* but having only one shareholder.

event certain to occur See *redeemable (preferred shares)*.

ex div (dividend) Said of *shares* whose *market price* quoted in the market has been reduced by a *dividend* already declared but not yet paid. The *corporation* will send the dividend to the person who owned the share on the *record date*. One who buys the share *ex dividend* will not receive the dividend although the corporation has not yet paid it.

ex rights The condition of *securities* whose quoted *market price* no longer includes the *right* to purchase new securities, such rights having expired or been retained by the seller. Compare *cum rights*.

except for Qualification in *auditor's report*, usually caused by a change, approved by the *auditor*, from one acceptable *accounting principle* or procedure to another.

excess present value In a *capital budgeting* context, *present value* (of anticipated *cash* inflows minus cash outflows including initial cash outflow for a project. The analyst uses the *cost of capital* as the *discount rate*).

excess present value index *Present value* of future *cash* inflows divided by initial cash *outlay*.

exchange The generic term for a *transaction* (or, more technically, a reciprocal *transfer*) between one *entity* and another; in another context, the name for a market, such as the *New York Stock Exchange*.

exchange gain or loss The phrase used by the *FASB* for *foreign exchange gain or loss*.

exchange rate The *price* of one country's currency in terms of another country's currency. For example, the British pound sterling might be *worth* U.S.\$1.95 at a given time. The exchange rate would be stated as "one pound is worth one dollar and ninety-five cents" or "one dollar is worth £0.513" (= £1/\$1.95).

excise tax Tax on the manufacture, *sale*, or consumption of a commodity.

executory contract A mere *exchange* of promises; an agreement providing for payment by a payor to a *payee* on the performance of an act or *service* by the payee, such as a labor contract. Accounting does not *recognize* benefits arising from *executory contracts* as *assets*, nor does it recognize obligations arising from such contracts as *liabilities*. See *partially executory contract*.

exemption A term used for various amounts subtracted from gross income in computing *taxable income*. Usage does not call all such subtractions exemptions. See *tax deduction*.

exercise Occurs when owners of an *option* or *warrant* purchase the *security* that the option entitles them to purchase.

exercise price See *option*.

exit value The *proceeds* that would be received if *assets* were disposed of (or the amounts the *firm* would have to pay to *transfer a liability*) in an *arm's length transaction*. *Current selling price*; *net realizable value*. Some definitions of *fair value* in *U.S. GAAP* define fair value in terms of *exit value*.

expectancy theory The notion that people act in ways to obtain rewards and prevent penalties.

expected value The mean or arithmetic *average* of a statistical distribution or series of numbers.

expected value of (perfect) information Expected net benefits from an undertaking with (perfect) information minus expected net benefits of the undertaking without (perfect) information.

expendable fund In governmental accounting, a *fund* whose resources, *principal*, and *earnings* the governmental unit may distribute.

expenditure Payment of *cash* for *goods* or *services* received. Payment may occur at the time the purchaser receives the goods or services or at a later time. Virtually synonymous with *disbursement* except that disbursement is a broader term and includes all payments for goods or services. Contrast with *expense*.

expense As a noun, a decrease in *owners' equity* accompanying the decrease in *net assets* caused by selling *goods* or rendering *services* or by the passage of time; a "gone" (net) asset; an *expired cost*. Measure *expense* as the cost of the (net) assets used. Do not confuse with *expenditure* or *disbursement*, which may occur before, when, or after the *firm* recognizes the related expense. Use the word "cost" to refer to an item that still has *service potential* and is an asset. Exceptions sometimes occur, as in *Cost of Goods Sold*. Use the word "expense" after the firm has used the asset's

service potential. As a verb, "expense" means to designate an expenditure—past, current, or future—as a current expense.

expense account An *account* to accumulate *expenses*; *closed* to *retained earnings* at the end of the *accounting period*; a *temporary owners' equity account*; also used to describe a listing of expenses that an employee submits to the employer for reimbursement.

expense recognition The process of recording an *expense*, to appear in the current *period's income statement*. Often, the timing of expense recognition results from the *matching convention*, which suggests the *firm* recognize the expense in the same period when it recognizes the *revenue* that expenses helped generate.

experience rating A term used in *insurance*, particularly unemployment insurance, to denote changes from ordinary rates to reflect extraordinarily large or small amounts of claims over time by the insured.

expired cost An *expense* or a *loss*.

Exposure Draft (ED) A preliminary statement of the *FASB* showing the contents of a pronouncement being considered for enactment by the board.

external failure costs Costs that a *firm* incurs when it detects nonconforming *products* and *services* after delivering them to customers, including *warranty* repairs, product liability, *marketing costs* to reach consumers, and *sales allowances*.

external reporting Reporting to *shareholders* and the public, as opposed to *internal reporting* for *management's* benefit. See *financial accounting*, and contrast with *managerial accounting*.

extraordinary gains (losses) (item) A *material expense* or *revenue* item characterized both by its unusual nature and by its infrequency of occurrence; appears along with its *income tax* effects separately in the *income statement*. A *firm* first reports its income after tax. It then reports three items, *net of tax*: Changes in *accounting principles*, extraordinary items, and *income from discontinued operations*. Accountants would probably classify a major *loss* from an earthquake as an extraordinary item.

extrinsic rewards Rewards that come from outside the individual, such as rewards from a teacher, a parent, an organization, and a spouse; they include grades, *money*, praise, and prizes. Contrast with *intrinsic rewards*.

F

face (par) amount (value) The *nominal amount* due at *maturity* from a *bond* or *note* not including the contractual periodic *coupon* payment that may also come due on the same date. Good usage calls the corresponding amount of a stock *certificate* the *par* or *stated value*, whichever applies. Not all shares have such an amount; such shares are called no-par.

facility-level activities Work that supports the entire organization. Examples include top *management*, human resources, and *research and development*.

- factor** For an *interest rate* r , a number of the form $(1 + r)^n$. When n is positive, then the number is a *future value factor* or an *accumulation factor*. When n is negative, then the number is a *discount factor* or *present value factor*. In another context, as a noun, a firm who buys *accounts receivable* from their owner; as a verb, the process of *factoring*; *to factor*.
- factoring** The process of buying *notes* or *accounts receivable* at a *discount* from the holder of the *debt*; from the holder's point of view, the selling of such notes or accounts. When the *transaction* involves a single note, usage calls the process *discounting a note*.
- factory** Used synonymously with "manufacturing" as an adjective. See *manufacturing cost*.
- factory burden** *Manufacturing overhead*.
- factory cost** *Manufacturing cost*.
- factory expense** *Manufacturing overhead*. *Expense* is a poor term in this context because the item is a *product cost*.
- factory overhead** Usually an item of *manufacturing cost* other than *direct labor* or *direct materials*.
- fair market value** See *fair value*.
- fair presentation (fairness)** One of the qualitative standards of financial reporting. When the *auditor's report* says that the *financial statements* "present fairly . . . ," the *auditor* means that the accounting alternatives used by the entity all comply with *U.S. GAAP*. In recent years, however, courts have ruled that conformity with *generally accepted accounting principles* may be insufficient grounds for an *opinion* that the statements are fair.
- fair value, fair market value (price)** *Price (value)* negotiated at *arm's length* between a willing buyer and a willing seller, each acting rationally in his or her own self-interest in an unrestricted market, neither compelled to transact and both have reasonable knowledge of the relevant facts. The accountant may estimate this amount in the absence of a monetary *transaction*. *U.S. GAAP* presents a *hierarchy* of methods for measuring fair value, starting with observation of prices in market transactions. The *FASB* and *SEC* have made clear that accountants need not base fair value measurements of observed prices if the transactions generating those prices were in inactive markets. Accountants sometime measure fair value as the *present value* of expected *cash flows*. In some contexts, fair value differs from *market value* in that the former takes into account the identity, tastes, and utility of the specific parties to the transaction, while market value assumes typical buyers and sellers. In this sense a fair value may exceed a market value if the parties to a transactions attach more value to the item than do other market participants. The market value of used silverware might be less than the fair value two siblings are willing to pay for a piece of their grandfather's collection.
- fair-value hedge** A hedge of an exposure to changes in the *fair value* of a *recognized asset* or *liability* or of an unrecognized *firm commitment*. If the firm uses *hedge accounting*, it will report both the hedged item and the hedging instrument at fair value, with *gains* and *losses* reported in *net income*. If the hedge is effective, the gains and losses on these items will offset each other, although both will appear in net income.
- fair value option** *Investors* in *marketable securities* must report *carrying value* at *fair value*, with changes reported in *income* for *trading securities* and in *other comprehensive income* for *securities available for sale*. This option allows the investor to report the carrying value of these items at fair value, with changes in fair value reported in income, not other comprehensive income. Issuers (see *issue*) of *debt* may, but need not, report the carrying value of these items at fair value, with changes in fair value reported in income, not other comprehensive income.
- faithful representation** From the *conceptual frameworks* developed by the *FASB* and *IASB*, a qualitative characteristic of decision-useful information. A faithful representation means that the words and numbers used to depict an economic phenomenon in financial reports correspond to the phenomenon being depicted. A perfectly faithful representation would be complete, neutral, in the sense of being unbiased, and free from error.
- FAS** *Statement of Financial Accounting standards* of the *FASB*.
- FASAC** *Financial Accounting standards Advisory Council*.
- FASB (Financial Accounting Standards Board)** An independent *board* responsible, since 1973, for establishing *U.S. GAAP: generally accepted accounting principles*. Its official pronouncements are *Statements of Financial Accounting Concepts (SFAC)*, *Statements of Financial Accounting standards (SFAS)*, and *FASB Interpretations*. See also *Discussion Memorandum* and *Technical Bulletin*. The FASB publishes its *Codification* to bring all its guidance into a single place. Web site: www.fasb.org.
- FASB Interpretation FIN** An official *FASB* statement interpreting the meaning of *Accounting Research Bulletins*, *APB Opinions*, and *Statements of Financial Accounting standards*. *FIN 46*, for example, has curtailed the use of *off-balance-sheet financings*. Part of the *FASB Codification*.
- FASB Technical Bulletin** See *Technical Bulletin*.
- favorable variance** An excess of actual *revenues* over expected revenues; an excess of *standard cost* over *actual cost*.
- federal income tax** Income tax levied by the U.S. government on individuals and *corporations*.
- Federal Insurance Contributions Act** See *FICA*.
- Federal Unemployment Tax Act** See *FUTA*.
- Fédération des Experts Comptables Européens (FEE)** The European Federation of Accountants, based in Brussels, represents the European accounting profession on matters relating to the initiatives of the European Union, including especially its administrative wing, the European Commission. See www.fee.org.
- feedback** The process of informing employees about how their actual performance compares with the expected or desired level of performance, in the hope that the

information will reinforce desired behavior and reduce unproductive behavior.

FEI *Financial Executives International*.

FICA (Federal Insurance Contributions Act) The law that sets *Social Security taxes* and benefits.

fiduciary Someone responsible for the custody or administration of property belonging to another; for example, an executor (of an estate), *agent*, receiver (in *bankruptcy*), or trustee (of a trust).

FIFO (first-in, first-out) The *inventory flow assumption* that *firms* use to compute *ending inventory cost* from most recent purchases and *cost of goods sold* from oldest purchases including *beginning inventory*. FIFO describes *cost flow* from the viewpoint of the *income statement*. From the *balance sheet* perspective, *LISH* (last-in, still-here) describes this same cost flow. Contrast with *LIFO*.

finance As a verb, to supply with *funds* through the *issue* of *stocks*, *bonds*, *notes*, or *mortgages* or through the retention of *earnings*.

finance lease (method) See capital lease method.

financial accounting The accounting for *assets*, *liabilities*, *equities*, *revenues*, *expenses*, and *cash flows* of a *business*; primarily concerned with the historical reporting, to external users, of the *financial position* and *operations* of an *entity* on a regular, periodic basis. Contrast with *managerial accounting*.

Financial Accounting Foundation The independent foundation (committee), governed by a *board* of trustees, that raises *funds* to support the *FASB* and *GASB*.

Financial Accounting Standards Advisory Council (FASAC) A committee of academics, preparers, *attestors*, and users giving advice to the *FASB* on matters of strategy and emerging issues. The council spends much of each meeting learning about current developments in standard setting from the *FASB* staff.

Financial Accounting Standards Board FASB.

Financial Executives International (FEI) An organization of financial executives, such as chief accountants, *controllers*, and *treasurers*, of large *businesses*. In recent years, the *FEI* has been a critic of the *FASB* because it views many of the *FASB* requirements as burdensome while not *cost-effective*.

financial asset Cash or the ownership *interest* in a contract, such as an *account receivable*, that gives its owner the right to receive cash or another financial instrument. This definition is recursive. See *financial instrument*.

financial assets at fair value through profit or loss *IFRS* term for trading securities.

financial expense An *expense incurred* in raising or managing *funds*.

financial flexibility As defined by *SFAC No. 5*, “the ability of an *entity* to take effective actions to alter amounts and timing of *cash flows* so it can respond to unexpected needs and opportunities.”

financial forecast See *financial projection* for definition and contrast.

financial instrument The *FASB* defines this term as follows: “*Cash*, evidence of an ownership interest in an *entity*, or a contract that both:

[a] imposes on one entity a contractual obligation (1) to deliver cash or another *financial instrument* to a second entity or (2) to exchange financial instruments on potentially unfavorable terms with the second entity, and

[b] conveys to that second entity a contractual *right* (1) to receive cash or another financial instrument from the first entity or (2) to exchange other financial instruments on potentially favorable terms with the first entity.”

For some *derivatives* that qualify as financial instruments, the obligation can be to deliver a commodity.

financial leverage See *leverage*.

financial liability An obligation to pay a specified amount of *cash* or to give another financial liability. See *financial instrument*.

financial literacy The *NYSE* and the *NASDAQ* have required that companies who list their *shares* with these groups have an *audit committee* comprising at least three independent *board* members who are financially literate. The organizations mention the ability to understand the *financial statements*, but leave the definition of financial literacy to the individual boards to define. We think financial literacy in this sense requires the ability to understand the *transactions* requiring *critical accounting judgments* or estimates; the accounting issues and choices for those judgments; what *management* chose, and why; and what opportunities management’s choices provide for *earnings* management. See *critical accounting judgments*.

financial model *Model*, typically expressed with arithmetic relations, that allows an organization to test the interaction of economic variables in a variety of settings.

financial position (condition) Statement of the *assets* and *equities* of a *firm*; displayed as a *balance sheet*.

financial projection An estimate of *financial position*, results of *operations*, and changes in *cash flows* for one or more future *periods* based on a set of assumptions. If the assumptions do not represent the most likely outcomes, then *GAAS* call the estimate a *projection*. If the assumptions represent the most *probable* outcomes, then *GAAS* call the estimate a *forecast*. “Most probable” means that *management* has evaluated the assumptions and that they are management’s judgment of the most likely set of conditions and most likely outcomes.

financial ratio See *ratio* and **Exhibit 7.12**.

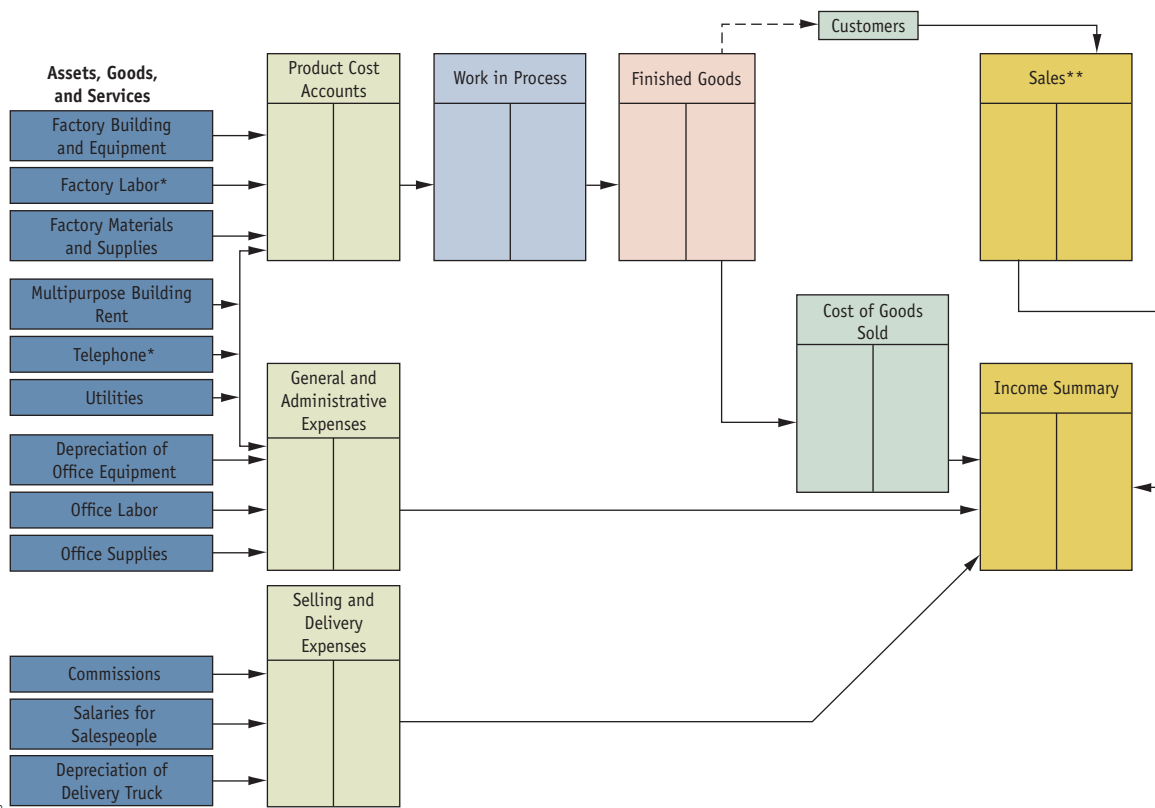
financial reporting objectives Broad *objectives* that are intended to guide the development of specific *accounting standards*; set out by *FASB SFAC No. 1*.

financial reporting (process) *Managers* and *governing boards* of reporting *entities* select from *accounting principles* provided by standard setters and regulatory bodies and prepare *financial statements*, which independent external *auditors* attest to, to enable users of financial statements to make informed decisions.

Financial Reporting Release Series of releases, issued by the *SEC* since 1982; replaces the *Accounting* Series Release. See *SEC*.

- financial statements** The *balance sheet, income statement, statement of retained earnings, statement of cash flows, statement of changes in owners' equity accounts, statement of comprehensive income, and notes thereto.*
- financial structure** Capital structure.
- financial vice president** Person in charge of the entire accounting and finance *function*; typically one of the three most influential people in the company.
- financial year** Australia and the United Kingdom: term for *fiscal year*.
- financing (activities)** Obtaining resources from (a) owners and providing them with a *return* on and a return of their *investment* and (b) *creditors* and repaying amounts borrowed (or otherwise settling the obligation). See *statement of cash flows*.
- financing lease** *Capital lease*.
- financing structure** The mix of *debt* and *owners' equity* that provides the sources of funding for the *assets* of an entity.
- finished goods (inventory account)** Manufactured *product* ready for *sale*; a *current asset (inventory)* account.
- finite life** The owner of an *intangible asset* with an *indefinite life* does not *amortize* it but tests it periodically for *impairment*. If the asset has non-indefinite life and a non-infinite life, it has a "*finite life*." If an asset does not have a finite life, it has an indefinite life; "indefinite" does not mean "infinite."
- firm** Informally, any *business entity*. (Strictly speaking, a firm is a *partnership*.)
- firm commitment** The FASB, in SFAS No. 133 (Codification Topic 815), defines this as "an agreement with an unrelated party, binding on both parties and usually legally enforceable," which requires that the *firm* promise to pay a specified amount of a currency and that the firm has sufficient disincentives for nonpayment that the firm will probably make the payment. A firm commitment resembles a *liability*, but it is an *executory contract*, so is not a *liability*. SFAS No. 133 (Codification Topic 815) allows the firm to *recognize* certain financial *hedges* in the *balance sheet* if they hedge firm commitments. The FASB first used the term in SFAS No. 52 (Codification Topic 830) but made the term more definite and more important in SFAS No. 133 (Codification Topic 815). This is an early, perhaps the first, step in changing the recognition criteria for *assets* and *liabilities* to exclude the test that the future benefit (asset) or obligation (liability) not arise from an *executory contract*.
- first-in, first-out** See *FIFO*.
- fiscal year** A *period* of 12 consecutive months chosen by a *business* as the *accounting period* for *annual reports*, not necessarily a *natural business year* or a calendar year.
- FISH** An acronym, conceived by George H. Sorter, for *first-in, still-here*. FISH is the same *cost-flow assumption* as *LIFO*. Many readers of accounting statements find it easier to think about inventory questions in terms of items still on hand. Think of LIFO in connection with *cost of goods sold* but of FISH in connection with *ending inventory*. See *LISH*.
- fixed** Said of an item that does not vary with volume of activity, at least in the *short run*.
- fixed assets** *Plant assets*.
- fixed assets turnover (ratio)** *Sales* divided by average total *fixed assets*. See *ratio* and Exhibit 7.12.
- fixed benefit plan** A *defined-benefit plan*.
- fixed budget** A plan that provides for specified amounts of *expenditures* and *receipts* that do not vary with activity levels; sometimes called a *static budget*. Contrast with *flexible budget*.
- fixed charges earned (coverage) ratio** *Income* before *interest expense* and *income tax expense* divided by interest expense.
- fixed cost; fixed expense** An *expenditure* or *expense* that does not vary with volume of activity, at least in the *short run*. See *capacity costs*, which include *enabling costs* and *standby costs*, and *programmed costs* for various subdivisions of fixed costs. See *cost terminology*.
- fixed cost price variance (spending variance)** The difference between actual and *budgeted fixed costs*.
- fixed interval sampling** A method of choosing a sample: the analyst selects the first item from the *population* randomly, drawing the remaining sample items at equally spaced intervals.
- fixed liability** *Long-term liability*.
- fixed manufacturing overhead applied** The portion of *fixed manufacturing overhead cost* allocated to units produced during a *period*.
- fixed overhead variance** Difference between actual *fixed manufacturing costs* and fixed manufacturing costs applied to production in a *standard costing system*.
- flexible budget** *Budget* that projects *receipts* and *expenditures* as a *function* of activity levels. Contrast with *fixed budget*.
- flexible budget allowance** With respect to *manufacturing overhead*, the total *cost* that a *firm* should have incurred at the level of activity actually experienced during the *period*.
- float** *Checks* whose amounts the bank has added to the depositor's bank *account* but whose amounts the bank has not yet reduced from the *drawer's* bank account. The number of shares publicly owned and available for trading, or the dollar *value* of a bond issue publicly owned and available for trading.
- flow** The change in the amount of an item over time. Contrast with *stock*.
- flow assumption** An assumption used when the *firm* makes a *withdrawal* from *inventory*. The firm must compute the *cost* of the withdrawal by a flow assumption if the firm does not use the *specific identification method*. The usual flow assumptions are *FIFO, LIFO, and weighted average*.
- flow of costs** *Costs* passing through various classifications within an *entity* engaging, at least in part, in manufacturing activities. See the diagram on page 776 for a summary of *product and period cost flows*. See also *cost-flow assumption*.
- flow-through method** Accounting for the *investment credit* to show all *income statement* benefits of the *credit* in the year of acquisition rather than spreading them

Flow of Costs (and Sales Revenue)



*The credit in the entry to record these items is usually to a payable; for all others, the credit is usually to an asset, or to an asset contra account.

**When the firm records sales to customers, it credits the Sales account. The debit is usually to Cash or Accounts Receivable.

over the life of the asset acquired (called the *deferral method*). The *APB* preferred the deferral method in *Opinion No. 2* (1962) but accepted the flow-through method in *Opinion No. 4* (1964); both now in **Codification Topic 740**.

FOB *Free on board* some location (for example, FOB shipping point, FOB destination). The *invoice price* includes delivery at seller's *expense* to that location. Title to *goods* usually passes from seller to buyer at the FOB location.

folio A page number or other identifying reference used in *posting* to indicate the source of entry.

footing Adding a column of figures.

footnotes A less-preferred word for the more detailed information than that provided in the *income statement*, *balance sheet*, *statement of retained earnings*, and *statement of cash flows*. These are an integral part of the statements, and the *auditor's report* covers them. Better to call them *notes* because they are not footnotes in the classic sense.

forecast See *financial projection* for definition and contrast.

foreclosure Occurs when a *lender* takes possession of property for his or her own use or *sale* after the *borrower* fails to make a required payment on a *mortgage*. Assume that the lender sells the property but

that the *proceeds* of the sale are too small to cover the *outstanding balance* on the *loan* at the time of foreclosure. Under the terms of most mortgages, the lender becomes an unsecured *creditor* of the borrower for the still-unrecovered balance of the loan.

foreign currency For *financial statements* prepared in a given currency, any other currency.

foreign currency translation Reporting in the currency used in *financial statements* the amounts denominated or measured in a different currency.

foreign exchange gain or loss Gain or loss from holding *net foreign monetary items* during a *period* when the *exchange rate* changes.

foreign private issuer See *U.S. SEC registrant* for definition and contrast.

forfeited share A *share* to which a subscriber has lost title because of nonpayment of a *call*.

Form 10-K See *10-K*.

Form 10-Q See *10-Q*.

Form 20-F See *20-F*.

forward (commodity) contract An agreement to purchase or sell a specific commodity or *financial instrument* for a specified *price*, the *forward price*, at a specified date. Contrast with *futures contract*. Typically, *forward contracts* are not traded on organized *exchanges* (unlike

- futures contract), so the parties to the agreement sacrifice *liquidity* but gain flexibility in setting contract quantities, qualities, and settlement dates.
- forward-exchange contract** An agreement to *exchange* at a specified future date currencies of different countries at a specified rate called the forward rate.
- forward price** The *price* of a commodity for delivery at a specified future date; in contrast to the *spot price*, the price of that commodity on the day of the price quotation.
- franchise** A privilege granted or sold, such as to use a name or to sell *products* or *services*.
- fraudulent conveyance** A *transfer* of *goods* or *cash* that a court finds illegal. *Creditors* of a *bankrupt firm* usually receive less than the firm owed them. For example, a creditor of a bankrupt firm might collect from the trustee of the bankrupt firm only \$0.60 for every dollar the bankrupt firm owed. Creditors, anticipating *bankruptcy*, sometimes attempt to persuade the firm to pay the debt in full before the firm declares bankruptcy, reducing the *net assets* available to other creditors. Bankruptcy laws have rules forbidding such transfers from a near-bankrupt firm to some of its creditors. Such a transfer is called a fraudulent conveyance. Courts sometimes ask accountants to judge whether a firm had *liabilities* exceeding assets even before the firm went into bankruptcy. When the court can find that economic bankruptcy occurred before legal bankruptcy, it will declare transfers of assets to creditors after economic bankruptcy to be fraudulent conveyances and have the assets *returned* to the trustees (or to a *legal entity* called the bankrupt's estate) for redistribution to all creditors.
- fraudulent financial reporting** Intentional or reckless conduct that results in materially misleading *financial statements*. See *creative accounting*.
- free cash flow** This term has no standard meaning. Some *financial statement* analysts use it to mean *cash flow from operations* + *interest expense* + *income tax expense*. Others mean the excess of *cash flow from operations* over *cash flow for investing*. Usage varies so much that you should ascertain the meaning intended in context by this phrase.
- free on board** *FOB*.
- freight-in** The *cost* of freight or shipping *incurred* in acquiring *inventory*, preferably treated as a part of the cost of inventory; often shown temporarily in an *adjunct account* that the acquirer *closes* at the end of the *period* with other purchase accounts to the inventory account.
- freight-out** The *cost* of freight or shipping *incurred* in selling *inventory*, treated by the seller as a selling *expense* in the *period* of sale.
- full absorption costing** The *costing* method that assigns all types of *manufacturing costs* (*direct material*, *direct labor*, *fixed* and *variable overhead*) to units produced; required by *U.S. GAAP*; also called *absorption costing*. Contrast with *variable costing*.
- full costing, full costs** The total *cost* of producing and selling a unit; often used in *long-term profitability* and pricing decisions. Full cost per unit equals *full absorption cost* per unit plus *marketing*, *administrative*, *interest*, and other *central corporate expenses*, per unit. The sum of full costs for all units equals total costs of the *firm*.
- full disclosure** The reporting policy requiring that all significant or *material* information appear in the *financial statements*. See *fair presentation*.
- fully vested** Said of a *pension plan* when an employee (or his or her estate) has *rights* to all the benefits granted by an employer's pension plan even if the employee does not work for this employer at the time of death or retirement.
- function** In governmental accounting, said of a group of related activities for accomplishing a service or regulatory program for which the governmental unit has responsibility; in mathematics, a rule for associating a number, called the *dependent variable*, with another number (or numbers), called *independent variable(s)*.
- functional classification** *Income statement* reporting form that classifies *expenses* by purpose, that is, *cost of goods sold*, *administrative expenses*, *financing expenses*, *selling expenses*. Contrast with *natural classification*.
- functional currency** Currency in which an *entity* carries out its principal economic activity.
- functional factor** See *obsolescence*.
- fund** An *asset* or group of assets set aside for a specific purpose. See also *fund accounting*.
- fund accounting** The accounting for resources, obligations, and *capital balances*, usually of a not-for-profit or governmental *entity*, which the entity has segregated into *accounts* representing logical groupings based on legal, donor, or administrative restrictions or requirements. The groupings are "funds." The accounts of each fund are *self-balancing*, and from them one can prepare a *balance sheet* and an *operating* statement for each fund. See *fund* and *fund balance*.
- fund balance** In governmental accounting, the excess of *assets* of a *fund* over its *liabilities* and *reserves*; the not-for-profit equivalent of *owners' equity*.
- funded** Said of a *pension plan* or other obligation when the *firm* has set aside *funds* for meeting the obligation when it comes due. The federal law for pension plans requires that the firm fund all *normal costs* when it *recognizes* them as *expenses*. In addition, the firm must fund *prior service cost* of pension plans over 30 or over 40 years, depending on the circumstances.
- funding** Replacing *short-term liabilities* with *long-term debt*.
- funds** Generally *working capital*; *current assets* less current *liabilities*; sometimes used to refer to *cash* or to cash and *marketable securities*.
- funds provided by operations** See *cash provided by operations*.
- funds statement** An informal name often used for the *statement of cash flows*.
- funny money** Said of *securities*, such as *convertible preferred stock*, *convertible bonds*, *options*, and *warrants*, that have aspects of *common shares* but that did not reduce reported *earnings per share* before the issuance of *APB Opinion No. 9* in 1966; now **Codification Topic 250**.
- FUTA (Federal Unemployment Tax Act)** Provides for *taxes* to be collected at the federal level, to help subsidize the individual states' administration of their unemployment compensation programs.

future value Value at a specified future date of a sum increased at a specified *interest rate*.

futures contract An agreement to purchase or sell a specific commodity or *financial instrument* for a specified *price*, at a specific future time or during a specified future *period*. Contrast with *forward contract*. When traded on an organized *exchange*, the exchange sets the minimum contract size and expiration date(s). The exchange requires that the holder of the contract settle in *cash* each day the fluctuations in the *value* of the contract. That is, each day, the exchange marks the contract to *market value*, called the “(daily) settlement price.” A contract holder who has lost during the day must put up more cash, and a holder who has gained receives cash.

G

GAAP *Generally accepted accounting principles*; a singular noun. In the United Kingdom and elsewhere, this means “generally accepted accounting practices.” In this book, we use *U.S. GAAP* for this concept. The international analog is *IFRS*.

GAAS *Generally accepted auditing standards*; a plural noun. Do not confuse with *GAS*.

gain In *financial accounting* contexts, the increase in *owners’ equity* caused by a *transaction* that is not part of a *firm’s* typical, day-to-day *operations* and not part of owners’ *investment* or *withdrawals*. Accounting distinguishes the meaning of the term “gain” (or *loss*) from that of related terms. First, gains (and losses) generally refer to *non-operating*, incidental, peripheral, or non-routine *transactions*: gain on *sale* of *land* in contrast to *gross margin* on sale of *inventory*. Second, gains and losses are *net* concepts, not *gross* concepts: gain or loss results from subtracting some measure of *cost* from the measure of *inflow*. *Revenues* and *expenses*, on the other hand, are *gross* concepts; their difference is a *net* concept. Gain is nonroutine and net, profit or margin is routine and net; revenue from *continuing operations* is routine and gross; revenue from *discontinued operations* is nonroutine and gross. Loss is net but can be either routine (loss on sale of inventory) or not (loss on disposal of segment of business).

In *managerial accounting* and lay contexts, the difference between some measure of revenue or *receipts* or *proceeds* and some measure of costs, such as direct costs or variable costs or fully absorbed costs or *full costs* (see *cost terminology*). Because the word can have so many different meanings, careful writers should be explicit to designate one.

gain contingency See *contingency*.

GAS *Goods available for sale*. Do not confuse with *GAAS*.

GASB (Governmental Accounting Standards Board) An independent body responsible, since 1984, for establishing *accounting standards* for state and local government units. It is part of the *Financial Accounting Foundation*, parallel to the *FASB*, and currently consists of five members.

GbR (Gesellschaft des bürgerlichen Rechtes) Germany: a *partnership* whose members agree to *share* in specific

aspects of their own separate *business* pursuits, such as an office. This partnership has no legal form and is not a separate *accounting entity*.

GDP Implicit Price Deflator (index) A *price index* issued quarterly by the Office of Business Economics of the U.S. Department of Commerce. This index attempts to trace the *price level* of all *goods* and *services* composing the *gross domestic product*. Contrast with *Consumer Price Index*.

gearing United Kingdom: *financial leverage*.

gearing adjustment A *revenue* representing part of a *holding gain*. Consider a *firm* that has part of its *assets* financed by *noncurrent liabilities* and that has experienced holding gains on its assets during a *period*. All the increase in wealth caused by the holding gains belongs to the owners; none typically belongs to the *lenders*. Some British accounting authorities believe that published *income statements* should show part of the holding gain in *income* for the period. The part they would report in income is the fraction of the gain equal to the fraction that debt composes of total financing; for example, if debt equals 40% of total *equities* and the holding gain equals \$100 for the period, the amount to appear in income for the period would be \$40. Usage calls that part the *gearing adjustment*.

general debt A governmental unit’s *debt* legally payable from general *revenues* and backed by the full faith and *credit* of the governmental unit.

general expenses *Operating expenses* other than those specifically identified as *cost of goods sold*, selling, *administrative*, and *research and development*.

general fixed asset (group of accounts) Accounts showing a governmental unit’s *long-term assets* that are not accounted for in *enterprise*, trust, or intragovernmental service funds.

general fund A nonprofit *entity’s assets* and *liabilities* not specifically earmarked for other purposes; the primary *operating fund* of a governmental unit.

general journal The formal record in which the *firm* records *transactions*, or summaries of similar *transactions*, in *journal entry* form as they occur. Use of the adjective “general” usually implies that the firm also uses various *special journals*, such as a *check register* or *sales journal*.

general ledger The name for the formal *ledger* containing all the *financial statement accounts*. It has equal *debits* and *credits*, as evidenced by the *trial balance*. Some of the accounts in the general ledger may be *control accounts*, supported by details contained in *subsidiary ledgers*.

general partner *Partnership* member who is personally liable for all debts of the partnership; contrast with *limited partner*.

general price index A measure of the aggregate *prices* of a wide range of *goods* and *services* in the economy at one time relative to the prices during a base *period*. See *Consumer Price Index* and *GDP Implicit Price Deflator*. Contrast with *specific price index*.

general price level-adjusted statements See *constant-dollar accounting*.

- general price-level changes** Changes in the aggregate *prices* of a wide range of *goods* and *services* in the economy. These price measurements result from using a *general price index*. Contrast with *specific price changes*.
- general purchasing power** The command of the dollar over a wide range of *goods* and *services* in the economy. The general purchasing power of the dollar is inversely related to changes in a general price index. See *general price index*.
- general purchasing-power accounting** See *constant-dollar accounting*.
- generally accepted accounting principles (GAAP)** As previously defined by the *CAP*, *APB*, and now the *FASB*, the conventions, rules, and procedures necessary to define accepted accounting practice at a particular time; includes both broad guidelines and relatively detailed practices and procedures. In the United States, the *FASB* defines *U.S. GAAP* to include accounting pronouncements of the *SEC* and other government agencies as well as a variety of authoritative sources, such as this book. In this book, we use *U.S. GAAP* for this concept. *SFAS No. 168 (2009) (Codification Topic 110)* provides a *hierarchy* of *GAAP* standards, starting with *Statements of Financial Accounting standards*, and *Interpretation*. It explicitly excludes textbooks, such as this one. The international analog is *IFRS*.
- generally accepted auditing standards (GAAS)** The standards, as opposed to particular procedures, formerly promulgated by the *AICPA* (in *Statements on Auditing Standards*), and now promulgated by the *PCAOB*, and that concern “the *auditor’s* professional quantities” and “the judgment exercised by him in the performance of his examination and in his *report*.” Currently, there are ten such standards: three general ones (concerned with proficiency, *independence*, and degree of care to be exercised), three standards of field work, and four standards of reporting. The first standard of reporting requires that the auditor’s report state whether the *firm* prepared the *financial statements* in accordance with *generally accepted accounting principles*. Thus, the typical auditor’s report says that the auditor conducted the examination in accordance with *generally accepted auditing standards* and that the firm prepared the statements in accordance with generally accepted accounting principles. See *auditor’s report*.
- geographic segment** A single *operation* or a group of operations that are located in a particular geographic area and that generate *revenue*, *incur costs*, and have *assets* used in or associated with generating such revenue.
- GIE (groupement d’intérêt économique)** France: a *joint venture*, normally used for exports and *research-and-development* pooling.
- GmbH (Gesellschaft mit beschränkter Haftung)** Germany: a private company with an unlimited number of *shareholders*. *Transfer* of ownership can take place only with the consent of other shareholders. Contrast with *AG*.
- goal congruence** The idea that all members of an organization have incentives to perform for a common interest, such as *shareholder* wealth maximization for a *corporation*.
- goals contrasted with strategies** A goal describes an ending position, whereas a strategy describes a process of getting from the current position to the goal.
- going concern (assumption)** For accounting purposes, accountants’ assumption that a *business* will remain in operation long enough to carry out all its current plans. This assumption partially justifies the *acquisition cost* basis rather than a *liquidation* or *exit value* basis, of accounting.
- going public** Said of a *business* when its *shares* become widely traded rather than being closely held by relatively few *shareholders*; issuing shares to the general investing public.
- goods** Items of *merchandise*, supplies, *raw materials*, or *finished goods*. Sometimes the meaning of “*goods*” is extended to include all *tangible* items, as in the phrase “*goods and services*.”
- goods available for sale (GAS)** The sum of *beginning inventory* plus all acquisitions of *merchandise* or *finished goods* during an *accounting period*.
- goods-in-process** *Work-in-process*.
- goodwill** The excess of *cost* of an acquired *firm* (or *operating* unit) over the current *fair value* of the separately identifiable *net assets* of the acquired unit. Before the acquiring firm can *recognize goodwill*, it must assign a fair value to all identifiable assets, even those not recorded on the *books* of the acquired unit. For example, assume a firm has developed a *patent* that does not appear on its books because of *SFAS No. 2 (Codification Topic 730)*. If another company acquires the firm, the acquirer will recognize the patent at an amount equal to its estimated fair value. The acquirer will compute the amount of goodwill only after assigning values to all assets it can identify. Informally, the term indicates the value of good customer relations, high employee morale, a well-respected *business* name, and so on, all of which the firm or analyst expects to result in greater-than-normal earning power.
- goodwill method** A method of accounting for the *admission* of a new partner to a *partnership* when the new partner will receive a portion of *capital* different from the *value* of the *tangible assets* contributed as a fraction of tangible assets of the partnership. See *bonus method* for a description and contrast.
- governing board** *Board of directors*.
- Governmental Accounting Standards Advisory Council** A group that consults with the *GASB* on agenda, technical issues, and the assignment of priorities to projects. It comprises more than a dozen members representing various areas of expertise.
- Governmental Accounting Standards Board** *GASB*.
- GPL (general price level)** Usually used as an adjective modifying the word “accounting” to mean *constant-dollar accounting*.
- GPLA (general price level-adjusted accounting)** *Constant-dollar accounting*.
- GPP (general purchasing power)** Usually used as an adjective modifying the word “accounting” to mean *constant-dollar accounting*.

graded vesting Said of a *pension plan* in which not all employees currently have *fully vested* benefits. By law, the benefits must vest according to one of several formulas as time passes.

grandfather clause An *exemption* in new accounting pronouncements exempting *transactions* that occurred before a given date from the new accounting treatment.

gross Not adjusted or reduced by deductions or subtractions. Contrast with *net*, and see *gain* for a description of how the difference between net and gross affects usage of the terms *revenue*, *gain*, *expense*, and *loss*.

gross domestic product (GDP) The *market value* of all *goods* and *services* produced by *capital* or labor within a country, regardless of who owns the capital or of the nationality of the labor; most widely used measure of production within a country. Contrast with *gross national product (GNP)*, which measures the market value of all goods and services produced with capital owned by, and labor services supplied by, the residents of that country regardless of where they work or where they own capital. In the United States in recent years, the difference between GDP and GNP equals about 0.2% of GDP.

gross margin *Net sales* minus *cost of goods sold*.

gross margin percentage $100 \times (1 - \text{cost of goods sold} / \text{net sales}) = 100 \times (\text{gross margin} / \text{net sales})$.

gross national product (GNP) See *gross domestic product* for definition and contrast.

gross price method (of recording purchase or sales discounts) The *firm* records the purchase (or *sale*) at the *invoice price*, not deducting the amounts of *discounts* available. Later, it uses a *contra account* to purchases (or sales) to record the amounts of discounts taken. Since information on *discounts lapsed* will not emerge from this system, most firms should prefer the *net price method* of recording *purchase discounts*.

gross profit *Gross margin*.

gross profit method A method of estimating *ending inventory* amounts. First, the firm measures *cost of goods sold* as some fraction of *sales*; then, it uses the *inventory equation* to *value ending inventory*.

gross profit ratio *Gross margin* divided by *net sales*.

gross sales All *sales* at *invoice prices*, not reduced by *discounts*, *allowances*, *returns*, or other *adjustments*.

group depreciation In calculating *depreciation charges*, a method that combines similar *assets* rather than depreciating them separately. It does not *recognize gain* or *loss* on retirement of items from the group until the *firm* sells or retires the last item in the group. See *composite life method*.

guarantee A promise to answer for payment of *debt* or performance of some obligation if the person liable for the debt or obligation fails to perform. A guarantee is a *contingency* of the *entity* making the promise. Often, writers use the words “guarantee” and “warranty” to mean the same thing. In precise usage, however, “guarantee” means some person’s promise to perform a contractual obligation such as to pay a sum of *cash*, whereas “warranty” refers to promises about pieces of machinery or other *products*. See *warranty*.

H

half-year convention In *tax accounting* under *ACRS*, and sometimes in *financial accounting*, an assumption that the *firm* acquired *assets* subject to *depreciation* at mid-year of the year of acquisition. When the firm uses this convention, it computes the *depreciation charge* for the year as one-half the charge that it would have used if it had acquired the assets at the beginning of the year.

hardware The physical equipment or devices forming a computer and peripheral equipment.

hash total Used to establish accuracy of data processing; a control that takes the sum of data items not normally added together (for example, the sum of a list of part numbers) and subsequently compares that sum with a computer-generated total of the same *values*. If the two sums are identical, then the analyst takes some comfort that the two lists are identical.

Hasselback An annual directory of accounting faculty at colleges and universities; gives information about the faculty’s training and fields of specialization. James R. Hasselback, of the University of West Florida, has compiled the directory since the 1970s; www.hasselback.org.

health care benefits obligation At any time, the *present value* of the nonpension benefits promised by an employer to employees during their retirement years. See *other post-employment benefits*.

hedge To reduce, perhaps cancel altogether, one *risk* the *entity* already bears, by purchasing a *security* or other *financial instrument*. For example, a farmer growing corn runs the risk that corn *prices* may decline before the corn matures and can be brought to market. Such a farmer can arrange to sell the corn now for future delivery, hedging the risk of corn price changes. A *firm* may have a *receivable* denominated in euros due in six months. It runs the risk that the *exchange rate* between the dollar and the euro will change and the firm will receive a smaller number of dollars in the future than it would receive from the same number of euros received today. Such a firm may hedge its exposure to risk of changes in the exchange rate between dollars and euros in a variety of ways. See *cash-flow hedge* and *fair-value hedge*. Do not confuse with *hedge accounting*.

hedge accounting *Firms* may, but need not, use hedge accounting. If the firm elects hedge accounting and if its hedging instrument is highly effective, it will report *gains* and *losses* on hedging instruments for *cash-flow hedges* in *other comprehensive income*, rather than in *net income*. For *fair-value hedges*, the firm using hedge accounting will report the hedged *asset* or *liability* at fair value; it reports the hedging instrument at fair value in any event.

held-to-maturity securities *Marketable debt securities* that a *firm* expects to, and has the ability to, hold to *maturity*; a classification important in *SFAS No. 115 (Codification Topic 320)*, which generally requires the owner to carry *marketable securities* on the *balance sheet* at *market value*, not at *cost*. Under *SFAS*

No. 115 (Codification Topic 320), the firm may show held-to-maturity *debt* securities at *amortized cost*. If the firm lacks either the expectation or the intent to hold the debt security to its maturity, then the firm will show that security at market value as a *security available for sale*.

hidden reserve An amount by which a *firm* has understated *owners' equity*, perhaps deliberately. The understatement arises from an undervaluation of *assets* or overvaluation of *liabilities*. By undervaluing assets on this *period's balance sheet*, the firm can overstate *net income* in some future period by disposing of the asset: actual *revenues* less artificially low *cost* of assets sold *yields* artificially high net income. No *account* in the *ledger* has this title.

hierarchy See *generally accepted accounting principles*.

FIFO (highest-in, first-out) An inventory *cost-flow assumption* used in tax accounting for sales of *marketable securities*. The taxpayer sells a share and chooses from his portfolio of shares the one with the highest cost. This cost-flow assumption might be called *specific identification*, with the understanding that the taxpayer seeks the highest cost share to deem sold.

hire-purchase agreement (contract) United Kingdom: a *lease* containing a *purchase option*.

historical cost (amount) *Acquisition cost*; *original cost*; a *sunk cost*.

historical cost/constant-dollar accounting Accounting based on *historical cost* valuations measured in *constant dollars*. The method restates *nonmonetary items* to reflect changes in the *general purchasing power* of the dollar since the time the *firm* acquired specific *assets* or incurred specific *liabilities*. The method recognizes a *gain* or *loss* on *monetary items* as the firm holds them over time *periods* when the general purchasing power of the dollar changes.

historical exchange rate The rate at which one currency converts into another at the date a *transaction* took place. Contrast with *current exchange rate*.

historical market interest rate Implicit interest rate (*internal rate of return*) in the *cash* inflows and outflows at the time of original issue of the *debt* instrument or the time of first acquisition of the *asset* by an *investor*. The *amortized cost method* of accounting for the *financial instrument* uses this rate throughout the accounting for the item.

historical summary A part of the *annual report* that shows items, such as *net income*, *revenues*, *expenses*, *asset*, and *equity* totals, *earnings per share*, and the like, for five or ten *periods* including the current one. Usually not as much detail appears in the historical summary as in *comparative statements*, which typically *report* as much detail for the two preceding years as for the current year. Annual reports almost always contain comparative statements but not always a historical summary.

holdback Under the terms of a contract, a portion of the *progress payments* that the customer need not pay until the contractor has fulfilled the contract or satisfied financial obligations to subcontractors.

holding company A company that confines its activities to owning *stock* in, and supervising *management* of, other companies. A holding company usually owns a controlling interest in—that is, more than 50% of the voting stock of—the companies whose stock it holds. Contrast with *mutual fund*. See *conglomerate*. In British usage, the term refers to any company with controlling interest in another company.

holding gain or loss Difference between end-of-period *price* and beginning-of-period *price* of an *asset* held during the *period*. The *financial statements* ordinarily do not separately report realized holding gains and losses. *Income* does not usually report unrealized gains at all, except on *trading securities* or other *securities* accounted for with the *fair value option*. See *lower of cost or market*. See *inventory profit* for further refinement, including *gains* on *assets* sold during the period.

holding gain or loss net of inflation Increase or decrease in the *current cost* of an *asset* while it is held; measured in units of *constant dollars*.

horizontal analysis *Time-series analysis*.

horizontal integration An organization's extension of activity in the same general line of *business* or its expansion into supplementary, complementary, or compatible *products*. Compare *vertical integration*.

house account An *account* with a customer who does not pay *sales commissions*. Or, from a sales person's perspective, a customer whose commissions go to another person or to the *firm* itself, the "house."

human resource accounting A term used to describe a variety of proposals that seek to report the importance of human resources—knowledgeable, trained, and loyal employees—in a company's earning process and total *assets*.

hurdle rate *Required rate of return* in a *discounted cash flow* analysis.

hybrid security *Security*, such as a *convertible bond*, containing elements of both *debt* and *owners' equity*.

hypothecation The *pledging* of property, without *transfer* of title or possession, to secure a *loan*.

IAA *Interamerican Accounting Association*.

IASB *International Accounting Standards Board*.

ICMA (Institute of Certified Management Accountants) See *CMA* and *Institute of Management Accountants*.

IDEA; Interactive Data Electronic Applications The SEC's 2009 system for facilitating electronic filing and retrieval of financial data. Registrants will file SEC-required data in format suitable for storage and retrieval in IDEA. Each data item will have a tag—think bar code. By querying the *database* by company name and tag, the user can retrieve, in machine readable form, any particular item of data from the database. Users can then do their own *time-series* and *cross-section analysis* without keying any data.

ideal standard costs *Standard costs* set equal to those that a *firm* would *incur* under the best-possible conditions.

IFRS; International Financial Reporting Standard(s) Refers broadly to all the pronouncements of the *IASB* and, with numbers after the letters, to specific reporting standards issued by the *IASB*.

iGAAP Some writers' acronym for international *accounting standards* and *principles*. We use the term *IFRS*, short for *International Financial Reporting Standards*, for this body of accounting literature.

IIA *Institute of Internal Auditors*.

IMA *Institute of Management Accountants*.

impairment (loss) Reduction in *market value* of an *asset*. When the *firm* has information indicating that its *long-lived assets*, such as *plant*, identifiable *intangibles*, and *goodwill*, have declined in *market value* or will provide a smaller future benefit than originally anticipated, for items other than goodwill, it tests to see if the decline in value is so drastic that the expected future *cash flows* from the asset have declined below *carrying value*. In *U.S. GAAP*, if then-current carrying value exceeds the sum of expected cash flows, an asset impairment has occurred. At the time the firm judges that an impairment has occurred, the firm writes down the carrying value of the asset to its then-current *fair value*, which is the market value of the asset or, if the firm cannot *assess* the market value, the expected *net present value* of the future cash flows. Goodwill has a different impairment test. In *IFRS*, the test for impairment compares the *recoverable amount* to the carrying value.

implicit interest Interest not paid or received. See *interest*, *imputed*. All transactions involving the deferred payment or receipt of *cash* involve interest, whether explicitly stated or not. The implicit interest on a single-payment *note* equals the difference between the amount collected at maturity and the amount lent at the start of the loan. One can compute the implicit *interest rate* per year for loans with a single cash inflow and a single cash outflow from the following equation:

$$\left[\frac{\text{Cash Received at Maturity}}{\text{Cash Lent}} \right]^{(1/t)} - 1$$

where *t* is the term of the loan in years; *t* need not be an integer.

imprest fund *Petty cash fund*.

improvement An *expenditure* to extend the *useful life* of an *asset* or to improve its performance (rate of *output*, *cost*) over that of the original *asset*; sometimes called *betterment*. The *firm* capitalizes such expenditures as part of the asset's cost. Contrast with *maintenance* and *repair*.

imputed cost A *cost* that does not appear in accounting records, such as the *interest* that a *firm* could earn on *cash* spent to acquire inventories rather than, say, government *bonds*. Or, consider a firm that owns the buildings it occupies. This firm has an imputed cost for *rent* in an amount equal to what it would have to pay to use similar buildings owned by another or equal to the amount it could collect from someone renting the premises from the firm. *Opportunity cost*.

imputed interest See *interest*, *imputed*.

in-process R&D (IPR&D) When one *firm* acquires another, the acquired firm will often have *research and development* activities under way that, following *U.S. GAAP*, it has *expensed*. The acquiring firm will pay for these activities to the extent they have value and recognize them as *assets*. The acquirer will record the in-process R&D as an asset even if it does not intend to use it, so long as the R&D would have value for an unidentified market participant.

in the black (red) Operating at a profit (*loss*).

incentive compatible compensation Said of a compensation plan that induces *managers* to act for the interests of owners while acting also in their own interests. For example, consider that a time of rising prices and increasing inventories when using a *LIFO cost-flow assumption* implies paying lower *income taxes* than using *FIFO*. A *bonus* scheme for managers based on accounting *net income* is not incentive-compatible because owners likely benefit more under LIFO, whereas managers benefit more if they report using FIFO. See *LIFO conformity rule* and *goal congruence*.

income Excess of *revenues* and *gains* over *expenses* and *losses* for a period; *net income* or *profit*. The term is sometimes used with an appropriate modifier to refer to the various intermediate amounts shown in a *multiple-step income statement* or to refer to revenues, as in "rental income." See *comprehensive income*.

income accounts *Revenue* and *expense accounts*.

income before taxes On the *income statement*, the difference between all *revenues* and *expenses* except *income tax expense*; *income from continuing operations* before subtractions for income taxes. Some would say all items of revenue, *gains*, *expenses*, and *losses* except *income tax expense*. Contrast with *net income*.

income determination See *determine*.

income distribution account *Temporary account* sometimes debited when the *firm* declares *dividends*; closed to *retained earnings*.

income from continuing operations As defined by *APB Opinion No. 30 (Codification Topic 225)*, all *revenues* less all *expenses* except for the following: results of *operations* (including *income tax* effects) that a *firm* has discontinued or will discontinue; *gains* or *losses*, including *income tax* effects, on disposal of segments of the *business*; *gains* or *losses*, including *income tax* effects, from *extraordinary items*; and the cumulative effect of *accounting changes*.

income (gains, losses) from discontinued operations *Income*, *net of tax* effects, from parts of the *business* that the *firm* has discontinued during the *period* or will discontinue in the near future. Accountants report such items on separate lines of the *income statement*, after *income from continuing operations* but before *extraordinary items*.

income (revenue) bond See *special revenue debt*.

income smoothing A method of timing *business transactions* or choosing *accounting principles* so that the *firm* reports smaller variations in *income* from year to year than it otherwise would. Although some managements set income smoothing as an *objective*, no standard-setter does.

- income statement** The statement of *revenues, expenses, gains, and losses* for the *period*, ending with *net income* for the period. Accountants usually show the *earnings-per-share* amount on the income statement; the *reconciliation* of beginning and ending *balances of retained earnings* may also appear in a combined statement of income and retained earnings. See *income from continuing operations, income from discontinued operations, extraordinary items, multiple-step, and single-step*.
- income summary** In problem solving, an *account* that serves as a surrogate for the *income statement*. In using an income summary, *close* all *revenue* accounts to the Income Summary as *credits* and all *expense accounts* as *debits*. The *balance* in the account, after you make all these *closing entries*, represents income or loss for the period. Then, close the income summary balance to *retained earnings*.
- income tax** An annual tax levied by the federal and other governments on the *taxable income* of an entity, which often does not equal *pretax net income* for *financial reporting*.
- income tax allocation** See *deferred income tax (liability) and intrastatement*.
- income tax expense** *Financial reporting* amount of *income taxes payable* plus *deferred income taxes* arising from *temporary differences*. In the United States, *firms* often use the word “*provision*” in the account title. See “*provision*” for our reasons not to use the word.
- income tax reporting** Computation of *taxable income*, in contrast to *financial statement pretax income*.
- income taxes payable** The amount the taxpayer pays to taxing authority for *income taxes*. As an *account* title, in capital letters, the *balance sheet liability* for taxes now owed to taxing authorities. In the sense of liability, contrast with *Deferred Income Taxes*.
- incremental** An adjective used to describe the increase in *cost, expense, investment, cash flow, revenue, profit, and the like* if the *firm* produces or sells one or more units or if it undertakes an activity. See *differential*.
- incremental cost** See *incremental*.
- incur** Said of an obligation of a *firm*, whether or not that obligation is *accrued*. For example, a firm incurs *interest expense* on a *loan* as time passes but accrues that interest only on payment dates or when it makes an *adjusting entry*.
- indefinite life** See *finite life* for definition and contrast. The concept arises in accounting for *intangibles*; the required accounting does not *amortize assets* with indefinite lives, but subjects them to periodic *impairment* tests. “Indefinite” does not mean “infinite.”
- indenture** See *bond indenture*.
- independence** The mental attitude required of the *CPA* in performing the *attest* function. It implies that the *CPA* is impartial and that the members of the *auditing CPA firm* own no *stock* in the *corporation* being audited.
- independent accountant** The *CPA* who performs the *attest* function for a *firm*.
- independent variable** See *regression analysis*.
- indexation** An attempt by lawmakers or parties to a contract to cope with the effects of *inflation*. Amounts fixed in law or contracts are “indexed” when these amounts change as a given measure of price changes. For example, a so-called escalator clause (*COLA*—cost of living allowance or adjustment) in a labor contract might provide that hourly wages will be increased as the *Consumer Price Index* increases. Many economists have suggested the indexation of numbers fixed in the *income tax* laws. If, for example, the personal *exemption* is \$2,500 at the start of the period, if prices rise by 10% during the period, and if the personal exemption is indexed, then the personal exemption would automatically rise to \$2,750 (= \$2,500 + 0.10 × \$2,500) at the end of the period.
- indirect cost pool** Any grouping of individual *costs* that a *firm* does not identify with a *cost objective*.
- indirect costs** *Production costs* not easily associated with the production of specific *goods and services; overhead costs*. Accountants may *allocate* them on some *arbitrary* basis to specific *products* or departments.
- indirect labor (material) cost** An *indirect cost* for labor (*material*), such as for supervisors (*supplies*).
- indirect method** See *statement of cash flows*.
- individual proprietorship** *Sole proprietorship*.
- Industry Audit Guides** A series of *AICPA* publications providing specific accounting and *auditing principles* for specialized situations. Audit guides have been issued covering government contractors, state and local government units, investment companies, finance companies, brokers and dealers in *securities*, and many other subjects.
- inescapable cost** A *cost* that the *firm* or manager cannot avoid (see *avoidable cost*) because of an action. For example, if management shuts down two operating rooms in a hospital but still must employ security guards in unreduced numbers, the security costs are “inescapable” with respect to the decision to *close* the operating rooms.
- inflation** A time of generally rising *prices*. An increase in prices.
- inflation accounting** Strictly speaking, *constant-dollar accounting*. Some writers incorrectly use the term to mean *current cost accounting*.
- information circular** Canada: a document, accompanying the notice of a *shareholders’ meeting*, prepared in connection with the solicitation of proxies by or on behalf of the *management* of the *corporation*. It contains information concerning the people making the solicitation, election of directors, appointment of *auditors*, and other matters to be acted on at the meeting.
- information system** A system, sometimes formal and sometimes informal, for collecting, processing, and communicating data that are useful for the managerial functions of decision making, planning, and control and for *financial reporting* under the *attest* requirement.
- inherent interest rate** *Implicit interest rate*.
- initial cash flows** Cash flows associated with the beginning of an investment project. Often include *asset cost*, freight and installation costs, reduced by *cash proceeds* from disposing of existing assets made redundant or unnecessary by the new project, and adjusted

- for the *income tax* effect of *gain (loss)* on disposal of existing assets.
- insolvent** Unable to pay *debts* when due; although most insolvent companies have *liabilities* that exceed *assets* in amount, this term applies to a company who is unable to pay even though assets exceed liabilities.
- installment** Partial payment of a *debt* or partial collection of a *receivable*, usually according to a contract.
- installment contracts receivable** The name used for *accounts receivable* when the *firm* uses the *installment method* of recognizing revenue. Its *contra account*, *unrealized gross margin*, appears on the *balance sheet* as a subtraction from the amount receivable.
- installment sales** Sales on *account* when the buyer promises to pay in several separate payments, called *installments*. The seller may, but need not, account for such sales using the *installment method*. If the seller accounts for installment sales with the *sales basis of revenue recognition* for *financial reporting* but with the installment method for income tax returns, then it will have *deferred income tax (liability)*.
- installment (sales) method** Recognizing *revenue* and *expense* (or *gross margin*) from a *sales transaction* in proportion to the fraction of the selling price collected during a period; allowed by the *IRS* for *income tax* reporting but acceptable in *U.S. GAAP* only when the *firm* cannot estimate *cash* collections with reasonable precision. See *realized* (and *unrealized*) *gross margin*.
- Institute of Internal Auditors (IIA)** The national association of accountants who are engaged in *internal auditing*; administers a comprehensive professional examination. Those who pass the exam qualify to be designated *CIA* (*Certified Internal Auditor*).
- Institute of Management Accountants (IMA)** Formerly, the *National Association of Accountants*, *NAA*; a society open to those engaged in *management accounting*; oversees the *CMA* program.
- insurance** A contract for reimbursement of specific *losses*; purchased with insurance premiums. “*Self-insurance*” is not insurance but is merely the uninsured’s willingness to assume the risk of *incurring* losses while saving the premium.
- intangible asset** A nonphysical *right* that gives a *firm* an exclusive or preferred position in the marketplace. Examples are *copyright*, *patent*, *trademark*, *goodwill*, *organization costs*, computer programs, licenses for any of the preceding, government licenses (for example, broadcasting or the right to sell liquor), *leases*, *franchises*, mailing lists, exploration permits, import and export permits, construction permits, and marketing quotas. (Other items, such as advertising costs, are intangibles providing future benefits; neither *U.S. GAAP* nor *IFRS* treat them as accounting *assets*.) Accountants often define “intangible” using a “for example” list, as we have just done because accounting has been unable to devise a definition of “intangible” that will include items such as those listed above but exclude *financial assets*, such as *stock* and *bond certificates*. Accountants classify these items as *tangibles*, even though they give their holders a preferred position in receiving *dividends* and *interest payments*. The *FASB* has defined “intangible” as “assets (not including financial assets) that lack physical substance.” In most accounting contexts, the term “intangible assets” excludes *goodwill*, which, although it is intangible, gets its own classification.
- Interactive Data Electronic Applications** See *IDEA*.
- Interamerican Accounting Association (IAA)** An organization devoted to facilitating interaction between accounting practitioners in the Americas.
- intercompany (intra-entity) elimination** See *eliminations*.
- intercompany (intra-entity) profit** Profit within an organization. If one *affiliated company* sells to another, and the *goods* remain in the second company’s *inventory* at the end of the *period*, then the first company has not yet realized a *profit* by a *sale* to an outsider. The profit is intercompany profit, and the accountant eliminates it from *net income* when preparing *consolidated income statements* or when the firm uses the *equity method*.
- intercompany (intra-entity) transaction** *Transaction* between a *parent company* and a *subsidiary* or between subsidiaries in a *consolidated entity*; the accountant must eliminate the effects of such a transaction when preparing *consolidated financial statements*. See *intercompany profit*.
- intercorporate investment** Occurs when a given *corporation* owns *shares* or *debt* issued by another.
- interdepartment monitoring** An *internal control* device. The advantage of allocating *service department costs* to *production departments* stems from the incentives that this gives those charged with the *costs* to control the costs incurred in the service department. That process of having one group monitor the performance of another is interdepartment monitoring.
- interest** The *charge* or *cost* for using *cash*, usually borrowed *funds*. Interest on one’s own cash used is an *opportunity cost*, *imputed interest*. The amount of interest for a *loan* is the total amount paid by a *borrower* to a *lender* less the amount paid by the lender to the borrower. Accounting seeks to *allocate* that interest over the time of the loan so that the interest rate (= interest charge/amount borrowed) stays constant each period. See *interest rate* for discussion of the quoted amount. See *effective interest rate* and *nominal interest rate*.
- interest costs during construction** A *firm* that self-constructs an *asset*, such as a new factory, will often borrow *funds* to help finance the project. Accounting views the *interest cost* on those borrowings as part of the cost of construction, not a *period expense*. Hence, the firm will *debit* the interest cost, not to *expense*, but to a *construction in process account*. This will increase the cost of the asset and increase subsequent *depreciation charges*. This process delays the recognition of the borrowing costs from immediate interest expense to later depreciation charges, which may themselves be immediate expenses or accumulated in *product cost* accounts (*work-in-process inventory*) until the firm sells the goods manufactured in the facility. A firm *capitalizes* interest costs on self construction even if it does not borrow for the construction, as long as it does have some debt. It will not capitalize any more interest than the amount of interest expense.

interest coverage ratio See *ratio* and **Exhibit 7.12**.

interest factor One plus the *interest rate*.

interest, imputed The difference between the *face amount* and the *present value* of a promise. If a *borrower* merely promises to pay a single amount, sometime later than the present, then the face amount the borrower will repay at *maturity* will exceed the present value (computed at a *fair market interest rate*, called the “imputed interest rate”) of the promise. See also *imputed cost*.

interest method See *effective interest method*.

interest payment This entry warns you not to use the term “interest payment” until you understand why most often it incorrectly describes what you’re talking about. “Interest” means a *charge* for using *funds*. Almost everyone in *business* refers to periodic payments a *borrower* makes to a *lender* (such as *coupon payments* on a *bond*) as “interest payments.” This term causes confusion because, as **Chapter 11** explains, the amount of *interest expense* for a *period* almost never equals the amount of the payments for that same period. The periodic payment will always include some amount to pay interest to the lender, but not necessarily all interest *accrued* since the last payment. If the payment exceeds all accrued interest, then the payment will discharge some of the principal amount. Both payment of interest and payment of principal serve to reduce *debt* (the amount owed), so one all-purpose term suitable for the payment is *debt service payment*. We urge you not to call these payments, nor to think of them as “interest payments” until you understand why they do not typically equal interest expense. You will never be wrong to call them debt-service payments.

interest rate A *basis* used for computing the *cost* of borrowing *funds*; usually expressed as a *ratio* between the number of currency units (for example, dollars) charged for a *period* of time and the number of currency units borrowed for that same period of time. When the writers and speakers do not state a period, they almost always mean a period of one year. See *interest*, *simple interest*, *compound interest*, *effective (interest) rate*, and *nominal interest rate*.

interest rate swap See *swap*.

interfund accounts In governmental accounting, the *accounts* that show *transactions* between *funds*, especially interfund receivables and *payables*.

interim statements Statements issued for *periods* less than the regular, annual *accounting period*. The *SEC* requires most *corporations* to issue interim statements on a quarterly basis. Many other countries require semiannual reports. In preparing interim reports, a problem arises that the accountant can resolve only by understanding whether interim reports should report on the interim period (1) as a self-contained accounting period or (2) as an integral part of the year so that analysts can make forecasts of annual performance. For example, assume that at the end of the first quarter, a retailer has *dipped into old LIFO layers*, depleting its *inventory*, so that it computes *LIFO cost of goods sold* artificially low and *net income* artificially high, relative

to the amounts the *firm* would have computed if it had made the “normal” purchases, equal to or greater than *sales*. The retailer expects to purchase inventory sufficiently large so that when it computes cost of goods sold for the year, there will be no dips into old LIFO layers and *income* will not be artificially high. The first approach will compute the quarterly income from low cost of goods sold using data for the dips that have actually occurred by the end of the quarter. The second approach will compute quarterly income from cost of goods sold assuming that purchases were equal to “normal” amounts and that the firm did not *dip into old LIFO layers*. *APB Opinion No. 28* and the *SEC* require that interim reports be constructed largely to satisfy the second purpose. *IFRS* rules would require the first alternative, but *IFRS* forbids LIFO, so we would need a different example.

internal audit, internal auditor An *audit* conducted by the *firm’s* own employees, called “internal auditors,” to ascertain whether the *firm’s internal control* procedures work as planned. A firm can contract with outside accountants to provide internal audit services, so long as the outsiders do not work for the firm that audits the *financial statements* for *GAAS* reporting. Contrast with an external audit conducted by a *CPA*.

internal controls Policies and procedures designed to provide *management* with reasonable assurances that employees behave in a way that enables the *firm* to meet its organizational goals. See *control system*.

internal failure costs Costs incurred when a *firm* detects nonconforming *products* and *services* before delivering them to customers; these include scrap, rework, and retesting.

internal rate of return (IRR) The *discount rate* that equates the *net present value* of a stream of *cash* outflows and inflows to zero.

internal reporting Reporting for *management’s* use in planning and control. Contrast with *external reporting* for *financial statement* users.

Internal Revenue Service (IRS) Agency of the U.S. Treasury Department responsible for administering the Internal Revenue Code and collecting *income* and certain other *taxes*.

International Accounting Standards (IAS) Standards set between 1973 and 2000 by the *International Accounting Standards Committee* (IASC), which was succeeded in 2001 by the *International Accounting Standards Board* (IASB). The IASC’s standards were known as *International Accounting Standards* (IAS) and are still cited by this name today even if they have subsequently been revised by the IASB.

International Accounting Standards Board (IASB) The independent body, based in London, that sets *International Financial Reporting Standards* (IFRS) and revises *International Accounting Standards* (IAS), which are required to be used, or may be used, in more the 100 countries. It succeeded the *International Accounting Standards Committee* (IASC) in 2001. Since 2002, the IASB and the *Financial Accounting Standards Board* (FASB) have been collaborating on the mutual *convergence* of their respective standards at a high level

of *quality*. See www.iasb.org. Developments concerning IFRS may be monitored on the Deloitte Web site, www.iasplus.com, recommended by the renowned expert on international accounting, Professor Stephen A. Zeff of Rice University.

International Accounting Standards Committee (IASC)

The body that set *International Accounting Standards* (IAS) between 1973 and 2000, which was succeeded in 2001 by the *International Accounting Standards Board* (IASB).

International Federation of Accountants (IFAC) A federation, based in New York, of virtually all national professional accounting bodies around the world. Its committees develop standards in auditing, education, ethics and public sector financial reporting. See www.ifac.com.

International Financial Reporting Interpretations Committee (IFRIC) This committee, based in London, is the interpretive body of the *International Accounting Standards Board* (IASB). Its recommended *interpretations* of *International Accounting Standards* (IAS) and *International Financial Reporting Standards* (IFRS) must be approved by the IASB before they become official.

International Financial Reporting Standards (IFRS) Standards set by the *International Accounting Standards Board* (IASB). Some of the standards previously issued by the *International Accounting Standards Committee* (IASC), even if revised by the IASB since 2001, are still referred to as *International Accounting Standards* (IAS).

International Organization of Securities Commissions IOSCO.

interperiod tax allocation See *deferred income tax (liability)*.

interpolation The estimation of an unknown number intermediate between two (or more) known numbers.

interpretations See *FASB Interpretation FIN*.

intrastatement tax allocation See *tax allocation: intrastatement*.

intrinsic rewards Rewards that come from within the individual, such as the satisfaction from studying hard, providing help to someone in need, or doing a good job. Contrast with *extrinsic rewards*.

intrinsic value of stock option At any time, the excess of the *market price* over the *exercise price* of a *stock option*.

inventoriable costs *Costs incurred* that the *firm* adds to the cost of manufactured *products*; *product costs (assets)* as opposed to *period expenses*.

inventory As a noun, the *balance* in an *asset account*, such as *raw materials*, *supplies*, *work-in-process*, and *finished goods*; as a verb, to calculate the *cost of goods* on hand at a given time or to count items on hand physically. Items held for sale or for production of items produced for sale.

inventory equation *Beginning Inventory* + *Net Additions* – *Withdrawals* = *Ending Inventory*. Ordinarily, additions are net purchases, and withdrawals are *cost of goods sold*. Notice that *ending inventory*, appearing on the *balance sheet*, and *cost of goods sold*, appearing on the *income statement*, must add to a fixed sum. The larger is one; the smaller must be the other. In

valuing inventories, the *firm* usually knows beginning inventory and net purchases. Some *inventory methods* (for example, some applications of the *retail inventory method*) measure costs of goods sold and use the equation to find the cost of ending inventory. Most methods measure cost of goods sold (withdrawals) and use the equation to find the ending inventory. In *current cost* (in contrast to *historical cost*) *accounting*, additions (in the equation) include *holding gains*, whether realized or not. Thus, the current cost *inventory equation* is as follows: Beginning Inventory (at Current Cost) + Purchases (where Current Cost is Historical Cost) + Holding Gains (whether Realized or Not) – Ending Inventory (at Current Cost) = Cost of Goods Sold (Current Cost).

inventory holding gains See *inventory profit*.

inventory layer See *LIFO inventory layer*.

inventory method A vague term, best avoided. In order to specify the accounting for *inventory*, one needs to make four choices: a *cost basis* (such as *historical cost* or *lower of cost or market* or *fair value*), an inclusion rule for manufactured inventories (such as *absorption costing* or *direct costing*), a *cost-flow assumption* (such as *FIFO* or *LIFO* or *weighted average* or, avoiding an assumption—*specific identification*), and the time for making computations (*periodic inventory*—one per period, or *perpetual inventory*). Imprecise usage often refers to “FIFO basis,” “periodic basis,” “absorption costing basis,” and other combinations. Strictly speaking, “inventory basis” refers to the cost basis.

inventory profit A term with several possible meanings. Consider the data in the accompanying illustration. The *firm* uses a *FIFO cost-flow assumption* and derives its *historical cost* data. The assumed *current cost* data resemble those that the *FASB* suggested in *SFAS No. 89 (Codification Topic 255)*. The term “*income from continuing operations*” refers to *revenues less expenses* based on current, rather than historical, costs. To that subtotal, add *realized holding gains* to arrive at *realized (conventional) income*. To that, add *unrealized holding gains* to arrive at economic income. The term “inventory profit” often refers (for example, in some *SEC* releases) to the realized holding gain, \$110 in the illustration. The amount of inventory profit will usually be *material* when the firm uses FIFO and when *prices* rise. Other analysts, including us, prefer to use the term “inventory profit” to refer to the total holding gain, \$300 (= \$110 + \$190, both realized and unrealized), but writers use this meaning less often. In *periods* of rising prices and increasing inventories, the realized holding gains under a FIFO cost-flow assumption will exceed those under LIFO. In the illustration, for example, assume under LIFO that the *historical cost of goods sold* is \$4,800, that *historical LIFO cost of beginning inventory* is \$600, and that *historical LIFO cost of ending inventory* is \$800. Then *income from continuing operations*, based on current costs, remains \$350 (= \$5,200 – \$4,850), realized holding gains are \$50 (= \$4,850 – \$4,800), realized income is \$400 (= \$350 + \$50), the *unrealized holding gain* for the year is \$250 [= (\$1,550 – \$800) – (\$1,100 – \$600)],

and economic income is \$650 (= \$350 + \$50 + \$250). The cost-flow assumption has only one real effect on this series of calculations: the *split* of the total holding gain into realized and unrealized portions. Thus, economic income does not depend on the cost-flow assumption. Holding gains total \$300 in the illustration. The choice of cost-flow assumption *determines* the portion reported as realized.

Inventory Profit Illustration

	(Historical) Acquisition Cost	Current Cost
	Assuming FIFO	
ASSUMED DATA		
Inventory, 1/1	\$ 900	\$1,100
Inventory, 12/31	1,160	1,550
Cost of Goods Sold for the Year	4,740	4,850
Sales for the Year	\$5,200	\$5,200
INCOME STATEMENT FOR THE YEAR		
Sales	\$5,200	\$5,200
Cost of Goods Sold	<u>4,740</u>	<u>4,850</u>
(1) Income from Continuing Operations . .		\$ 350
Realized Holding Gains		<u>110^a</u>
(2) Realized Income = Conventional Net Income (under FIFO)	<u>\$ 460</u>	\$ 460
Unrealized Holding Gain		<u>190^b</u>
(3) Economic Income		<u>\$ 650</u>

^aRealized holding gain during a period is current cost of goods sold less historical cost of goods sold; for the year the realized holding gain under FIFO is \$110 = \$4,850 – \$4,740. Some refer to this as “*inventory profit*.”

^bThe total unrealized holding gain at any time is current cost of inventory on hand at that time less historical cost of that inventory. The unrealized holding gain during a period is the unrealized holding gain at the end of the period less the unrealized holding gain prior to this year. The unrealized holding gain at the beginning of the year in this example is: \$200 = \$1,100 – \$900. Unrealized holding gain during the year = (\$1,550 – \$1,160) – (\$1,100 – \$900) = \$390 – \$200 = \$190.

inventory turnover (ratio) Number of times the *firm* sells the average *inventory* during a *period*; *cost of goods sold* for a period divided by *average inventory* for the period. See *ratio* and **Exhibit 7.12**.

invested capital *Contributed capital*.

investee A company in which another *entity*, the “*investor*,” owns *stock*.

investing activities Acquiring and selling *securities* or productive *assets* expected to produce *revenue* over several *periods*.

investment An *expenditure* to acquire property or other *assets* in order to produce *revenue*; the asset so acquired; hence a current *expenditure* made in anticipation of future *income*; said of other companies’ *securities* held for the *long term* and appearing in a separate section of the *balance sheet*; in this context, contrast with *marketable securities*.

investment in affiliate Investment in a *company* in which the *investor* has *significant influence* or control.

investment in securities See *investment*.

investment center A *responsibility center*, with control over *revenues*, *costs*, and *assets*.

investment credit A reduction in *income tax liability* sometimes granted by the federal government to *firms* that buy new equipment. This item is a *credit* in that the taxpayer deducts it from the *tax bill*, not from *pretax income*. The *tax credit* has been a given percentage of the purchase *price* of the *assets* purchased. The government has changed the actual rules and rates over the years. As of 2009, there is no investment credit. See *flow-through method* and *carryforward*.

investment decision The decision whether to undertake an action involving production of *goods* or *services*; contrast with financing decision.

investment tax credit *Investment credit*.

investment turnover ratio A term that means the same thing as *total assets turnover ratio*.

investments A *balance sheet* heading for *tangible assets* held for *periods* longer than the *operating cycle* and not used in *revenue* production (assets not meeting the definitions of *current assets* or *property, plant, and equipment* or *land* or *goodwill* or other *intangibles*).

investor See *investee* for definition and contrast.

invoice A document showing the details of a *sale* or purchase *transaction*.

IOSCO (International Organization of Securities Commissions) The name, since 1983, of a confederation of regulators of *securities* and futures markets. Members come from more than 80 countries. The IOSCO encourages the *IASB* to eliminate accounting alternatives and to ensure that *accounting standards* are detailed and complete, with *adequate disclosure* requirements, and that *financial statements* are user-friendly.

I.O.U. “I owe you.” An informal document acknowledging a debt, setting out the amount of the debt and signed by the debtor.

IRR *Internal rate of return*.

IRS *Internal Revenue Service*.

isoprofit line On a graph showing feasible production possibilities of two *products* that require the use of the same, limited resources, a line showing all feasible production possibility combinations with the same *profit* or, perhaps, *contribution margin*.

issue A *corporation’s* exchange of its *stock* (or *bonds*) for *cash* or other *assets*. Terminology says the corporation, the “*issuer*,” “*issues*,” not “*sells*,” that *stock* (or *bonds*). Also used in the context of *withdrawing* supplies or *materials* from *inventory* for use in *operations* and of drawing a *check*.

issued shares Those *shares* of *authorized capital stock* that a *corporation* has distributed to the *shareholders*. See *issue*. Shares of *treasury stock* are legally issued but are not *outstanding* for the purpose of voting, *dividend* declarations, and *earnings-per-share* calculations.

J

JIT See *just-in-time inventory*.

job cost sheet A *schedule* showing actual or budgeted inputs for an order.

job development credit The name used for the *investment credit* in the 1971 *tax law*, since repealed, on this subject.

job (order) costing Accumulation of *costs* for a particular identifiable batch of *product*, known as a *job*, as it moves through production.

jobs Customized *products*.

joint cost Cost of simultaneously producing or otherwise acquiring two or more *products*, called *joint products*, that a *firm* must, by the nature of the process, produce or acquire together, such as the cost of beef and hides of cattle or cocoa butter and cocoa powder from cocoa beans. Generally, accounting *allocates* the joint costs of production to the individual products in proportion to their respective *sales* value (or, sometimes and usually not preferred, their respective physical quantities) at the *split-off* point. Such allocations should not affect decision making; that is, good decisions do not depend on any specific allocation or whether the firm allocated the joint costs at all. Other examples include *central corporate expenses* and *overhead* of a department when it manufactures several products. See *common cost* and *sterilized allocation*.

joint cost allocation See *joint cost*.

joint process A process that converts a common input into several *outputs*.

joint product One of two or more *outputs* with significant *value* that a *firm* must produce or acquire simultaneously. See *by-product* and *joint cost*.

joint venture Two or more *firms* invest in a project or company or *division*, sharing *risks* and rewards of ownership and *management*.

journal The place where the *firm* records *transactions* as they occur; the *book of original entry*. Typically, a computerized *database*.

journal entry A dated *journal* recording, showing the *accounts* affected, of equal *debits* and *credits*, with an explanation of the *transaction*, if necessary.

journal voucher A *voucher* documenting (and sometimes authorizing) a *transaction*, leading to an entry in the *journal*.

journalize To make an entry in a *journal*.

judgment(al) sampling A method of choosing a sample in which the analyst subjectively selects items for examination, in contrast to selecting them by statistical methods. Compare *random sampling*.

junk bond A low-rated *bond* that lacks the merit and characteristics of an investment-grade bond. It offers high yields, typically in excess of 15% per year, but also possesses high *risk of default*. Sometimes writers, less pejoratively, call these high-yield bonds. No clear line separates junk from nonjunk bonds.

just-in-time inventory (production) (JIT) In managing *inventory* for manufacturing, a system in which a *firm* purchases or manufactures each component just before the firm uses it. Contrast with systems in which firms acquire or manufacture many parts in advance of needs. JIT systems have much smaller *carrying costs* for inventory, ideally none, but run higher risks of *incurring stockout costs*. As fuel costs have soared, JIT has become less cost effective.

K

k Two to the tenth power (2^{10} or 1,024). The one-letter abbreviation derives from the first letter of the prefix “kilo-” (which means 1,000 in decimal notation).

Kaizen costing A *management* concept that seeks *continuous improvements*, likely occurring in small incremental amounts, by refinements of all components of a production process.

KG (Kommanditgesellschaft) Germany: similar to a general *partnership (OHG)* except that some of its members may limit their liability. One of the partners must be a *general partner* with *unlimited liability*.

kiting A term with slightly different meanings in banking and auditing contexts. In both, however, it refers to the wrongful practice of taking advantage of the *float*, the time that elapses between the deposit of a *check* in one bank and its collection at another. In the banking context, an individual deposits in Bank A a check written on Bank B. He (or she) then writes checks against the deposit created in Bank A. Several days later, he deposits in Bank B a check written on Bank A, to cover the original check written on Bank B. Still later, he deposits in Bank A a check written on Bank B. The process of covering the deposit in Bank A with a check written on Bank B and vice versa continues until the person can arrange an actual deposit of *cash*. In the auditing context, kiting refers to a form of *window dressing* in which the *firm* makes the amount of the *account* Cash in Bank appear larger than it actually is by depositing in Bank A a check written on Bank B without recording the check written on Bank B in the *check register* until after the *close* of the *accounting period*.

know-how Technical or *business* information that is of the type defined under *trade secret* but that a *firm* does not maintain as a secret. The rules of accounting for this *asset* are the same as for other *intangibles*.

L

labor efficiency variance Measures labor productivity by multiplying the *standard labor price* times the difference between the standard labor hours and the actual labor hours.

labor price (or wage) variance Measures the difference between the actual and *standard* labor prices (*wage rates*).

labor variances The *price* (or *rate*) and *quantity* (or *usage*) *variances* for *direct labor* inputs in a *standard costing system*.

laid-down cost Canada and the United Kingdom: the sum of all direct *costs incurred* for procurement of *goods* up to the time of physical receipt, such as *invoice cost* plus customs and excise duties, freight and cartage.

land An *asset* shown at *acquisition cost* plus the *cost* of any nondepreciable *improvements*; in accounting, implies use as a *plant* or office site rather than as a *natural resource*, such as timberland or farmland.

lapping (accounts receivable) The theft, by an employee, of *cash* sent in by a customer to discharge the latter's *payable*. The employee conceals the theft from the

first customer by using cash received from a second customer. The employee conceals the theft from the second customer by using cash received from a third customer, and so on. The process continues until the thief returns the funds or can make the theft permanent by creating a fictitious *expense* or receivable write-off or until someone discovers the fraud.

lapse To expire; said of, for example, an *insurance* policy; discounts that the seller makes available for prompt payment and that the purchaser does not take are said to “lapse.”

last-in, first-out See *LIFO*.

layer See *LIFO inventory layer*.

lead time The time that elapses between placing an order and receiving the *goods* or *services* ordered.

learning curve A mathematical expression of the phenomenon that *incremental unit costs* to produce decrease as *managers* and labor gain experience from practice.

lease A contract calling for the *lessee* (user) to pay the *lessor* (owner) for the right to use an *asset*. A *cancelable lease* allows the lessee to cancel at any time. A *noncancellable lease* requires payments from the lessee for the life of the lease and usually shares many of the economic characteristics of *debt financing*. Some *long-term noncancellable leases* meet the usual criteria for classifying them as *liabilities*, and *U.S. GAAP* requires the *firm* to show them as liabilities. Rules of lease accounting change often and are in flux as we write this. See *SFAS No. 13 (Codification Topic 840)*, *financing lease*, and *operating lease*.

leasehold The *asset* representing the *right* of the *lessee* to use leased property. See *lease* and *leasehold improvement*.

leasehold improvement An *improvement* to leased property. The *firm* should *amortize* it over the *service life* or the life of the *lease*, whichever is shorter.

least and latest rule Paying the least amount of *taxes* as late as possible within the law to minimize the *present value* of tax payments for a given set of *operations*. Sensible taxpayers will follow this rule. When a taxpayer knows that tax rates will increase later, the taxpayer may reduce the present value of the tax burden by paying lower taxes sooner. Each set of circumstances requires its own computations.

ledger A *book of accounts*; book of final entry. See *general ledger* and *subsidiary ledger*. Contrast with *journal*.

legal capital The amount of *contributed capital* that, according to state law, the *firm* must keep permanently in the firm as protection for *creditors*.

legal entity See *entity*.

lender See *loan*.

lessee See *lease*.

lessor See *lease*.

letter stock Privately placed *common shares*; so called because the *SEC* requires the purchaser to sign a letter of intent not to resell the *shares*.

leverage More than proportional result from extra effort or *financing*. Some measure of *output* increases faster than the measure of input. “Operating leverage” refers to the tendency of *net income* to rise at a faster rate than sales in the presence of *fixed costs*. A doubling of *sales*, for example, usually implies a more than doubling of net income. “*Financial leverage*” (or “*capital leverage*”) refers

to an increase in rate of return larger than the increase in explicit financing costs—the increased rate of return on *owners’ equity* (see *ratio* and **Exhibit 7.12**) when an *investment* earns a return larger than the after-tax *interest rate* paid for *debt* financing. Because the *interest charges* on debt usually do not change, any *incremental income* benefits owners and none benefits *debtors*. When writers use the term “leverage” without a qualifying adjective, the term usually refers to financial leverage, the use of *long-term* debt in securing *funds* for the *entity*.

leveraged lease A special form of lease involving three parties: a *lender*, a *lessor*, and a *lessee*. The lender, such as a bank or *insurance* company, lends a portion, say, 80%, of the *cash* required for acquiring the *asset*. The lessor puts up the remainder, 20%, of the cash required. The lessor acquires the asset with the cash, using the asset as *security* for the *loan*, and leases it to the lessee on a *noncancellable* basis. The lessee makes periodic lease payments to the lessor, who in turn makes payments on the loan to the lender. Typically, the lessor has no obligation for the debt to the lender other than transferring a portion of the receipts from the lessee. If the lessee should *default* on the required lease payments, then the lender can repossess the leased asset. The lessor usually has the right to benefit from the tax deductions for *depreciation* on the asset, for *interest expense* on the loan from the lender, and for any *investment credit*. The lease is leveraged in the sense that the lessor, who takes most of the risks and enjoys most of the rewards of ownership, usually borrows most of the funds needed to acquire the asset. See *leverage*.

liability (definition and recognition) An obligation to pay a definite (or reasonably definite) amount at a definite (or reasonably definite) time in *return* for a past or current benefit (that is, the obligation arises from a *transaction* that is not an *executory contract*); a *probable* future sacrifice of economic benefits arising from present obligations of a particular *entity* to *transfer assets* or to provide *services* to other entities in the future as a result of past *transactions* or events. *SFAC No. 6* says that “*probable*” refers to that which we can reasonably expect or believe but that is neither certain nor proved. A liability has three essential characteristics: (1) the obligation to transfer *assets* or services has a specified or knowable date, (2) the entity has little or no discretion to avoid the transfer, and (3) the event causing the obligation has already happened, that is, it is not *executory*. Accounting does not recognize many obligations to pay definite amounts at definite times because it views the mutual obligations of the parties as *executory*, a mere *exchange* of promises.

lien The right of person A to satisfy a claim against person B by holding B’s property as *security* or by seizing B’s property.

life annuity A *contingent annuity* in which payments cease at the death of a specified person(s), usually the *annuitant(s)*.

LIFO (last-in, first-out) An *inventory flow assumption* in which the *cost of goods sold* equals the *cost* of the most recently acquired units and a *firm* computes the *ending inventory cost* from the costs of the oldest units.

- In periods of rising *prices* and increasing *inventories*, LIFO leads to higher reported *expenses* and therefore lower reported *income* and lower *balance sheet* inventories than does FIFO. *IFRS* does not allow LIFO. Contrast with *FIFO*. See *FISH* and *inventory profit*.
- LIFO conformity rule** The *IRS* rule requiring that companies that use a *LIFO cost-flow assumption* for *income taxes* must also use LIFO in computing *income* reported in *financial statements* and forbidding the *disclosure* of *pro forma* results from using any other cost-flow assumption. The *SEC* requires *firms* using LIFO to disclose *balance sheet inventory* amounts valued at *replacement cost* or *current cost*, which is effectively *FIFO* or *average cost*.
- LIFO, dollar-value method** See *dollar-value LIFO method*.
- LIFO inventory layer** A portion of LIFO *inventory cost* on the *balance sheet*. The *ending inventory* in physical quantity will usually exceed the *beginning inventory*. The *LIFO cost-flow assumption* assigns to this increase in physical quantities a cost computed from the *prices* of the earliest purchases during the year. The LIFO inventory then consists of *layers*, sometimes called “slices,” which typically consist of relatively small amounts of physical quantities from each of the past years when purchases in physical units exceeded sales in units. Each layer carries the prices from near the beginning of the *period* when the *firm* acquired it. The earliest layers will typically (in periods of rising prices) have prices much less than current prices. If inventory quantities should decline in a subsequent period—a “*dip into old LIFO layers*”—the latest layers enter *cost of goods sold* first.
- LIFO liquidation** A firm using *LIFO* uses more *inventory* than it acquired during a *period*, hence uses some of the inventory in its *LIFO layers*, the most recent ones first.
- LIFO reserve** *Unrealized holding gain* in *ending inventory*; current or *FIFO historical cost* of ending inventory less *LIFO historical cost*. A better term for this concept is “excess of *current cost* over LIFO historical cost.” See *reserve*.
- limited liability** The legal concept that *shareholders* of *corporations* are not personally liable for *debts* of the company.
- limited partner** A *partnership* member who is not personally liable for *debts* of the partnership. Every partnership must have at least one *general partner*, who is fully liable.
- line-of-business reporting** See *segment reporting*.
- line of credit** An agreement with a bank or set of banks for *short-term* borrowings on demand.
- linear programming** A mathematical tool for finding *profit-maximizing* (or *cost-minimizing*) combinations of *products* to produce when a *firm* has several products that it can produce but faces linear constraints on the resources available in the production processes or on maximum and minimum production requirements.
- liquid** Said of a business with a substantial amount (the amount is unspecified) of *working capital*, especially *quick assets*.
- liquid assets** Cash, current *marketable securities*, and sometimes, current *receivables*.
- liquidating dividend** A *dividend* that a *firm* declares in the winding up of a *business* to distribute its *assets* to the *shareholders*. Usually the recipient treats this as a *return of investment*, not as a *return on investment* or *revenue*.
- liquidation** Payment of a *debt*; *sale of assets* in closing down a *business* or a segment thereof.
- liquidation value per share** The amount each *share* of *stock* will receive if the *board* dissolves a *corporation*; for *preferred stock* with a *liquidation preference*, a stated amount per share.
- liquidity** Refers to the availability of *cash*, or near-cash resources, for meeting a *firm’s* obligations.
- LISH** An acronym, conceived by George H. Sorter, for *last-in, still-here*. LISH is the same *cost-flow assumption* as *FIFO*. Many readers of accounting statements find it easier to think about *inventory* questions in terms of items still on hand. Think of FIFO in connection with *cost of goods sold* but of LISH in connection with *ending inventory*. See *FISH*.
- list price** The published or nominally quoted *price* for *goods*.
- list price method** See *trade-in transaction*.
- loan** An arrangement in which the owner of an *asset*, called the *lender*, allows someone else, called the *borrower*, the use of the asset for a *period* of time, which the agreement setting up the loan usually specifies. The borrower promises to return the asset to the lender and, often, to make a payment for the use of the asset. This term is generally used when the asset is *cash* and the payment for its use is *interest*.
- LOCOM** *Lower of cost or market*.
- long-lived (term) asset** An asset whose benefits the *firm* expects to receive over several years; a *noncurrent* asset, usually includes *investments*, *plant assets*, and *intangibles*.
- long run; long term** A term denoting a time or time *periods* in the future. How far in the future depends on context. For some securities traders, “long-term” can mean anything beyond the next hour or two. For most *managers*, it means the period of time long enough to allow change in total *productive capacity*. For government policy makers, it can mean anything beyond the next decade or two. For geologists, it can mean millions of years. In contrast to the *short run*. Use a hyphen when the phrase is an adjective, but no hyphen when it is a noun.
- long term** See *long run*.
- long-term (construction) contract accounting** The *percentage-of-completion method* of *revenue recognition*; sometimes used to mean the *completed contract method*.
- long-term debt ratio** *Long-term debt* divided by total *assets*. See *ratio* and **Exhibit 7.12**.
- long-term liability (debt)** *Noncurrent liability*.
- long-term liquidity (solventy) risk** The risk that a *firm* will not have sufficient *cash* to pay its *debts* sometime in the *long run*.
- loophole** Imprecise term meaning a technicality allowing a taxpayer (or *financial statements*) to circumvent the intent, without violating the letter, of the law (or *U.S. GAAP*).
- loss** Excess of *cost* over *net proceeds* for a single *transaction*; negative *income* for a *period*; a cost expiration that produced no *revenue*. See *gain* for a discussion of

related and contrasting terms and how to distinguish loss from *expense*.

loss contingency accounting See *contingency*. In U.S. GAAP the term “loss contingency accounting” refers to the process the accountant uses to evaluate a contingency as to whether the item meets the tests to become a balance sheet liability and, if it does, the subsequent accounting. Once the item meets the tests to be a liability, it no longer is a contingency (which means an item disclosed in notes, but not yet a liability) and becomes a liability. Hence the term “loss contingency accounting” might confuse the unwary, as the process removes the “contingency” and results in debiting a loss and crediting a liability, which should not have the word “contingency” or the word “contingent” in its account title. IFRS refers to this process as “provision accounting.”

lower of cost or market (LOCOM) A *basis* for valuation of *inventory* and, formerly in the United States, of *marketable securities*. This basis sets *inventory value* at the lower of *acquisition cost* or *current replacement cost* (market), *subject* to the following constraints. First, the market value of an item used in the computation cannot exceed its *net realizable value*—an amount equal to selling *price* less reasonable *costs* to complete production and to sell the item. Second, the market value of an item used in the computation cannot be less than the net realizable value minus the normal *profit* ordinarily realized on disposition of completed items of this type. The basis chooses the lower-of-cost-or-market valuation as the lower of acquisition cost or replacement cost (market) *subject* to the upper and lower bounds on replacement cost established in the first two steps. Thus,

$$\text{Market Value} = \text{Midvalue of (Replacement Cost, Net Realizable Value, Net Realizable Value Less Normal Profit Margin)}$$

$$\text{Lower of Cost or Market Valuation} = \text{Minimum (Acquisition Cost, Market Value)}$$

The accompanying exhibit illustrates the calculation of the lower-of-cost-or-market valuation for four inventory items. Notice that each of the four possible outcomes occurs once in measuring *lower of cost or market*. Item 1 uses acquisition cost; item 2 uses net realizable value; item 3 uses replacement cost; and item 4 uses net realizable value less normal profit margin.

	Item			
	1	2	3	4
CALCULATION OF MARKET VALUE				
(a) Replacement Cost	\$92	\$96	\$92	\$96
(b) Net Realizable Value	95	95	95	95
(c) Net Realizable Value Less Normal Profit Margin [= (b) - \$9]	86	86	86	86
(d) Market = Midvalue [(a), (b), (c)]	92	95	92	95
CALCULATION OF LOWER OF COST OR MARKET				
(e) Acquisition Cost	90	97	96	90
(f) Market [= (d)]	92	95	92	95
(g) Lower of Cost or Market = Minimum [(e), (f)]	90	95	92	90

A taxpayer may not use the lower-of-cost-or-market basis for inventory on tax returns in combination with a *LIFO cost-flow assumption*. In the context of inventory, once the firm writes down the *asset*, it establishes a new *original cost* basis and ignores subsequent increases in market value in the *accounts*.

The *firm* may apply lower of cost or market to individual items of inventory or to groups (usually called pools) of items. The smaller the group, the more *conservative* the resulting valuation.

Omit hyphens when you use the term as a noun, but use them when you use the term as an adjectival phrase.

IFRS specifies that, in the context of inventories, “market” means net realizable value.

Ltd.; Limited United Kingdom: a private limited *corporation*. The name of a private limited company must include the word “Limited” or its abbreviation “Ltd.”

lump-sum acquisition *Basket purchase*.

M

MACRS *Modified Accelerated Cost Recovery System*.

See *Accelerated Cost Recovery System*. Since 1986, MACRS has been the *accelerated depreciation* method required for U.S. *income tax* purposes.

maintenance *Expenditures* undertaken to preserve an *asset's service potential* for its originally intended life. These expenditures are *period expenses* or *product costs*. Contrast with *improvement*, and see *repair*.

majority, active investments A *firm* owns more than 50% of another firm, giving it majority ownership, typically because it wishes to control some aspects of the other firm's *operations*, giving it an active, not passive, motive.

make money; making money Users of these words can mean any of the following: earn *income*; earn *other comprehensive income*; save *opportunity costs*; earn *revenues*; earn *gross margin*; sell for *cash*; generate *cash flow from operations*; and maybe others, as well, not to mention counterfeiting. You can see that you should avoid these words in clear communications. See *money*.

make-or-buy decision A managerial decision about whether the *firm* should produce a *product* internally or purchase it from others. Proper make-or-buy decisions in the *short run* result only when a firm considers *incremental costs* in the analysis.

maker (of note) (of check) One who signs a *note* to borrow; one who signs a *check*; in the latter context, synonymous with “*drawer*.” See *draft*.

management Executive authority that operates a *business*.

management accounting See *managerial accounting*.

Management Accounting Publication of the *IMA*.

management audit An *audit* conducted to ascertain whether a *firm* or one of its *operating* units properly carries out its *objectives*, policies, and procedures; generally applies only to activities for which accountants can specify qualitative standards. See *audit* and *internal audit*.

management by exception A principle of *management* in which *managers* focus attention on performance only if it differs significantly from that expected.

- management by objective (MBO)** A *management* approach designed to focus on the definition and attainment of overall and individual *objectives* with the participation of all levels of management.
- management discussion and analysis** See *management's discussion and analysis*.
- management information system (MIS)** A system designed to provide all levels of *management* with timely and reliable information required for planning, control, and evaluation of performance.
- management's discussion and analysis (MD&A)** A discussion of *management's* views of the company's performance; required by the *SEC* to be included in the *10-K* and in the *annual report to shareholders*. The information typically contains discussion of such items as *liquidity*, results of *operations*, *segments*, and the effects of *inflation*.
- managerial (management) accounting** Reporting designed to enhance the ability of *management* to do its job of decision making, planning, and control. Contrast with *financial accounting*.
- managers** Business executives with decision-making authority who are *agents* of the *shareholders* and are responsible for safeguarding and properly using the *firm's* resources.
- mandatorily redeemable preferred share** See *redeemable (preferred shares)*.
- manufacturing cost** Cost of producing *goods*, usually in a factory.
- manufacturing expense** An imprecise, and generally incorrect, alternative title for *manufacturing overhead*. The term is generally incorrect because these *costs* are usually *product costs*, not *expenses*.
- manufacturing firm** A *firm* that converts *raw materials* and labor into *finished goods*, or intermediate goods, which can be parts of finished goods assembled by others. A firm that assembles parts into goods nearer to becoming finished goods.
- manufacturing overhead** General *manufacturing costs* that are not directly associated with identifiable units of product and that the *firm* incurs in providing a *capacity* to carry on productive activities. Accounting treats *fixed manufacturing overhead* cost as a *product cost* under *full absorption costing* but as an *expense* of the *period* under *variable costing*, which none of the *IRS*, *U.S. GAAP*, and *IFRS* allow.
- margin** Revenue less specified *expenses*. See *contribution margin*, *gross margin*, and *current margin*.
- margin of safety** Excess of actual, or budgeted, *sales* over *breakeven sales*; usually expressed in dollars but may be expressed in units of *product*.
- marginal cost** The *incremental cost* or *differential cost* of the last unit added to production or the first unit subtracted from production. See *cost terminology* and *differential* for contrast.
- marginal costing** *Variable costing*.
- marginal revenue** The increment in *revenue* from the *sale* of one additional unit of *product*.
- marginal tax rate** The amount, expressed as a percentage, by which *income taxes* increase when *taxable income* increases by one dollar. Contrast with *average tax rate*.
- mark to market** As a verb, to record an item in the *books* at *current fair value*. When used as an adjective, such as mark-to-market accounting, hyphenate the phrase.
- markdown** See *markup* for definition and contrast.
- markdown cancellation** See *markup* for definition and contrast.
- market-based transfer price** A *transfer price* based on external market data rather than internal company data.
- market multiple** The ratio of the market price of a share of stock to the *earnings per share* of that security.
- market (interest) rate** The rate of *interest* a company must pay to borrow *funds* currently. See *effective rate*.
- market price** See *fair value*.
- market value** *Fair market value*.
- marketable securities; marketable debt securities; marketable equity securities** Other companies' *bonds* and *stocks* a company holds that it can readily sell on *stock exchanges* or *over-the-counter* markets and that the company plans to sell as *cash* is needed; classified as *current assets* and as part of "cash" in preparing the *statement of cash flows*. If the *firm* holds these same securities for *long-term* purposes, it will classify them as *noncurrent assets*. *SFAS No. 115 (Codification Topic 320)* requires that all *marketable equity* and all *debt securities* (except those debt securities the holder has the ability and intent to hold to maturity) appear at market value on the *balance sheet*. The firm reports changes in market value in income for *trading securities* but *debts holding losses* (or *credits holding gains*) directly to *owners' equity* accounts for *securities available for sale* unless the firm has elected the *fair value option*.
- marketing costs** *Costs* incurred to sell; includes locating customers, persuading them to buy, delivering the *goods* or *services*, and collecting the *sales proceeds*.
- markup** See *markup* for definition and contrast.
- markup** The difference between the original selling price of items acquired for *inventory* and the *cost*. Precise usage calls this "*markon*," although many businesspeople use the term "markup." Because of confusion of this use of "markup" with its precise definition (see below), terminology sometimes uses "original markup." If the originally established retail *price* increases, the precise term for the amount of price increase is "markup," although terminology sometimes uses "additional markup." If a *firm* reduces selling price, terminology uses the terms "*markdown*" and "markup cancellation." "Markup cancellation" refers to reduction in price following "additional markups" and can, by definition, be no more than the amount of the additional markup; "cancellation of additional markup," although not used, is descriptive. "Markdown" refers to price reductions from the original retail price. A price increase after a markdown is a "*markdown cancellation*." If *original cost* is \$12 and original selling price is \$20, then *markon* (original markup) is \$8; if the firm later increases the price to \$24, the \$4 increase is markup (additional markup); if the firm later lowers the price to \$21, the \$3 reduction is markup cancellation; if the firm further lowers the price to \$17, the

- \$4 reduction comprises \$1 markup cancellation and \$3 markdown; if the firm later increases the price to \$22, the \$5 increase comprises \$3 of markdown cancellation and \$2 of markup (additional markup). Accountants track markup cancellations and markdowns separately because they deduct the former (but not the latter) in computing the selling prices of *goods available for sale* for the denominator of the *cost percentage* used in the conventional *retail inventory method*.
- markup cancellation** See *markup* for definition and contrast.
- markup percentage** *Markup* divided by (*acquisition cost* plus *markup*).
- master budget** A *budget* projecting all *financial statements* and their components.
- matching convention** The concept of recognizing *cost* expirations (*expenses*) in the same *accounting period* during which the firm recognizes related *revenues*; combining or simultaneously recognizing the *revenues* and *expenses* that jointly result from the same *transactions* or other events.
- material** As an adjective, it means relatively important, capable of influencing a decision (see *materiality*); as a noun, *raw material*.
- materiality** The concept that accounting should disclose separately only those events that are relatively important (no operable definition yet exists) for the *business* or for understanding its statements. *SFAC No. 2* suggests that accounting information is material if “the judgment of a reasonable person relying on the information would have been changed or influenced by the omission or misstatement.” The *SEC’s SAB 99* provides the current rule on materiality, based on *SFAC No. 2*.
- materials efficiency variance** Measures materials *waste* by multiplying the *standard materials price* times the difference between the *standard materials quantity* used and the *actual materials quantity* used.
- materials price variance** Measures the difference between the *actual* and *standard materials prices*. Measures the effect of *price* differences by multiplying the *quantity purchased* times the difference between the *actual price paid* and the *standard price*.
- materials variances** *Price* and *quantity variances* for *direct materials* in *standard costing systems*; difference between *actual cost* and *standard cost*.
- matrix** A rectangular array of numbers or mathematical symbols.
- maturity** The date at which an obligation, such as the *principal* of a *bond* or a *note*, becomes due.
- maturity value** The amount expected to be collected when a *loan* reaches *maturity*. Depending on the context, the amount may be *principal* or *principal and interest*.
- MBO** *Management by objective*.
- MD&A** *Management’s discussion and analysis* section of the *annual report*.
- measuring unit** See *attribute measured* for definition and contrast.
- merchandise** *Finished goods* bought by a retailer or wholesaler for resale; contrast with *finished goods* of a manufacturing *business*.
- merchandise costs** Costs incurred to sell a *product*, such as *commissions* and advertising. Some use this term to refer to the cost of merchandise acquired.
- merchandise firm; merchandising business** As opposed to a *manufacturing* business or service business, one that purchases (rather than manufactures) *finished goods* for resale.
- merchandise turnover** *Inventory turnover* for merchandise. See *ratio* and **Exhibit 7.12**.
- merger** The joining of two or more *businesses* into a single *economic entity*. See *holding company*.
- minority, active investment** *Minority investment* where the *investor* holds sufficient *shares* to be able to exercise *significant influence* over the other *firm’s operating*, or investing, or financial decisions.
- minority interest (income statement and balance sheet)** See *noncontrolling interest*.
- minority investment** A holding of less than 50% of the voting *shares* in another corporation; accounted for with the *equity method* when the *investor* owns sufficient shares that it can exercise “*significant influence*” and as *marketable securities* otherwise. See *mutual fund*. Generally, a holding of at least 20% but less than 50% of the voting stock in another corporation.
- minority, passive investment** A holding of less than 50% of the voting *shares* in another *corporation* when the *investor* owns insufficient *shares* to enable it to exercise *significant influence*.
- minutes book** A record of all actions authorized at corporate *board of directors* or *shareholders’ meetings*.
- MIS** *Management information system*.
- mix variance** One of the *manufacturing variances*. Many *standard cost* systems specify combinations of inputs—for example, labor of a certain skill and materials of a certain *quality* grade. Sometimes combinations of inputs used differ from those contemplated by the standard. The mix variance attempts to report the cost difference caused by those changes in the *combination* of inputs. Can be a sales mix variance.
- mixed cost** A *semifixed* or a *semivariable* cost.
- model** See *business model*.
- Modified Accelerated Cost Recovery System (MACRS)**
Name used for the *Accelerated Cost Recovery System*, originally passed by Congress in 1981 and amended by Congress in 1986.
- modified cash basis** The *cash basis of accounting* with long-term *assets* accounted for using the *accrual basis of accounting*. Most users of the term “cash basis of accounting” actually mean “modified cash basis.”
- monetary amount** See *attribute measured* for the discussion of this concept as a *measuring unit*.
- monetary assets and liabilities** See *monetary items*.
- monetary gain or loss** The *firm’s gain* or *loss* in *general purchasing power* as a result of its holding *monetary assets* or *liabilities* during a *period* when the general purchasing power of the dollar changes; explicitly reported in *constant-dollar accounting*. During periods of *inflation*, holders of *net* monetary assets lose, and holders of *net* monetary liabilities gain, general purchasing power. During periods of *deflation*, holders of *net* monetary

assets gain, and holders of net monetary liabilities lose, general purchasing power.

monetary items Amounts fixed in terms of currency (such as dollars or euros) by statute or contract; *cash*, *accounts receivable*, *accounts payable*, and *debt*. The distinction between monetary and *nonmonetary items* is important for *constant-dollar accounting* and for *foreign exchange gain or loss* computations. In the foreign exchange context, *account* amounts denominated in the *firm's* own currency are not monetary items, whereas amounts denominated in any other currency are monetary.

monetary-nonmonetary method *Foreign currency translation* method that translates all *monetary items* at the *current exchange rate* and translates all *nonmonetary items* at the *historical rate*. Contrast with *all-current method*.

money A word seldom used with *precision* in accounting, at least in part because economists have not yet agreed on its definition. Economists use the term to refer to both a medium of exchange and a store of value. See *cash* and *monetary items*. Consider a different set of issues concerning the phrase, “making money.” Lay terminology uses this to mean “earning income” whether, as a result, the firm increased its *cash balances* or other *net assets*. The user does not typically mean that the firm has increased cash equal to the amount of net income, although the unaware listeners often think the phrase means this. Given that usage equates “making money” with “earning income,” in this sense “money” has a *credit* balance not a *debit* balance. Since cash typically has a debit balance, the phrase “making money” is even more troublesome. Consider the following language from the U.S. statutes on forfeitures required of some who commit illegal acts: “. . . the amount of money acquired through illegal *transaction*” Does the law mean the cash left over after the lawbreaker has completed the illegal transactions the income earned from the transactions or something else?

Focus on the following four sets of questions and see how much difficulty you have in answering the questions associated with 3 and 4.

1. I took a cab and it cost \$10; I spent money. Did the cabbie earn money? If so, how much?
2. I asked Jerry to give me a ride and he did, so I didn't spend \$10. Did I earn money? If so, how much?
3. I decided to walk, so I didn't spend \$10. Did I earn money? If so, how much?
4. I canceled the trip, so I didn't spend \$10. Did I earn money? If so, how much?

Now, you can better appreciate why careful writers avoid using the word.

“Money” sometimes refers to debits and sometimes to credits; “making money” sometimes means earning accounting income and sometimes avoiding a cost, not reported in accounting, so careful writing about accounting avoids the word.

Another prevalent misunderstanding involving the word “money” results from the accounting for *reserves*, itself a term careful writers avoid for reasons explained in its definition in this glossary. You will often read something like, “Groupon (or some other company) set aside money in case customers asked for refunds. It didn't set aside enough money.” The lay reader does not typically understand that the company, such as Groupon, estimated a liability for returns by debiting an expense account and crediting a liability account, sometimes labeled, confusingly, a *reserve*, for the amount of estimated returns. See the *allowance method*, as this accounting is the allowance method used for returns. The journal entry described above reduces income, but the company has not set aside any cash in other funds. If the company were to have set up a fund, it would have credited cash and debited an asset such as Funds Segregated to Pay for Returns. Companies rarely set up such special funds. There is no way the reader uninformed about reserves and “money” can understand that “setting aside money” does not mean setting aside cash. The *Wall Street Journal* reported, confusingly, “. . . it . . . had failed to set aside enough money for customer refunds.” The company has set aside zero cash or other funds; it had created an estimated liability that turned out to be too small.

money purchase plan A *pension plan* in which the employer contributes a specified amount of *cash* each year to each employee's *pension fund*; sometimes called a *defined-contribution plan*; contrast with *defined-benefit plan*. The plan does not specify the benefits ultimately received by the employee, since these benefits depend on the rate of return on the cash invested. *ERISA* makes money purchase plans relatively more attractive than they had been. Most newly formed companies since the 1980s have used defined contribution plans, and, since the late 1990s, many industrial *firms*, where defined-benefit plans were most common, have eliminated their defined-benefit plans.

mortality table Data of life expectancies or probabilities of death for persons of specified age and sex.

mortgage A claim given by the *borrower* (mortgagor) to the *lender* (mortgagee) against the borrower's property in *return* for a *loan*.

moving average An *average* computed on observations over time. As a new observation becomes available, analysts drop the oldest one so that they always compute the average for the same number of observations and use only the most recent ones.

moving average method *Weighted-average inventory method*.

multiple deliverable contract Same as *multiple element contract*.

multiple element contract The seller makes a single *sale* of a *combination* of *goods* and *services*, which the seller must disaggregate for *revenue recognition*. For example, consider that Xerox sells a copier, toner, paper, a service contract, and emergency repair services for a single price.

multiple-step Said of an *income statement* that shows various subtotals of *expenses* and *losses* subtracted from *revenues* to show intermediate items such as *operating income*, income of the enterprise (operating income plus *interest* income), income to *investors* (income of the enterprise less *income taxes*), *net income* to *shareholders* (income to investors less interest charges), and income retained (net income to shareholders less *dividends*). See *entity theory*.

municipal bond A *bond* issued by a village, town, or city, or an *operating* unit of one of them, such as a library or a hockey arena. *Interest* on such bonds is generally exempt from *federal income taxes* and from some state income taxes. Because bonds issued by state and county governments often have these characteristics, terminology often calls such bonds “municipals” as well. These are also sometimes called *tax-exempts*.

mutual fund An *investment* company that *issues* its own stock to the public and uses the *proceeds* to invest in *securities* of other companies. A mutual fund usually owns less than 5% or 10% of the stock of any one company and accounts for its investments using current *market values*. Contrast with *holding company*.

mutually exclusive (investment) projects Competing *investment* projects in which accepting one project eliminates the possibility of undertaking the remaining projects.

mutually unexecuted contract *Executory contract*.

N

NAARS *National Automated Accounting Research System*.

NASDAQ (National Association of Securities Dealers Automated Quotation System) A computerized system to provide brokers and dealers with *price* quotations for securities traded *over-the-counter* as well as for some *NYSE* securities.

National Association of Accountants (NAA) Former name for the *Institute of Management Accountants (IMA)*.

National Automated Accounting Research System (NAARS) A computer-based information-retrieval system containing, among other things, the complete text of most public corporate *annual reports* and *Forms 10-K*. Users may access the system through the *AICPA*.

natural business year A 12-month *period* chosen as the reporting period so that the end of the period coincides with a low point in activity or inventories. See *ratio* and **Exhibit 7.12** for a discussion of analyses of *financial statements* of companies using a natural business year.

natural classification *Income statement* reporting form that classifies *expenses* by nature of items acquired, that is, *materials*, *wages*, *salaries*, *insurance*, and *taxes*, as well as *depreciation*. Contrast with *functional classification*.

natural resources Timberland, oil and gas wells, ore deposits, and other products of nature that have economic value. Terminology uses the term *depletion* to refer to the process of *amortizing* the cost of natural resources. Natural resources are nonrenewable (for example, oil, coal, gas, ore deposits) or renewable (timberland, sod fields); terminology often calls the former *wasting*

assets. See also *reserve recognition accounting* and *percentage depletion*.

negative confirmation See *confirmation*.

negative goodwill See *goodwill*. When a *firm* acquires another company, and the *fair value* of the *net assets* acquired exceeds the purchase price, *U.S. GAAP* requires that the acquiring company recognize a gain from a *bargain purchase*.

negotiable Legally capable of being transferred by *endorsement*. Usually said of *checks* and *notes* and sometimes of *stocks* and *bearer bonds*, which U.S. law no longer allow.

negotiated transfer price A *transfer price* set jointly by the buying and the selling divisions.

net Reduced by all relevant deductions.

net assets Total *assets* minus total *liabilities*; equals the amount of *owners' equity*. Often, we find it useful to split the *balance sheet* into two parts: owners' equity and all the rest. The “rest” is total assets less total liabilities. To take an example, consider one definition of *revenue*: the increase in owners' equity accompanying the *net assets* increase caused by selling *goods* or rendering *services*. An alternative, more cumbersome way to say the same thing is: the increase in owners' equity accompanying the *assets' increase* or the *liabilities' decrease*, or both, caused by selling goods or rendering services. Consider the definition of *goodwill*: the excess of purchase *price* over the *fair value* of identifiable net assets acquired in a purchase *transaction*. Without the phrase “net assets,” the definition might be as follows: the excess of purchase price over the fair value of identifiable assets reduced by the fair value of identifiable liabilities acquired in a purchase transaction.

net bank position From a *firm's* point of view, *cash* in a specific bank less *loans* payable to that bank.

net book value *Book value*. *Carrying value*.

net current asset value (per share) *Working capital* divided by the number of *common shares outstanding*. Some analysts think that when a common share trades in the market for an amount less than *net current asset* value, the shares are undervalued and *investors* should purchase them. We find this view naive because it ignores, generally, the efficiency of *capital markets* and, specifically, unrecorded obligations, such as for *executory contracts* and contingencies, not currently reported as *liabilities* in the *balance sheet* under *U.S. GAAP*.

net current assets *Working Capital* = *Current Assets* – *Current Liabilities*.

net defined benefit liability (asset) *IFRS* term for the excess of *liabilities* over *assets* (or excess of assets over liabilities) for all a *firm's* *defined benefit pension plans*.

net income The excess of all *revenues* and *gains* for a *period* over all *expenses* and *losses* of the period. The *FASB* is proposing to discontinue use of this term and substitute *earnings*. See *comprehensive income*.

net loss The excess of all *expenses* and *losses* for a period over all *revenues* and *gains* of the period; negative *net income*.

net markup In the context of *retail inventory methods*, *markups* less markup cancellations; a figure that usually ignores *markdowns* and *markdown cancellations*.

- net of tax method** A nonsanctioned method for dealing with the problem of *income tax allocation*. The method subtracts deferred *tax* items from specific *asset* amounts rather than showing them as a *deferred credit* or *liability*.
- net of tax reporting** Reporting, such as for *income from discontinued operations*, *extraordinary items*, and *prior-period adjustments*, in which the *firm* adjusts the amounts presented in the *financial statements* for all *income tax* effects. For example, if an *extraordinary loss* amounted to \$10,000, and the *marginal tax rate* was 40%, then the extraordinary item would appear “*net of taxes*” as a \$6,000 loss. Hence, not all a firm’s income taxes necessarily appear on one line of the income statement. The reporting *allocates* the total taxes among *income from continuing operations*, *income from discontinued operations*, *extraordinary items*, cumulative effects of *accounting changes*, and *prior-period adjustments*.
- net operating profit** *Income from continuing operations*.
- net present value** Discounted or *present value* of all *cash inflows* and *outflows* of a project or of an *investment* at a given *discount rate*.
- net price method (of recording purchase or sales discounts)** Method that records a *purchase* (or *sale*) at its *invoice price* less all *discounts* made available, under the assumption that the *firm* will take nearly all discounts offered. The purchaser *debits*, to an *expense account*, *discounts lapsed* through failure to pay promptly. For purchases, *management* usually prefers to know about the amount of discounts lost because of inefficient *operations*, not the amounts taken, so that most *managers* prefer the net price method to the *gross price method*.
- net realizable (sales) value** *Current selling price* less reasonable *costs* to complete production and to sell the item. Also, a method for *allocating joint costs* in proportion to *realizable values* of the *joint products*. For example, joint products A and B together cost \$100; A sells for \$60, whereas B sells for \$90. Then a firm would allocate to A $(\$60/\$150) \times \$100 = 0.40 \times \$100 = \$40$ of cost, while it would allocate to B $(\$90/\$150) \times \$100 = \60 of cost. This *cost allocation* should not, however affect any decision making.
- net sales** Sales (at gross *invoice* amount) less *returns*, *allowances*, freight paid for customers, and *discounts* taken.
- net settlement** Many *derivative* contracts obligate both *counterparties* to do something. (Most exchange traded derivatives only require only one party to do something.) “Net settlement” means that the contract provides that, when the derivative contract settles, one of the counterparties pays the other the *fair value* of the contract. For example, at the *maturity* of the derivative A owes B 9% of \$100,000 and B owes A 6% of \$110,000. Rather than A writing B a *check* for \$9,000 while B writes A check for \$6,600, net settlement allows A to write B a check for \$2,400 (+ \$9,000 – \$6,600).
- net working capital** *Working capital*; the term “*net*” is redundant in accounting. Financial analysts sometimes mean *current assets* when they speak of working capital, so for them the “net” is not redundant.
- net worth** A misleading term with the same meaning as *owners’ equity*. Avoid using this term; accounting valuations at historical cost do not show economic worth.
- network analysis** A project planning and scheduling method, usually displayed in a diagram, that enables *management* to identify the interrelated sequences that it must accomplish to complete the project.
- new product development time** The period between a *firm’s* first consideration of a *product* and delivery of it to the customer.
- New York Stock Exchange (NYSE)** A public market in which those who own seats (a seat is the right to participate) trade various corporate *securities* for themselves and for their customers.
- next-in, first-out** See *NIFO*.
- NIFO (next-in, first-out)** A *cost-flow assumption*, one not allowed by *U.S. GAAP*. In making decisions, many *managers* consider *replacement costs* (rather than *historical costs*) and refer to them as NIFO costs.
- no par** Said of *stock* without a *par method*.
- nominal accounts** *Temporary accounts*, such as *revenue* and *expense accounts*; contrast with *balance sheet accounts*. The firm *closes* all nominal accounts at the end of each *accounting period* to *retained earnings*.
- nominal amount (value)** An amount stated in dollars, in contrast to an amount stated in *constant dollars*. Contrast with *real amount (value)*.
- nominal dollars** The *measuring unit* giving no consideration to differences in the *general purchasing power* of the dollar over time. The *face amount* of currency or coin, a *bond*, an *invoice*, or a *receivable* is a nominal-dollar amount. When the analyst adjusts that amount for changes in general purchasing power, it becomes a *constant-dollar* amount.
- nominal interest rate** A rate specified on a *debt* instrument; usually differs from the market or *effective rate*; also, a rate of *interest* quoted for a year. If the interest compounds more often than annually, then the *effective interest rate* exceeds the nominal rate.
- noncancellable** See *lease*.
- nonconsolidated subsidiary** An *intercorporate investment* in which the *parent* owns more than 50% of the *shares* of the *subsidiary* but accounts for the investment with the *cost method*. This might happen when the *firm* owns another firm located in a country, such as Venezuela as this book goes to press, where the owner cannot easily remove *cash* and other *assets* from the country.
- noncontributory** Said of a *pension plan* in which only the employer makes payments to a *pension fund*. Contrast with *contributory*.
- noncontrollable cost** A cost that a particular *manager* cannot control.
- noncontrolling interest** A *balance sheet account* on *consolidated statements* showing the *equity* in a less-than-100%-owned *subsidiary* company; equity allocable to those who are not part of the controlling (*majority*) interest; classified as *shareholders’ equity* on the consolidated *balance sheet*. The *income statement* must subtract the noncontrolling interest in the current *period’s income* of the less-than-100%-owned

- subsidiary to arrive at *net income* for the period. Previous terminology referred to noncontrolling interest as the *minority interest*.
- noncurrent** Of a *liability*, due in more than one year (or more than one *operating cycle*); of an *asset*, the firm will enjoy the future benefit in more than one year (or more than one operating cycle).
- nonexpendable fund** A governmental fund whose *principal*, and sometimes *earnings*, the *entity* may not spend.
- nonfinancial assets** See *financial assets* for contrast.
- noninterest-bearing note** A *note* that does not specify explicit interest. The *face value* of such a note will exceed its *present value* at any time before *maturity* value so long as *interest rates* are positive. *APB Opinion No. 21 (Codification Topic 835)* requires that firms report the present value, not face value, of long-term noninterest-bearing notes as the *asset* or *liability* amount in financial statements. For this purpose, the firm uses the *historical interest rate*. See *interest*, *imputed*.
- nonmanufacturing costs** All *costs* incurred other than those necessary to produce *goods*. Typically, only *manufacturing firms* use this designation.
- nonmonetary items** All items that are not monetary. See *monetary items*.
- non-operating** In the *income statement* context, said of *revenues* and *expenses* arising from *transactions* incidental to the company's main line(s) of *business*; in the *statement of cash flows* context, said of all financing and investing sources or uses of *cash* in contrast to *cash provided by operations*. See *operations*.
- nonprofit corporation** An incorporated *entity*, such as a hospital, with owners who do not share in the *earnings*. It usually emphasizes providing services rather than maximizing *income*.
- nonreciprocal transfer** Transfer of *assets* or *services* from an *entity* without receiving something of equal value in return.
- nonrecurring** Said of an event that is not expected to happen often for a given *firm*. *APB Opinion No. 30 (Codification Topic 225)* requires firms to disclose separately the effects of such events as part of ordinary items unless the event is also unusual. See *extraordinary item*.
- nonregistrant** *U.S. SEC registrant* for definition and contrast.
- nonvalue-added activity** An activity that causes *costs* without increasing a *product's* or *service's value* to the customer.
- normal cost** Former name for *service cost* in accounting for pensions and other postemployment benefits.
- normal costing** Method of charging costs to *products* using actual *direct materials*, actual *direct labor*, and *predetermined factory overhead rates*.
- normal costing system** *Costing* based on actual material and labor costs but using *predetermined overhead rates* per unit of some *activity* basis (such as *direct labor hours* or *machine hours*) to apply overhead to production. Management decides the rate to *charge* to production for overhead at the start of the *period*. At the end of the period the accountant multiplies this rate by the actual number of units of the base activity (such as actual direct labor hours worked or actual machine hours used during the period) to apply overhead to production.
- normal spoilage** Costs incurred because of ordinary amounts of *spoilage*. Accounting *prorates* such costs to units produced as *product costs*. Contrast with *abnormal spoilage*.
- normal standard cost, normal standards** The *cost* a *firm* expects to incur under reasonably efficient *operating conditions* with adequate *provision* for an average amount of rework, *spoilage*, and the like.
- normal volume** The level of production that will, over a time span, usually one year, satisfy purchasers' demands and provide for reasonable *inventory levels*.
- not-for-profit** Said of an entity that uses the excess of *receipts* over *expenditures* (or *revenues* over *expenses*) to achieve its stated goals, rather than distribute the excess to owners. Examples include private universities, some private hospitals, the Girl Scouts, and the United Way.
- note (payable and receivable)** An unconditional written promise by the *maker (borrower)* to pay a certain amount on demand or at a certain future time. The borrower has the *payable* and the *lender*, the *receivable*.
- note receivable discounted** A *note* assigned by the holder to another. The new holder of the note typically pays the old holder an amount less than the *face value* of the note, hence the word "discounted." If the old holder assigns the note to the new holder *with recourse*, the old holder has a *contingent liability* until the *maker of the note* pays the *debt*. See *factoring*.
- notes** The preferred word, not "*footnotes*," for referring to the detailed information included by management as an integral part of the *financial statements* and covered by the *auditor's report*.
- notional amounts** A number of currency units, bushels, shares, or other units specified in a *derivative contract*. The notional amount of a derivative typically exceeds *fair value* of a derivative contract; for example, a swap contract on a \$100 million borrowing might have a fair value under \$1 million.
- NOW (negotiable order of withdrawal) account** *Negotiable order of withdrawal*. A *savings account* whose owner can draw an order to pay, much like a *check* but technically not a check, and give it to others, who can redeem the order at the savings institution.
- number of days sales in inventory (or receivables)** *Days of average inventory on hand (or average collection period for receivables)*. See *ratio* and **Exhibit 7.12**.
- NV (naamloze vennootschap)** Netherlands: a public *limited liability company*.
- NYSE** *New York Stock Exchange*.

O

OASDI *Old Age, Survivors, and Disability Insurance*.

objective See *reporting objectives* and *objectivity*.

objective function In *linear programming*, the name of the *profit* (or *cost*) criterion the analyst wants to maximize (or minimize).

objectivity Having existence independent of the observer.

Formerly, the reporting policy implying that the *firm* will not give formal recognition to an event in *financial statements* until the firm can measure the magnitude of the events with reasonable accuracy and check that amount with independent *verification*. The *FASB* has said *SFAC No. 2*, par. 158, “Accounting terminology will be improved if *verifiability*, which reflects what accountants do, replaces objectivity in the accountant’s lexicon.”

obsolescence An *asset’s market value* decrease caused by physical deterioration or by improved alternatives becoming available that will be more *cost-effective*. The decline in market value does not necessarily relate to physical changes in the asset itself. For example, computers become obsolete long before they wear out. The former is said to result from “*physical factors*,” whereas the latter is said to result from “*functional factors*.” See *partial obsolescence*.

Occupational Safety and Health Act *OSHA*.

off-balance-sheet financing A description often used for an obligation that meets all the tests to be classified a *liability* except that the obligation arises from an *executory contract* and, hence, is not a liability. Consider the following example. Miller Corporation desires to acquire *land* costing \$25 million, on which it will build a shopping center. It could borrow the \$25 million from its bank, paying *interest* at 12%, and buy the land outright from the seller. If so, both an *asset* and a liability will appear on the *balance sheet*. Instead, it borrows \$5 million and purchases for \$5 million from the seller an *option* to buy the land from the seller at any time within the next six years for a price of \$20 million. The option costs Miller Corporation \$5 million immediately and provides for continuing “option” payments of \$2.4 million per year, which precisely equal Miller Corporation’s borrowing rate multiplied by the remaining *purchase price* of the land: \$2.4 million = 0.12 × \$20 million. Although Miller Corporation need not continue payments and can let the option *lapse* at any time, it also has an obligation to begin developing on the site immediately. Because Miller Corporation has invested a substantial sum in the option, will invest more, and will begin immediately developing the land, Miller Corporation will almost certainly exercise its option before expiration. The seller of the land can take the option contract to the bank and borrow \$20 million, paying interest at Miller Corporation’s borrowing rate, 12% per year. The continuing option payments from Miller Corporation will be sufficient to enable the seller to make its payments to the bank. *Generally accepted accounting principles* view Miller Corporation as having acquired an option for \$5 million rather than having acquired land costing \$25 million in return for \$25 million of debt. The *firm* will likely be able to structure this *transaction* so that it need not *recognize debt* on the balance sheet until it borrows more funds to exercise the option.

The *FASB* has curtailed the use of such financings with *FIN 46R (Codification Topic 810)*. See also

variable interest entity. Accountants would probably classify a *loss* from an earthquake as an extraordinary item.

off-balance-sheet risk A contract that exposes an entity to the possibility of *loss* but that does not appear in the *financial statements*. For example, a *forward-exchange contract* that does not allow for *net settlement* generally does not appear on the *balance sheet* because it is an *executory contract*. The contract may reduce or increase the *entity’s* exposure to *foreign-exchange risk* (the chance of loss due to unfavorable changes in the foreign-exchange rate). It may also expose the entity to credit risk (the chance of loss that occurs when the *counterparty* to the contract cannot fulfill the contract terms).

OHG (Offene Handelsgesellschaft) Germany: a general *partnership*. The partners have unlimited *liability*.

Old Age, Survivors, and Disability Insurance (OASDI) The technical name for *Social Security* under the *Federal Insurance Contributions Act (FICA)*.

on consignment Said of *goods* delivered by the owner (the *consignor*) to another (the *consignee*) to be sold by the consignee. The arrangement entitles the owner either to the return of the property or to payment of a specified amount. The goods are *assets* of the consignor. Such arrangements provide the consignor with better protection than an outright *sale on account* to the consignee in case the consignee becomes *bankrupt*. In event of *bankruptcy*, the ordinary seller, holding an *account receivable*, has no special claim to the return of the goods, whereas a consignor can reclaim the goods without going through bankruptcy proceedings, from which the consignor might recover only a fraction of the amounts owed to it. Some consignors believe their total *proceeds* of sale will be greater if they give the goods to the consignee, who later sells the goods and takes a *commission*, rather than have the consignee buy the goods from the consignor and incur *costs* of holding the asset until time of eventual sale to a third party.

on (open) account Said of a *purchase* (or *sale*) when the seller expects payment sometime after delivery and the purchaser does not give a *note* evidencing the *debt*. The purchaser has generally signed an agreement sometime in the past promising to pay for such purchases according to an agreed time *schedule*. When the firm sells (purchases) on *open account*, it *debits* (*credits*) *Accounts Receivable* (*Payable*).

on-time performance The *firm* delivers the *product* or *service* at the time *scheduled* for delivery.

one-line consolidation Said of an *intercorporate investment* accounted for with the *equity method*. With this method, the *income* and *balance sheet* total *assets* and *equities* amounts are identical to those that would appear if the *parent* consolidated the *investee firm*, even though the *income* from the *investment* appears on a single line of the *income statement* and the *net investment* appears on a single line in the Assets section of the balance sheet.

one-write system A system of *bookkeeping* that produces several records, including original documents, in one

operation by the use of reproductive paper and equipment that provides for the proper alignment of the documents.

OPEB *Other post-employment benefits.*

open account Any *account* with a nonzero *debit* or *credit balance*. See *on (open) account*.

operating accounts *Revenue, expense, and production cost accounts*. Contrast with *balance sheet accounts*.

operating activities For purposes of the *statement of cash flows*, all *transactions* and events that are neither *financing activities* nor *investing activities*. See *operations*.

operating (asset, liability, revenue, expense) An adjective used to refer to *asset, liability, revenue, and expense* items relating to the company's main line(s) of *business*. See *operations*. Contrast with *financial asset* and *peripheral*.

operating budget A formal *budget* for the *operating cycle* or for a year. Typically, this excludes *investing* and *financing activities*.

operating cash flow *Cash flow from operations*. *Financial statement* analysts sometimes use this term to mean *cash flow from operations, capital expenditures, dividends*. This usage leads to such ambiguity that the reader should always confirm the definition that the writer uses before drawing inferences from the reported data.

operating cycle *Earnings cycle*.

operating expenses *Expenses* incurred in the course of *ordinary* activities of an *entity*; frequently, a classification including only *selling, general, and administrative expenses*, thereby excluding *cost of goods sold, interest, and income tax* expenses. See *operations*.

operating lease A *lease* accounted for by the *lessee* without showing an *asset* for the lease rights (*leasehold*) or a *liability* for the lease payment obligations. The lessee reports only rental payments or *rent* incurred during the *period* as *expenses* of the period. The asset remains on the lessor's *books*, where rental collections appear as *revenues*. Contrast with *capital lease*.

operating leverage Usually said of a *firm* with a large proportion of *fixed costs* in its total costs. Consider a book publisher or a railroad: such a firm has large costs to produce the first unit of *service*; then, the *incremental costs* of producing another book or transporting another freight car are much less than the *average cost*, so the *gross margin* on the sale of the subsequent units is relatively large. Contrast this situation with that, for example, of a grocery store, where the *contribution margin* can be smaller than 5% of the selling price. For firms with equal *profitability*, however defined, we say that the one with the larger percentage increase in income from a given percentage increase in dollar sales has the larger operating leverage. See *leverage* for contrast of this term with "financial leverage." See *cost terminology* for definitions of terms involving the word "cost."

operating margin *Revenues* from *sales* minus *cost of goods sold* and *operating expenses*.

operating margin based on current costs Operating margin where *cost of goods sold* is based on *current*, not

historical costs; a measure of operating efficiency that does not depend on the *cost-flow assumption* for *inventory*; sometimes called current (gross) margin. See *inventory profit* for illustrative computations.

operating profit (loss) *Earnings (losses)* before *discontinued items, changes in accounting principles, extraordinary items, financial costs and revenues, and, typically, income taxes*.

operating segment The *FASB* defines this as a component of a *business*

- That engages in activities from which it can earn *revenues* and incur *expenses*,
- Whose *operating* results the chief decision makers of the firm regularly review to consider resource allocation decisions and to make performance assessments, and
- For which discrete, that is separate from other components, financial information is available.

operational control See *control system*.

operational measures of time Indicators of the speed and reliability with which organizations supply *products* and *services* to customer. Companies generally use two operational measures of time: *customer response time* and *on-time performance*.

operations A word not precisely defined in *accounting*. Generally, analysts distinguish *operating activities* (producing and selling *goods* or *services*) from *financing activities* (raising *funds*) and *investing activities*. Acquiring goods *on account* and then paying for them one month later, though generally classified as an operating activity, has the characteristics of a financing activity. Or consider the transaction of selling *plant assets* for a price in excess of *carrying value*. On the *income statement*, the gain appears as part of income from operations ("continuing operations" or "discontinued" operations, depending on the circumstances), but the *statement of cash flows* reports all the funds received as a *non-operating* source of *cash*, "disposition of *noncurrent* assets." In income tax accounting, an "operating loss" results whenever deductions exceed taxable *revenues*.

opinion The *auditor's report* containing an attestation or lack thereof; also, *APB Opinion*.

opinion paragraph Section of *auditor's report*, generally following the *scope paragraph* and giving the *auditor's* conclusion that the *financial statements* are (rarely, are not) in accordance with *U.S. GAAP* and present fairly the *financial position, changes in financial position, and the results of operations*. The paragraph also includes the *auditor's opinion* about the adequacy, or not, of the *internal control* processes.

opportunity cost The *present value* of the *income* (or *costs*) that a *firm* could earn (or save) from using an *asset* in its best alternative use to the one under consideration.

opportunity cost of capital *Cost of capital*.

option The legal *right* to buy or sell something during a specified *period* at a specified *price*, called the *exercise price*. If the right exists during a specified time interval, it is known as an "American option." If it exists for only one specific day, it is known as a "European

option.” Do not confuse *employee stock options* with *put* and *call* options, traded in various public markets.

ordinary annuity An *annuity in arrears*.

ordinary income For *income tax* purposes, reportable *income* not qualifying as *capital gains*.

organization costs The *costs* incurred in planning and establishing an *entity*; example of an *intangible asset*. The *firm* must treat these costs as *expenses* of the *period*, even though the *expenditures* clearly provide future benefits and meet the test to be assets.

organization goals Broad *objectives* for an organization established by management.

original cost *Acquisition cost*; in public utility accounting, the acquisition cost of the *entity* first devoting the *asset* to public use. See *aboriginal cost*.

original entry Entry in a *journal*.

OSHA (Occupational Safety and Health Act) The federal law that governs working conditions in commerce and industry.

other comprehensive income (OCI) According to the *FASB*, *comprehensive income* items that are not themselves part of *earnings*. See *comprehensive income*. To define other comprehensive income does not convey its essence. To understand other comprehensive income, you need to understand how it differs from earnings (or *net income*), the amount reported in the *earnings (income) statement* or *statement of profit and loss*. The term earnings (or net income) refers to the sum of all components of comprehensive income minus the components of other comprehensive income. OCI includes items, such as unrealized gains and losses on *securities available for sale*, some *foreign currency* transactions, and *cash flow hedges* that affect a *firm's owners' equity*, but which standard setters decide the firm should report separately from net income. Historically, the standard setters have classified as OCI some items that management cannot directly control.

Both *U.S. GAAP* and *IFRS* require firms to present OCI in a combined statement of income and OCI or in separate, but equal, statements, equal in type size and prominence.

other post-employment benefits During their working years, employees earn rights, promised by employers, for *pensions*, health care, and other benefits the employees collect after retirement. Accounting for these divides them into *pension plans* and other post-employment benefits. The accounting rules for these two, although not identical, result from similar principles.

outlay The amount of an *expenditure*.

outlier Said of an observation (or data point) that appears to differ significantly in some regard from other observations (or data points) of supposedly the same phenomenon; in a *regression analysis*, often used to describe an observation that falls far from the fitted regression equation (in two dimensions, line).

out-of-pocket Said of an *expenditure* usually paid for with cash; an *incremental cost*.

out-of-stock cost The estimated decrease in future *profit* as a result of losing customers because a *firm* has insufficient quantities of *inventory* currently on hand to meet customers' demands.

output Physical quantity or monetary measurement of *goods* and *services* produced.

outside director; independent director A corporate *board of directors* member who is not a company officer and does not participate in the *corporation's* day-to-day *management*.

outstanding Unpaid or uncollected; when said of *stock*, refers to the *shares* issued less *treasury stock*; when said of *checks*, refers to a *check* issued that did not clear the *drawer's* bank prior to the *bank statement* date.

over-and-short Title for an *expense account* used to account for small differences between the book balance of *cash* and the sum of actual cash and *vouchers* or receipts in *petty cash* or *change funds*.

overapplied (overabsorbed) overhead *Costs* applied, or *charged*, to product and exceeding actual *overhead costs* during the *period*; a *credit balance* in an overhead *account* after overhead is assigned to product.

overdraft A *check* written on a checking *account* that contains funds less than the amount of the check.

overhead costs Any *cost* not directly associated with the production or sale of identifiable goods and services; sometimes called *burden* or *indirect costs* and, in the United Kingdom, *oncosts*; frequently limited to manufacturing overhead. See *central corporate expenses* and *manufacturing overhead*.

overhead rate Standard, or other predetermined rate, at which a *firm* applies *overhead costs* to *products* or to *services*.

over-the-counter Said of a *security* traded in a negotiated *transaction*, as on *NASDAQ*, rather than in an auctioned one on an organized stock exchange, such as the *New York Stock Exchange*.

owners' equity *Proprietorship*; *assets* minus *liabilities*; *paid-in capital* plus *retained earnings* of a *corporation*; partners' *capital accounts* in a *partnership*; owner's *capital account* in a *sole proprietorship*.

P

paid-in capital Sum of *balances* in *capital stock* and *capital contributed in excess of par (or stated) value accounts*; same as *contributed capital* (minus *donated capital*).

paid-in surplus See *surplus*.

P&L *Profit-and-loss statement*; *income statement*.

paper profit A *gain* not yet realized through a *transaction*; an *unrealized holding gain*.

par See *at par* and *face amount*.

par (nominal or stated) value *Face amount* of a *security*.

par value method In accounting for *treasury stock*, method that *debits* a *common stock account* with the *par method* of the shares required and *allocates* the remaining debits between the *Additional Paid-in Capital* and *Retained Earnings* accounts. Contrast with *cost method*.

parent (company) Company owning more than 50% of the voting *shares* of another company, called the *subsidiary*.

Pareto chart A graph of a skewed statistical distribution. In many *business* settings, a relatively small percentage of the potential *population* causes a relatively large

percentage of the business activity. For example, some businesses find that the top 20% of the customers buy 80% of the *goods* sold. Or, the top 10% of products account for 60% of the revenues or 70% of the profits. The statistical distribution known as the Pareto distribution has this property of skewness, so a graph of a phenomenon with such skewness has come to be known as a Pareto chart, even if the underlying data do not actually fit the Pareto distribution well. Practitioners of *total quality management* find that in many businesses a small number of processes account for a large fraction of the quality problems, so they advocate charting potential problems and actual occurrences of problems to identify the relatively small number of sources of trouble. They call such a chart a Pareto chart.

partial obsolescence One cause of decline in *market value* of an *asset*. As *technology* improves, the economic value of existing assets declines. In many cases, however, it will not pay a *firm* to replace the existing asset with a new one, even though it would acquire the new type rather than the old if it did make a new acquisition currently. In these cases, the accountant should theoretically recognize a loss from partial obsolescence from the firm's owning an old, out-of-date asset, but *U.S. GAAP* does not permit recognition of partial obsolescence until the sum of future *cash flows* from the asset total less than carrying value; see *impairment*. The firm will carry the old asset at *cost less accumulated depreciation* until the firm retires it from service so long as the *un-discounted future cash flows* from the asset exceed its *carrying value*. Thus *management* that uses an asset *subject to partial obsolescence* reports results inferior to those reported by a similar management that uses a new asset. See *obsolescence*.

partially executory contract *Executory contract* in which one or both parties have done something other than merely promise.

partially funded Said of a *pension plan* in which the *firm* has not funded all earned benefits. See *funded* for funding requirements.

partially vested Said of a *pension plan* in which not all employee benefits have *vested*. See *graded vesting*.

participating dividend *Dividend* paid to preferred *shareholders* in addition to the minimum preferred dividends when the *preferred shares* contract provides for such sharing in *earnings*. Usually the contract specifies that dividends on *common shares* must reach a specified level before the preferred shares receive the participating dividend.

participating preferred stock *Preferred shares* with rights to *participating dividends*.

participative budgeting Using input from lower- and middle-*management* employees in setting goals.

partner's drawing A payment made to a partner and debited against his or her share of *income* or *capital*. The name of a *temporary account*, closed to the partner's capital account, to record the *debits* when the partner receives such payments.

partnership; partner Contractual arrangement between individuals, called "partners," to share resources and operations in a jointly run *business*. See *general* and *limited partner* and *Uniform Partnership Act*.

patent A right granted for up to 20 years by the federal government to exclude others from manufacturing, using, or selling a claimed design, *product*, or plant (for example, a new breed of rose) or from using a claimed process or method of manufacture; an *asset* if the *firm* acquires it by purchase. If the firm develops it internally, current *U.S. GAAP* requires the firm to *expense* the development *costs* when incurred, but to *capitalize* legal costs and filing fees.

pay-as-you-go Said of an *income tax* scheme in which the taxpayer makes periodic payments of income taxes during the period when it earns the income to be taxed; in contrast to a scheme in which the taxpayer owes no payments until the end of, or after, the period when it earned the income being taxed (called *PAYE*—pay-as-you-earn—in the United Kingdom). The phrase is sometimes used to describe an *unfunded pension plan*, or retirement benefit plan, in which the *firm* makes payments to *pension plan* beneficiaries from general corporate funds, not from *cash* previously contributed to a fund. Under this method, the firm debits expense as it makes payments, not as it incurs the obligations. This is not acceptable as a method of accounting for pension plans, under *SFAS No. 87 (Codification Topic 715)*, or as a method of *funding*, under *ERISA*. Many firms fund *other post-employment benefits*, which are primarily retiree health insurance plans, this way.

payable Unpaid but not necessarily due or past due.

payback period Amount of time that must elapse before the undiscounted *cash* inflows from a project equal the cash outflows.

payback reciprocal One divided by the *payback period*. This number approximates the *internal rate of return* on a project when the project life exceeds twice the payback period and the cash inflows are identical in every period after the initial period.

PAYE (pay-as-you-earn) See *pay-as-you-go* for contrast.

payee The person or *entity* who receives a *cash* payment or who will receive the stated amount of cash on a *check*. See *draft*.

payout ratio *Common share dividends* declared for a year divided by net *income* to common stock for the year; a term used by financial analysts. Contrast with *dividend yield*.

payroll taxes *Taxes* levied because the taxpayer pays *salaries* or *wages*; for example, *FICA* and unemployment compensation insurance taxes. Typically, the employer pays a portion and withholds part of the employee's wages for the portion paid by the employee.

PCAOB *Public Company Accounting Oversight Board*.

P/E ratio *Price-earnings ratio*.

Pension Benefit Guarantee Corporation (PBGC) A federal *corporation* established under *ERISA* to guarantee basic pension benefits in covered *pension plans* by administering terminated pension plans, paying benefits to those who have *vested* benefits from those plans, and placing *liens* on corporate *assets* for certain *unfunded* pension liabilities.

pension fund *Fund*, the *assets* of which the trustee will pay to retired ex-employees, usually as a *life annuity*;

- generally held by an independent trustee and thus not an *asset* of the employer.
- pension plan** Details or *provisions* of employer's contract with employees for paying retirement *annuities* or other benefits. See *funded*, *vested*, *service cost*, *prior service cost*, *money purchase plan*, and *defined-benefit plan*.
- per books** An expression used to refer to the *carrying value* of an item at a specific time.
- percent** Any number, expressed as a decimal, multiplied by 100.
- percentage depletion (allowance)** Deductible *expense* allowed in some cases by the *federal income tax* regulations; computed as a percentage of gross income from a *natural resource* independent of the unamortized *cost* of the *asset*. Because the amount of the total deductions for tax purposes usually exceeds the cost of the *asset subject to depletion*, many people think the deduction is an unfair tax advantage or *loophole*.
- percentage-of-completion method** Recognizing *revenues* and *expenses* on a *job*, order, or contract (1) in proportion to the *costs* incurred for the period divided by total costs expected to be incurred for the job, or order, or contract (cost to cost) or (2) in proportion to engineers' or architects' estimates of the incremental degree of completion of the job, order, or contract during the period. Contrast with *completed contract method*.
- percentage-of-sales procedure** Refer to the *allowance method for uncollectibles*. When the firm uses this procedure, it estimates the *debit* to *Bad Debt Expense* or the *Revenue Contra account*, an amount equal to a specified percentage of *sales* for the period. Periodically, the firm will perform an *aging-of-accounts-receivable procedure* to decide if the balance in the *Allowance for Uncollectibles* account needs increase or decreasing, with offsetting debits or credits to an *income statement*.
- percentage statement** A statement containing, in addition to (or instead of) dollar amounts, ratios of dollar amounts to some base. In a percentage *income statement*, the base is usually either *net sales* or total *revenues*, and in a percentage *balance sheet*, the base is usually total *assets*. Often referred to as a "common-size(d) financial statement."
- period** *Accounting period*.
- period cost** An inferior term for *period expense* (because in most contexts, the word "cost" means an *asset* not an expense—a common exception being *cost of goods sold*).
- period expense (charge)** *Expenditure*, usually based on the passage of time, charged to *operations* of the *accounting period* rather than *capitalized* as an *asset*. Contrast with *product cost*.
- periodic cash flows** *Cash flows* that occur during the life of an investment project. Often include *receipts* from *sales*, *expenditures* for *fixed* and *variable production costs*, and savings of *fixed* and *variable production costs*, to name a few. They do not include non-cash items, such as *financial accounting depreciation charges* or *allocated items of overhead* not requiring *differential cash expenditures*.
- periodic inventory** In recording *inventory*, a method that uses data on *beginning inventory*, additions to inventories, and *ending inventory* to find the *cost* of *withdrawals* from inventory. Contrast with *perpetual inventory*.
- periodic procedures** The process of making *adjusting entries* and *closing entries* and preparing the *financial statements*, usually by use of *trial balances* and *work sheets*.
- permanent account** An *account* that appears on the *balance sheet*. Contrast with *temporary account*.
- permanent difference** Difference between reported income and *taxable income* that will never reverse and, hence, requires no entry in the *deferred income tax (liability) account*; for example, nontaxable state and *municipal bond* interest that will appear on the financial statements. Contrast with *temporary difference*. See *deferred income tax liability*.
- permanent file** The file of *working papers* that are prepared by a *public accountant* and that contain the information required for reference in successive professional engagements for a particular organization, as distinguished from working papers applicable only to a particular engagement.
- perpetual annuity** *Perpetuity*.
- perpetual inventory** *Inventory* quantity and dollar amount records that the *firm* changes and makes current with each physical addition to or *withdrawal* from the stock of *goods*; an inventory so recorded. The records will show the physical quantities and, frequently, the dollar valuations that should be on hand at any time. Because the firm explicitly computes *cost of goods sold*, it can use the *inventory equation* to compute an amount for what *ending inventory* should be. It can then compare the computed amount of ending inventory with a physical count of the actual amount, either using cycle counts throughout the year (inventory counts for only one or a few inventory items), or a complete inventory count of ending inventory as a *control device* to measure the amount of *shrinkages*. Contrast with *periodic inventory*.
- perpetuity** An *annuity* whose payments continue forever. The *present value* of a perpetuity in *arrears* is p/r , where p is the periodic payment and r is the *interest rate* per period. If a perpetuity promises \$100 each year, in arrears, forever and the interest rate is 8% per year, then the perpetuity has a *value* of $\$1,250 = \$100/0.08$.
- perpetuity growth model** See *perpetuity*. A perpetuity whose cash flows grow at the rate g per *period* and thus has *present value* of $1/(r - g)$. Some call this the Gordon Growth Model because Myron Gordon wrote about applications of this formula and its variants in the 1950s. John Burr Williams wrote about them in the 1930s.
- personal account** *Drawing account*.
- PERT (Program Evaluation and Review Technique)** A method of *network analysis* in which the analyst makes three time estimates for each activity—the optimistic time, the most likely time, and the pessimistic time—and gives an expected completion date for the project within a probability range.
- petty cash fund** Currency and coins maintained for *expenditures* that the *firm* makes with *cash* on hand.

physical factor See *obsolescence*.

physical units method A method of *allocating a joint cost* to the *joint products* based on a physical measure of the joint products; for example, allocating the cost of a cow to sirloin steak and to hamburger, based on the weight of the meat. This method usually provides nonsensical (see *sterilized allocation*) results unless the physical units of the joint products tend to have the same *value*.

physical verification *Verification*, by an *auditor*, performed by actually inspecting items in *inventory*, *plant assets*, and the like, in contrast to merely checking the written records. The auditor may use statistical sampling procedures.

planning and control process General name for the *management* techniques comprising the setting of organizational goals and *strategic plans*, *capital budgeting*, *operations budgeting*, comparison of plans with actual results, performance evaluation and corrective action, and revisions of goals, plans, and budgets.

plant *Plant assets*.

plant asset turnover *Fixed asset turnover*.

plant assets *Assets* used in the revenue-production process. Plant assets include buildings, machinery, equipment, *land*, and *natural resources*. The phrase “*property, plant, and equipment*” (though often appearing on *balance sheets*) is therefore a redundancy. In this context, “plant” used alone means buildings.

plantwide allocation method A method for *allocating overhead costs* to *product*. First, use one *cost pool* for the entire *plant*. Then, allocate all costs from that pool to products using a single overhead *allocation rate*, or one set of rates, for all the products of the plant, independent of the number of departments in the plant.

PLC (public limited company) United Kingdom: a publicly held *corporation*. Contrast with *Ltd*.

pledging The *borrower* assigns *assets* as *security* or *collateral* for repayment of a *loan*.

pledging of receivables The process of using expected collections on *accounts receivable* as *collateral* for a *loan*. The *borrower* remains responsible for collecting the receivable but promises to use the *proceeds* for repaying the *debt*.

plow back To retain *assets* generated by *earnings* for continued *investment* in the *business*.

plug Process for finding an unknown amount. For any *account*, Beginning Balance + Additions – Deductions = Ending Balance; if you know any three of the four items, you can find the fourth with simple arithmetic, called “plugging.” In making a *journal entry*, often you know all *debits* and all but one of the *credits* (or vice versa). Because *double entry bookkeeping* requires equal debits and credits, you can compute the unknown quantity by subtracting the sum of the known credits from the sum of all the debits (or vice versa), also called plugging. Accountants often call the unknown the plug. For example, in amortizing a *discount* on *bonds payable* with the *straight-line depreciation* method, *interest expense* is a plug: Interest Expense = Interest Payable + Discount Amortization. See *trade-in transaction* for an example. The term

sometimes has a bad connotation for accountants because plugging can occur in a slightly different context. During the process of preparing a *preclosing trial balance* (or *balance sheet*), often the sum of the debits does not equal the sum of the credits. Because almost all real businesses now use computerized *accounting systems*, it is impossible not to have debits equal credits. This problem arises more for students than in reality. Rather than find the error, some students are tempted to force equality by changing one of the amounts, with a plugged *debit* or credit to an account such as Other Expenses. No harm results from this procedure if the amount of the error is small compared with asset totals, since spending much time to correct a small error will not be *cost-effective*. Still, most accounting teachers rightly disallow this use of plugging because *exercises* and problems set for students provide enough information not to require it.

point of sale The time, or the location, at which a *sale* occurs. A point of sale system refers to a system located at the point where a sale occurs, although the system also keeps track of the time each sale occurs.

pooling-of-interests method Accounting for a *business combination* by adding together the *carrying value* of the *assets* and *equities* of the combined *firms*; generally leads to a higher reported *net income* for the combined firms than results when the firm accounts for the business combination as a purchase because the *market values* of the merged assets generally exceed their carrying values. *U.S. GAAP* and *IFRS* do not allow this method, although they previously did, so *financial statements* still reflect the effects of pooling accounting. Called *uniting-of-interests method* by the *IASB*. Contrast with *purchase method*.

population The entire set of numbers or items from which the analyst samples or performs some other analysis.

positive confirmation See *confirmation*.

post; posting (process) To record entries in an *account* to a *ledger*, usually as *transfers* from a *journal*. Computerized *accounting systems* do not necessarily do *steps* the way one does them by hand, but one needs to understand the how a record-keeping system operated by hand operates in order to understand common terminology heard in accounting contexts.

post-closing trial balance *Trial balance* taken after the accountant has *closed* all *temporary accounts*.

post-statement events Events that have *material* impact and that occur between the end of the *accounting period* and the formal publication of the *financial statements*. Even though the events occur after the end of the period being reported on, the *firm* must disclose such events in *notes* if the *auditor* is to give a *clean opinion*.

potentially dilutive A *security* that its holder may convert into, or *exchange* for, *common stock* and thereby reduce reported *earnings per share*; *options*, *warrants*, *convertible bonds*, and *convertible preferred stock*.

PPB *Program budgeting*. The second “P” stands for “plan.”

practical capacity Maximum level at which a *plant* or department can operate efficiently.

- precision** The degree of accuracy for an estimate derived from a sampling process, usually expressed as a range of *values* around the estimate. The analyst might express a sample estimate in the following terms: “Based on the sample, we are 95% sure [confidence level] that the true *population value* is within the range of X to Y [*precision*].” See *confidence level*.
- predclosing trial balance** *Trial balance* taken at the end of the period before *closing entries*; in this sense, an *adjusted trial balance*; sometimes taken before *adjusting entries* and then synonymous with *unadjusted trial balance*.
- predatory prices** Setting *prices* below some measure of *cost* in an effort to drive out competitors with the hope of recouping *losses* later by charging monopoly prices. Illegal in the United States if the prices set are below long-run *variable costs*.
- predetermined (factory) overhead rate** Rate used in applying *overhead costs* to *products* or departments developed at the start of a *period*. Compute the rate as estimated overhead cost divided by the estimated number of units of the overhead *allocation base* (or *denominator volume*) activity. See *normal costing*.
- preemptive right** The privilege of a *shareholder* to maintain a proportionate *share* of ownership by purchasing a proportionate share of any new *stock* issues. Most state *corporation* laws allow corporations to pay shareholders to waive their *preemptive rights* or state that preemptive rights exist only if the *corporation charter* explicitly grants them. In practice, then, preemptive rights are the exception rather than the rule.
- preference as to assets** The rights of *preferred shareholders* to receive certain payments before common shareholders receive payments in case the *board* dissolves the *corporation*.
- preferred shares (stock)** *Capital stock* with a claim to *income* or *assets* after holders of *bonds* but before *common shares*. *Dividends* on preferred shares are *income* distributions, not *expenses*. See *cumulative preferred shares*.
- premium** For *shares*, the excess of issue (or market) price over *par method*. For *debt*, the excess of *carrying value* over *face value* of the debt instrument. For a different context, see *insurance*.
- premium on capital stock** Alternative but inferior title for *capital contributed in excess of par (or stated) value* or *additional paid-in capital*.
- prepaid assets** *Prepayments*.
- prepaid expense** An *expenditure* that leads to a *deferred charge* or *prepayment*. Strictly speaking, this is a contradiction in terms because an *expense* is a gone *asset*, and this title refers to past *expenditures*, such as for *rent* or *insurance premiums*, that still have future benefits and thus are *assets*. We try to avoid this term and use “prepayment” instead.
- prepaid income** An inferior alternative title for *advances from customers*. Do not call an item *revenue* or *income* until the firm earns it by delivering *goods* or rendering *services*.
- prepayments** *Deferred charges*; *assets* representing *expenditures* for future benefits. *Rent* and *insurance premiums* paid in advance are usually current prepayments.
- present value (of future [net] cash flows)** Value today (or at some specific date) of an amount or amounts to be paid or received later (or at other, different dates), discounted at some *interest* or *discount rate*; an amount that, if invested today at the specified rate, will grow to the amount to be paid or received in the future.
- pretax (income)** Said of the number on an income statement (financial reporting) from which is subtracted income tax expense to derive net income or earnings. Do not confuse with *taxable income*, the number on a tax return to which the tax formula is applied to derive taxes payable.
- prevention costs** *Costs incurred* to prevent defects in the *products* or *services* a *firm* produces, including procurement inspection, processing control (inspection), design, quality training, and machine inspection.
- price** The quantity of one *good* or *service*, usually *cash*, asked in *return* for a unit of another good or service. See *fair value*.
- price–earnings (P/E) ratio** At a given time, the *market value* of a company’s *common share*, per *share*, divided by the *earnings per common share* for the past year. The analyst usually bases the denominator on *income from continuing operations* or on some estimate of the number if the analyst thinks the current figure for that amount does not represent a usual situation—such as when the number is negative or, if positive, close to zero. See *ratio* and **Exhibit 7.12**.
- price index** A series of numbers, one for each *period*, that purports to represent some *average* of prices for a series of periods, relative to a base period.
- price level** The number from a *price index* series for a given *period* or date.
- price level–adjusted statements** *Financial statements* expressed in terms of dollars of uniform *purchasing power*. The statements restate *nonmonetary* items to reflect changes in general *price levels* since the time the *firm* acquired specific *assets* and incurred *liabilities*. The statements recognize a *gain* or *loss* on *monetary items* as the firm holds them over time *periods* when the general *price level changes*. Conventional financial statements show *historical costs* or *fair values* and ignore differences in purchasing power in different periods.
- price variance** In accounting for *standard costs*, an amount equal to (*Actual Cost Per Unit* – *Standard Cost Per Unit*) times actual quantity.
- primary beneficiary** U.S. *GAAP* uses this term in describing who should *consolidate a variable interest entity (VIE)*. This usage is unrelated to *insurance* policies. U.S. *GAAP* provides no technical definition of this term but relies on common understanding.
- prime cost** Sum of *direct materials* plus *direct labor* costs assigned to *product*.
- prime rate** The *loan* rate charged by commercial banks to their creditworthy customers. Some customers pay even less than the prime rate and others, more. The *Federal Reserve Bulletin* is the authoritative source of information about historical prime rates.
- principal; principal (face) value** An amount on which *interest accrues*, either as *expense* (for the *borrower*) or as *revenue* (for the *lender*); the *face amount* of a *loan*;

also, the absent owner (principal) who hires the manager (*agent*) in a “principal–agent” relationship.

principle See *generally accepted accounting principles*.

prior-period adjustment A *debit* or *credit* that is made directly to *retained earnings* (and that does not affect *income* for the *period*) to adjust *earnings* as calculated for prior periods. Such *adjustments* are now rare. Theory suggests that accounting should correct for errors in accounting estimates (such as the *depreciable life* or *salvage value* of an *asset*) by adjusting retained earnings so that statements for future periods will show correct amounts. But *U.S. GAAP* requires that corrections of such estimates flow through current, and perhaps future, *income statements*. See *accounting changes* and *accounting errors*.

prior service cost *Present value* at a given time of a *pension plan’s retroactive benefits*. “Unrecognized prior service cost” refers to that portion of prior service cost not yet *debited* to *expense*. See *funded*. Contrast with *normal cost*.

pro forma income See *pro forma statements*.

pro forma statements Hypothetical statements; *financial statements* as they would appear if some event, such as a *merger* or increased production and *sales*, had occurred or were to occur; sometimes spelled as one word, “proforma.” The phrase “*pro forma income*” has come to disrepute, as some companies have published *pro forma income statements* that include their good news as *recurring income* and omit the bad news as *nonrecurring income*. They have attempted to focus the *investment* community on their own presentation of this good news, de-emphasizing *U.S. GAAP net income*. The *SEC* and others have attempted to make these *disclosures* less misleading.

probable In many of its definitions, the *FASB* uses the term “probable.” See, for example, *asset*, *firm commitment*, *liability*. A survey of practicing accountants revealed that the *average* of the probabilities that those surveyed had in mind when they used the term “probable” was 85%. Some accountants think that any event whose outcome is greater than 50% should be called probable. The *FASB* uses the phrase “more likely than not” when it means greater than 50%. The *IASB* defines “probable” to mean more likely than not.

proceeds The *funds* received from the disposition of *assets* or from the *issue* of securities.

process costing A method of *cost accounting* based on average costs (total cost divided by the *equivalent units* of work done in a *period*); typically used for assembly lines or for *products* that the *firm* produces in a series of steps that are more continuous than discrete.

product *Goods* or *services* produced.

product cost Any *manufacturing cost* that the *firm* can—or, in some contexts, should—*debit* to an *inventory account*. See *flow of costs*, for example. Contrast with *period expenses*.

product life cycle Time span between initial concept (typically starting with *research and development*) of a *good* or *service* and the time when the *firm* ceases to support customers who have purchased the good or service.

production cost *Manufacturing cost*.

production cost account A *temporary account* for accumulating *manufacturing costs* during a *period*.

production cycle efficiency Measures the efficiency of the production cycle by computing the *ratio* of the time spent processing a unit divided by the *production cycle time*. The higher the percentage, the less the time and costs spent on *nonvalue-added activities*, such as moving and storage.

production cycle time The total time to produce a unit. Includes processing, moving, storing, and inspecting.

production department A department producing salable *goods* or *services*; contrast with *service department*.

production method (depreciation) One form of *straight-line depreciation*. The *firm* assigns to the depreciable *asset* (for example, a truck) a *depreciable life* measured not in elapsed time but in units of *output* (for example, miles) or perhaps in units of time of expected use. Then the *depreciation charge* for a period is a portion of *depreciable cost* equal to a fraction computed as the actual output produced during the period divided by the expected total output to be produced over the life of the asset. This method is sometimes called the *units-of-production (or output) method*.

production method (revenue recognition) *Percentage-of-completion method* for recognizing *revenue*.

production volume variance Standard *fixed overhead* rate per unit of normal *capacity* (or base activity) times (units of base activity budgeted or planned for a *period* minus actual units of base activity worked or assigned to *product* during the period); often called a *volume variance*.

productive capacity One *attribute measured* for *assets*. The *current cost* of *long-term assets* means the cost of reproducing the productive capacity (for example, the ability to manufacture one million units a year), not the cost of reproducing the actual physical assets currently used (see *reproduction cost*). *Replacement cost* of productive capacity will be the same as reproduction cost of assets only in the unusual case when no technological *improvement* in production processes has occurred and the relative *prices* of *goods* and *services* used in production have remained approximately the same as when the *firm* acquired the currently used goods and services.

product-level activities Work that supports a particular *product* or service line. Examples include design work, supervision, and advertising that are specific to each type of product or *service*.

profit Excess of *revenues* over *expenses* for a *transaction*; sometimes used synonymously with *net income* for the *period*, especially under *IFRS*. “Profit” is a *credit* balance. Many writers and top accountants misleadingly use terminology such as “distribute profits.” This usage confuses because the *firm* paying a *dividend* distributes *cash* or other assets, with a credit to the *retained earnings* (retained profits) account. Careful users do not say “distribute profits,” but even top standard setters sometimes do: “. . . no accounting standard can or should seek to define what element of profits can be distributed.” The lay reader will think that the company distributes some amorphous thing

- called “profits,” rather than think the company distributes cash or other assets generated by activities that result in reported profits.
- profit and loss account** United Kingdom: *retained earnings*.
- profit-and-loss sharing ratio** The fraction of *net income* or *loss* allocable to a partner in a *partnership*; need not be the same fraction as the partner’s *share of capital*.
- profit-and-loss statement** *Income statement*.
- profit center** A *responsibility center* for which a *firm* accumulates both *revenues* and *expenses*. Contrast with *cost center* and *investment center*.
- profit margin; profit margin for ROA ratio; profit margin for ROCE ratio** *Sales* minus all *expenses*.
- profit margin percentage** *Profit margin* divided by *net sales*. See *ratio* and **Exhibit 7.12**.
- profit maximization** The doctrine that the *firm* should account for a given set of *operations* so as to make reported *net income* as large as possible; contrast with *conservatism*. The concept of profit maximization in accounting differs from the profit-maximizing concept in economics, which states that the *firm* should manage operations to maximize the *present value* of the *firm’s* wealth, generally by equating *marginal costs* and *marginal revenues*.
- profit plan** The *income statement* portion of a *master budget*.
- profit-sharing plan** A *defined-contribution plan* in which the employer contributes amounts based on *net income*.
- profit variance analysis** Analysis of the causes of the difference between budgeted profit in the *master budget* and the profits earned.
- profit-volume analysis (equation)** Analysis of effects, on *profits*, caused by changes in volume or *contribution margin* per unit or *fixed costs*. See *breakeven chart*.
- profit-volume graph** See *breakeven chart*.
- profit-volume ratio** *Net income* divided by *net sales* in dollars.
- profitability** A nontechnical term meaning the potential for, or actual earning of, *net income*.
- profitability accounting** *Responsibility accounting*.
- program budgeting (PPB)** Specification and analysis of inputs, *outputs*, *costs*, and alternatives that link plans to *budgets*.
- programmed cost** A *fixed cost* not essential for carrying out *operations*. For example, a *firm* can control costs for *research and development* and advertising designed to generate new *business*, but once it commits to incur them, they become fixed costs. These costs are sometimes called managed costs or *discretionary costs*. Contrast with *capacity costs*.
- progress payments** When a *firm* undertakes to construct for a customer, and the construction takes more than a few months, the *firm* will often contract with the customer to make cash payments as construction proceeds. The *firm* receives the cash, often called a “progress payment,” debiting cash and crediting an *account* such as *Advances from Customers*. The customer credits cash and debits an *account* such as *Advances to Suppliers*. The *firm* receiving the cash often refers to these collections as “progress collections.” We prefer not to use the word *payment* to refer to part of a transaction where the *firm* receives the cash, a collection of a payment made by a *counterparty*.
- progressive tax** Tax for which the rate increases as the taxed base, such as *income*, increases. Contrast with *regressive tax*.
- project financing arrangement** As defined by *SFAS No. 47 (Codification Topic 440)*, the *financing* of an investment project in which the *lender* looks principally to the *cash flows* and *earnings* of the project as the *source of funds* for repayment and to the *assets* of the project as *collateral* for the *loan*. The general *credit* of the project *entity* usually does not affect the terms of the financing either because the borrowing *entity* is a *corporation* without other assets or because the financing provides that the *lender* has no direct *recourse* to the *entity’s* owners.
- projected benefit obligation (PBO)** The *actuarial present value* at a given date of all pension benefits attributed by a *defined-benefit pension* formula to employee service rendered before that date. The analyst measures the obligation using assumptions as to future compensation levels if the formula incorporates future compensation, as happens, for example, when the plan bases the eventual pension benefit on *wages* of the last several years of employees’ work lives. Contrast to *accumulated benefit obligation*, where the analyst measures the obligation using employee compensation levels at the time of the measurement date.
- projected financial statement** *Pro forma financial statement*.
- projection** See *financial projection* for definition and contrast.
- promissory note** An unconditional written promise to pay a specified sum of *cash* on demand or at a specified date.
- proof of journal** The process of checking the arithmetic accuracy of *journal entries* by testing for the equality of all *debits* and all *credits* since the last previous proof.
- property dividend** A *dividend in kind*.
- property, plant, and equipment** See *plant assets*.
- proportionate consolidation** A presentation of the *financial statements* of any *investor-investment* relationship, whereby the investor’s pro rata *share* of each *asset*, *liability*, *income* item, and *expense* item appears in the *financial statements* of the investor under the various *balance sheet* and *income statement* headings. Allowed by *IFRS* but not by *U.S. GAAP*.
- proprietary accounts** See *budgetary accounts* for definition and contrast in the context of governmental accounting.
- propriatorship** *Assets* minus *liabilities* of an *entity*; equals *contributed capital* plus *retained earnings*. See *sole proprietor* for another context.
- propriatorship theory** The *corporation* view that emphasizes the form of the *accounting equation* that says $Assets - Liabilities = Owners' equity$; contrast with *entity theory*. The major implication of a choice between these theories deals with the treatment of *subsidiaries*. For example, the proprietorship theory views *noncontrolling interest* as a *liability* with indeterminate term. The proprietorship theory implies using a *single-step income statement*.

prorate To *allocate* in proportion to some base; for example, to allocate *service department* costs in proportion to hours of service used by the benefited department or to allocate manufacturing *variances* to *product* sold and to product added to *ending inventory*.

prorating variances See *prorate*.

prospectus Formal written document describing *securities* a *firm* will issue. See *proxy*.

protest fee Fee charged by banks or other financial agencies when the bank cannot collect items (such as *checks*) presented for collection.

provision Part of an *account* title. Often the *firm* must recognize an *expense* even though it cannot be sure of the exact amount. The entry for the *estimated expense*, such as for *income taxes* or expected *costs* under *warranty*, is as follows:

Retained Earnings (Expense) (Asset Decrease or Liability Increase) (Estimated)	X
Liability Increase (Estimated)	X

American terminology often uses “provision” in the *expense account* title of the above entry. Thus, Provision for Income Taxes means the estimate of income tax expense. (IFRS terminology uses “provision” in the title for the *estimated liability* of the above entry, so that Provision for Income Taxes is a *balance sheet account*. IFRS terminology also uses the word for an *asset contra account*.)

provision accounting See *loss contingency accounting*.

provision for bad debts See *provision*. In the U.S., this term refers to *Bad Debt Expense*. In Europe, the term refers to the *asset contra account*, such as *Allowance for Uncollectibles*.

provision for uncollectible accounts See *provision*. This term has the same meaning as *provision for bad debts*.

proxy Written authorization given by one person to another so that the second person can act for the first, such as to vote *shares* of *stock*; of particular significance to accountants because the *SEC* presumes that *management* distributes financial information along with its proxy solicitations.

public accountant Generally, this term is synonymous with *certified public accountant* or *Chartered Accountant*. Some jurisdictions, however, license individuals who are not CPAs as public accountants.

public accounting That portion of accounting primarily involving the *attest function*, culminating in the *auditor’s report*.

Public Company Accounting Oversight Board PCAOB A board established by the *Sarbanes-Oxley Act* of 2002 that regulates the auditing profession and sets standards for audits of public companies. The *SEC* appoints its members and approves its *budget*. The *PCAOB* directly *invoices publicly traded* companies and their *auditors* to *fund* its *operations*.

publicly traded An adjectival phrase describing *firms* whose *securities* trade in active markets or the securities themselves.

PuPU Acronym for *purchasing power unit*; conceived by John C. Burton, former chief accountant of the *SEC*. Those who think that *constant-dollar accounting* is not particularly useful poke fun at it by calling it “PuPU accounting.”

purchase The acquisition of goods and services in exchange for some *asset*. See *purchase method* for the context of acquisition of another company or division.

purchase allowance A reduction in sales *invoice price* usually granted because the purchaser received *goods* not exactly as ordered. The purchaser does not return the goods but agrees to keep them for a price lower than originally agreed upon.

purchase discount A reduction in purchase *invoice price* granted for prompt payment. See *sales discount* and *terms of sale*.

purchase investigation *Due diligence*.

purchase method Accounting for a *business combination* by recognizing the acquired company’s identifiable *assets* and *liabilities* at their *fair value*, and recognizing the *goodwill* (if any) and *noncontrolling interest* (if any) of the business combination.

purchase order Document issued by a buyer authorizing a seller to deliver *goods*, with the buyer to make payment later.

purchasing power gain or loss *Monetary gain or loss*.

push-down accounting An *accounting method* used in some *purchase transactions*. Assume that Company A purchases substantially all the *common shares* of Company B but that Company B must still issue its own *financial statements*. The question arises, shall Company B change the *basis* for its *assets* and *equities* on its own *books* to the same updated amounts at which they appear on Company A’s *consolidated financial statements*? Company B uses push-down accounting when it shows the new asset and *equity* bases reflecting Company A’s purchase, because the method “pushes down” the new bases from Company A (where *U.S. GAAP* requires them) to Company B (where the new bases would not appear in *historical cost accounting*). Since 1983, the *SEC* has required push-down accounting under many circumstances.

put (option) An option to sell *shares* of a *publicly traded corporation* (or other items) at a fixed *price* during a fixed time span. Contrast with *call*.

Q

qualified report (opinion) *Auditor’s report* containing a statement that the *auditor* was unable to complete a satisfactory examination of all things considered relevant or that the auditor has doubts about the financial impact of some *material* item reported in the *financial statements*. See *except for* and *subject to*.

qualifying special-purpose entity See *special purpose entity*.

quality In modern usage, a *product* or service has quality to the extent it conforms to specifications or provides customers the characteristics promised them.

quality of earnings A phrase with no single, agreed-upon meaning. Some who use the phrase use it with different

meanings on different occasions. Quality of earnings has an accounting aspect and a *business* cycle aspect.

In its accounting aspect, *managers* have choices in measuring and reporting *earnings*. This discretion can involve any of the following: selecting *accounting principles* or standards when *U.S. GAAP* allows a choice; making estimates in the application of accounting principles; and timing *transactions* to allow recognizing *nonrecurring* items in earnings. In some instances the range of choices has a large impact on reported earnings and in others, small.

- (1) Some use the phrase “quality of earnings” to mean the degree to which management can affect reported *income* by its choices of accounting estimates even though the choices recur every *period*. These users judge, for example, *insurance* companies to have low-quality *earnings*. Insurance company management must re-estimate its liabilities for future payments to the insured each period, thereby having an opportunity to report periodic earnings within a wide range.
- (2) Others use the phrase to mean the degree to which *management* actually takes advantage of its flexibility. For them, an insurance company that does not vary its methods and estimating techniques, even though it has the opportunity to do so, has high-quality earnings.
- (3) Some have in mind the proximity in time between *revenue recognition* and *cash* collection. For them, the smaller the time delay, the higher will be the quality.
- (4) Still others use the phrase to mean the degree to which managers who have a choice among the items with large influence on earnings choose the ones that result in income measures that are more likely to recur. For them, the more likely an item of earnings is to recur, the higher will be its quality.

Often these last two groups trade off with each other. Consider a dealer leasing a car on a long-term lease, receiving monthly collections. The dealer who uses *sales-type lease* accounting scores low on proximity of revenue recognition (all at the time of signing the lease) to cash collection but highlights the nonrepetitive nature of the transaction. The leasing dealer who uses *operating lease* accounting has perfectly matching revenue recognition and cash collection, but the recurring nature of the revenue gives a misleading picture of a repetitive transaction. The phrase “item of earnings” in (4) is ambiguous. The writer could mean the underlying economic event (which occurs when the lease for the car is signed) or the revenue recognition (which occurs every time the dealer using operating lease accounting receives cash). Hence, you should try to understand what other speakers and writers mean by “quality of earnings” when you interpret what they say and write. Some who refer to “earnings quality” suspect that managers will usually make choices that enhance current earnings and present the firm in the

best light, independent of the ability of the firm to generate similar earnings in the future.

In the business cycle aspect, management’s action often has no impact on the stability and recurrence of earnings. Compare a company that sells consumer products and likely has sales repeating every week with a construction company that builds to order. Companies in noncyclical businesses, such as some public utilities, likely have more stable earnings than ones in cyclical businesses, such as steel. Some use “quality of earnings” to refer to the stability and recurrence of basic revenue-generating activities. Those who use the phrase this way rarely associate earnings quality with accounting issues.

quality of financial position Because of the linkage between the *income statement* with the change in *retained earnings* between the beginning and ending *balance sheet*, the *factors* that imply a high (or low) *quality of earnings* also affect the balance sheet. Users of this phrase have in mind the same accounting issues as they have in mind when they use the phrase “quality of earnings.” In the recent past, many *firms* held subprime *mortgages* overvalued, in aggregate, by \$1 trillion or more, suggesting a low quality of *financial position*.

quantitative performance measure A measure of *output* based on an objectively observable quantity, such as units produced or *direct costs* incurred, rather than on an unobservable quantity or a quantity observable only nonobjectively, like *quality* of service provided.

quantity discount A reduction in purchase *price* as quantity purchased increases. The Robinson-Patman Act constrains the amount of the *discount*. Do not confuse with *purchase discount*.

quantity variance *Efficiency variance*; in *standard cost* systems, the *standard price* per unit times (standard quantity that should be used minus actual quantity used).

quasi-reorganization A *reorganization* in which no new company emerges or no court has intervened, as would happen in *bankruptcy*. The primary purpose is to rid the *balance sheet* of a *deficit* (negative *retained earnings*) and give the *firm* a “fresh start.”

quick assets *Assets* readily convertible into *cash*; includes cash, current *marketable securities* (that is, not held as *investments*), and current *receivables*.

quick ratio Sum of (*cash*, current *marketable securities*, and current *receivables*) divided by *current liabilities*; often called the *acid test ratio*. The analyst may exclude some nonliquid receivables from the numerator. See *ratio* and **Exhibit 7.12**.

R

R² The proportion of the statistical *variance* of a *dependent variable* explained by the equation fit to *independent variable(s)* in a *regression analysis*.

R&D See *research and development*.

Railroad Accounting Principles Board (RAPB) A *board* brought into existence by the Staggers Rail Act of 1980 to advise the Interstate Commerce Commission on accounting matters affecting railroads. The *RAPB* was the only cost-accounting body authorized by the

government during the decade of the 1980s (because Congress ceased *funding* the *CASB* during the 1980s). The RAPB incorporated the pronouncements of the CASB and became the government's authority on *cost accounting principles*, until the Congress re-instated the CASB. Refer to *CASB*.

random number sampling For choosing a sample, a method in which the analyst selects items from the *population* by using a random number table or generator.

random sampling For choosing a sample, a method in which all items in the *population* have an equal chance of being selected. Compare *judgment(al) sampling* and *stratified sampling*.

RAPB *Railroad Accounting Principles Board*.

rate of return on assets (ROA) *Return on assets*. See *ratio* and **Exhibit 7.12**.

rate of return on common stock equity (ROCE) See *ratio* and **Exhibit 7.12**.

rate of return on shareholders' (owners') equity See *ratio*.

rate of return (on total capital) See *ratio* and *return on assets*.

rate variance *Price variance*, usually for *direct labor costs*.

ratio The number resulting when one number divides another. Analysts generally use ratios to *assess* aspects of *profitability*, *solvency*, and *liquidity*. The commonly used *financial ratios* fall into three categories: (1) those that summarize some aspect of *operations* for a *period*, usually a year; (2) those that summarize some aspect of *financial position* at a given moment—the moment for which a *balance sheet* reports; and (3) those that relate some aspect of operations to some aspect of financial position. **Exhibit 7.12**, in **Chapter 7**, defines many commonly used financial ratios.

For all *ratios* that require an *average balance* during the period, the analyst often derives the average as one half the sum of the beginning and the ending balances. Sophisticated analysts *recognize*, however, that particularly when companies use a *fiscal year* different from the calendar year, this averaging of beginning and ending balances may mislead. Consider, for example, the *rate of return on assets* of Sears, Roebuck & Company, whose *fiscal year* ends on January 31. Sears chooses a January 31 closing date at least in part because *inventories* are at a low level and are therefore easy to count—it has sold the Christmas *merchandise*, and the Easter merchandise has not yet all arrived. Furthermore, by January 31, Sears has collected for most Christmas *sales*, so *receivable* amounts are not unusually large. Thus at January 31, the amount of total assets is lower than at many other times during the year. Consequently, the denominator of the rate of return on assets, total assets, for Sears more likely represents the smallest amount of total assets on hand during the year rather than the average amount. The return on assets rate for Sears and other companies that choose a fiscal year-end to coincide with low points in the inventory cycle is likely to exceed the ratio measured with a more accurate estimate of the average amounts of total assets.

raw material *Goods* purchased for use in manufacturing a *product*.

raw materials inventory See *raw material*; see *inventory*.

reacquired stock *Treasury shares*.

real accounts *Balance sheet accounts*, as opposed to *nominal accounts*. See *permanent accounts*.

real amount (value) An amount stated in *constant dollars*. For example, if the *firm* sells an *investment* costing \$100 for \$130 after a *period* of 10% general *inflation*, the *nominal amount of gain* is \$30 (= \$130 – \$100) but the *real amount of gain* is C\$20 (= \$130 – 1.10 × \$100), where “C\$” denotes constant dollars of purchasing power on the date of *sale*.

real estate *Land* and its *improvements*, such as landscaping and roads, but not buildings.

real interest rate *Interest rate* reflecting the productivity of *capital*, not including a *premium* for *inflation* anticipated over the life of the *loan*.

realizable value *Fair value* or, sometimes, *net realizable (sales) value*.

realization (convention) The accounting practice of delaying the recognition of *gains* and *losses* from changes in the *market price of assets* until the *firm* sells the assets. However, the *firm* recognizes unrealized losses on *inventory* (or *marketable securities* classified as *trading securities*) prior to sale when the *firm* uses the *lower of cost or market* valuation basis for inventory (or the *fair value* basis for marketable securities) or when it recognizes *impairments*.

realize (v. recognize) To convert into *funds*; when applied to a *gain* or *loss*, implies that an *arm's length transaction* has taken place. Contrast with *recognize*; the *firm* may recognize a loss (as, for example, on *marketable equity securities*) in the *financial statements* even though it has not yet realized the loss via a *transaction*.

realized gain (or loss) on marketable equity securities An *income statement account* title for the difference between the proceeds of disposition and the *acquisition cost* of *marketable equity securities*.

realized gross margin *Gross margin* in a *transaction* with a *counterparty* outside the *firm*.

realized holding gain See *inventory profit* for definition and an example.

rearrangement costs *Costs* of reinstalling *assets*, perhaps in a different location. The *firm* should *capitalize* them as part of the assets cost, just as is done with original installation cost. The *firm* will *expense* these costs if they merely maintain the asset's future benefits at their originally intended level before the relocation.

recapitalization *Reorganization*.

recapture Name for one kind of tax payment. Various *provisions* of the *income tax* rules require a refund by the taxpayer (*recapture* by the government) of various tax advantages under certain conditions. For example, the taxpayer must repay tax savings provided by *accelerated depreciation* if the taxpayer prematurely retires the item providing the tax savings.

receipt Acquisition of *cash*. Written acknowledgment that the signer has received a good or service or cash.

receivable Any *collectible*, whether or not it is currently due.

receivable turnover See *ratio* and **Exhibit 7.12**.

reciprocal holdings Company A owns *stock* of Company B, and Company B owns stock of Company A; or Company B owns stock of Company C, which owns stock of Company A.

recognize To enter a *transaction* in the *accounts*; contrast with *realize*.

reconciliation A calculation that shows how one *balance* or figure derives from another, such as a *reconciliation* of retained earnings or a *bank reconciliation schedule*. See *articulate*.

record date The date at which the *firm* pays *dividends* on payment date to those who own the *stock*.

recourse The *rights* of the *lender* if a *borrower* does not repay as promised. A *recourse loan* gives the lender the right to take any of the borrower's *assets* not exempted from such taking by the contract. See also *note receivable discounted*.

recoverable amount Under *IFRS*, the larger of (1) *fair value* less *cost* to sell and (2) *value* in use, defined as the *present value of future cash flows* of the *asset* in its current use by the *firm*. Used in measuring the amount of an *impairment loss*.

recovery of unrealized loss on trading securities An *income statement account title* for the *gain* during the current *period* on *trading securities*.

recurring Occurring again; occurring repetitively; in accounting, an adjective often used in describing *revenue* or *earnings*. In some contexts, the term “*recurring revenue*” is ambiguous. Consider a construction contractor who accounts for a single long-term project with the *installment method*, with revenue recognized at the time of each cash collection from the customer. The recognized revenue is recurring, but the *transaction* leading to the revenue is not. See *quality of earnings*.

redeemable (preferred shares) *Preferred shares* that carry one of three types of *redemption* rights or obligations:

- Redemption right of the issuer: The issuing firm has the right but not the obligation—the option—to redeem the *preferred stock* under certain conditions Same as *callable preferred stock*. *U.S. GAAP* and *IFRS* require the issuer to classify as a component of *shareholders' equity*.
- Redemption obligation of the issuer at specified time or upon a specified *event certain to occur*: Often called “*mandatorily redeemable preferred stock*.” This preferred stock has attributes of both long-term debt and *shareholders' equity*. The specified redemption time is analogous to the *maturity* date of long-term debt. An example of an event certain to occur that would trigger redemption is the death of the preferred shareholder. *U.S. GAAP* and *IFRS* require the issuer to classify as a *liability*.
- Redemption obligation of the issuer conditional on a specified event not certain to occur: Some *preferred shares* give the holder the option, but not the obligation, to force the issuer to redeem. The owner of the preferred stock has a *put option*, the right to require the issuing firm to repurchase the

shares. Such redemption is an event not certain to occur. *U.S. GAAP* requires the issuer to classify the security as neither liability nor shareholders' equity, but to show the amounts in between. *IFRS* requires classification as a liability.

redemption Retirement by the issuer, usually by a purchase or *call*, of *stocks* or *bonds*.

redemption premium *Call premium*.

redemption value The *price* a *corporation* will pay to retire *bonds* or *preferred stock* if it calls them before *maturity*.

refinancing An *adjustment* in the *capital structure* of a *corporation*, involving changes in the nature and amounts of the various classes of *debt* and, in some cases, *capital* as well as other components of *shareholders' equity*. *Asset carrying values* in the *accounts* remain unchanged.

refunding bond issue Said of a *bond* issue whose *proceeds* the *firm* uses to retire bonds already *outstanding*.

register A collection of consecutive entries, or other information, in chronological order, such as a *check register* or an *insurance register* that lists all *insurance* policies owned.

registered bond A *bond* for which the issuer will pay the *principal* and *interest*, if registered as to interest, to the owner listed on the *books* of the issuer.

registrant See *U.S. SEC registrant*.

registrar An *agent*, usually a bank or trust company, appointed by a *corporation* to keep track of the names of *shareholders* and distributions to them.

registration statement Required by the Securities Act of 1933, statement of most companies that want to have owners of their securities trade the securities in public markets. The statement discloses financial data and other items of *interest* to potential *investors*.

regression analysis A method of *cost estimation* based on statistical techniques for fitting a line (or its equivalent in higher mathematical dimensions) to an observed series of data points, usually by minimizing the sum of squared deviations of the observed data from the fitted line. Common usage calls the cost that the analysis explains the *dependent variable*; it calls the variable(s) we use to estimate *cost behavior* the *independent variable(s)*. If we use more than one independent variable, the term for the analysis is “multiple *regression analysis*.” See R^2 , *standard error*, and *t-value*.

regressive tax *Tax* for which the rate decreases as the taxed base, such as *income*, increases. Contrast with *progressive tax*.

Regulation S-K The *SEC's* standardization of nonfinancial statement *disclosure* requirements for documents filed with the SEC.

Regulation S-T The *SEC's* regulations specifying formats for electronic filing. See *XBRL*.

Regulation S-X The *SEC's* principal accounting regulation, which specifies the form and content of financial reports to the SEC.

rehabilitation The improving of a used *asset* via an extensive *repair*. Ordinary repairs and *maintenance* restore or maintain expected *service potential* of an asset, and the *firm* treats them as *expenses*. A rehabilitation

improves the asset beyond its current service potential, enhancing the service potential to a significantly higher level than before the rehabilitation. Once rehabilitated, the asset may be better, but need not be, than it was when new. The firm will *capitalize expenditures* for rehabilitation, like those for *betterments and improvements*.

reinvestment rate In a *capital budgeting* context, the rate at which the *firm* invests *cash* inflows from a project occurring before the project's completion. Once the analyst assumes such a rate, no project can ever have multiple *internal rates of return*. See *Descartes's Rule of Signs*.

relative performance evaluation Setting performance targets and, sometimes, compensation in relation to the performance of others, perhaps in different *firms* or *divisions*, who face a similar environment.

relative sales value method See *net realizable (sales) value*.

relevance; relevant According to *SFAC No. 2*, the *financial reporting objective* stating that accounting information is appropriate or helpful for the purposes to be served by that information.

relevant cost *Cost* used by an analyst in making a decision. *Incremental cost; opportunity cost*.

relevant cost analysis Identifies the *costs* (or *revenues*) relevant to the decision to be made. A cost or revenue is relevant only if an amount differs between alternatives. Also called *differential cost analysis*.

relevant range Activity levels over which costs are linear or for which *flexible budget* estimates and *breakeven charts* will remain valid.

reliability According to *SFAC No. 2*, the *financial reporting objective* stating that accounting information "represents what it purports to represent."

remit earnings An expression likely to confuse a reader without a firm understanding of accounting basics. A *firm* generates *net assets* by earning *income* and retains net assets if it does not declare *dividends* in the amount of *net income*. When a firm declares dividends and pays the *cash* (or other net assets), some writers would say the firm *remits earnings*. We think the student learns better by conceiving earnings as a *credit balance*. When a firm pays dividends it sends net assets, things with *debit* balances, not something with a *credit* balance, to the recipient. When writers say firms remit earnings, they mean the firms send assets (or net assets) that previous earnings have generated and reduce *retained earnings*.

remittance advice Information on a *check stub*, or on a document attached to a check by the *drawer*, that tells the *payee* why a payment is being made.

rent A *charge* for use of *land*, buildings, or other *assets*.

reorganization In the *capital structure* of a *corporation*, a major change that leads to changes in the *rights, interests*, and implied ownership of the various *security* owners; usually results from a *merger* or an agreement by *senior security* holders to take action to forestall *bankruptcy*.

repair An *expenditure* to restore an *asset's service potential* after damage or after prolonged use. In the second sense, after prolonged use, the difference between

repairs and maintenance is one of degree and not of kind. A repair is treated as an *expense* of the *period* when incurred. Because the *firm* treats repairs and maintenance similarly in this regard, the distinction is not important. A repair helps to maintain *capacity* at the levels planned when the firm acquired the asset. Contrast with *improvement*.

replacement cost For an *asset*, the *current fair market value* to purchase another, similar asset (with the same future benefit or *service potential*). *Current cost*. See *reproduction cost* and *productive capacity*. See also *distributable income* and *inventory profit*.

replacement cost method of depreciation Method in which the analyst augments the original-cost *depreciation charge* with an amount based on a portion of the difference between the *current replacement cost* of the *asset* and its *original cost*.

replacement system of depreciation See *retirement method of depreciation* for definition and contrast.

report *Financial statement; auditor's report*.

report form Balance sheet form that typically shows *assets* minus *liabilities* as one total. Then, below that total appears the components of *owners' equity* summing to the same total. Often, the top section shows *current* assets less *current liabilities* before *noncurrent assets* less *noncurrent liabilities*. Contrast with *account form*.

reporting objectives (policies) The general purposes for which the *firm* prepares *financial statements*. The *FASB* has discussed these in *SFAC No. 1*.

reporting unit A *segment* or a component of a segment that is a *business* with separate financial information that *management* regularly reviews. Pertinent for *impairment* considerations involving *goodwill*. *IFRS* refers to the same concept as a *cash-generating unit*.

representative item sampling Sampling in which the analyst believes the sample selected is typical of the entire *population* from which it comes. Compare *specific item sampling*.

reproduction cost The *cost* necessary to acquire an *asset*-similar in all physical respects to another asset for which the analyst requires a *current value*. See *replacement cost* and *productive capacity* for contrast.

required rate of return (RRR) *Cost of capital*.

requisition A formal written order or request, such as for withdrawal of supplies from the storeroom.

resale value *Exit value; net realizable value*.

research and development (R&D) A form of economic activity with special accounting rules. *Firms* engage in research in hopes of discovering new knowledge that will create a new *product*, process, or service or of improving a present product, process, or service. Development translates research findings or other knowledge into a new or improved product, process, or service. *SFAS No. 2 (Codification Topic 730)* requires that firms expense costs of such activities as incurred on the grounds that the future benefits are too uncertain to warrant *capitalization* as an *asset*. This treatment seems questionable to us because we wonder why firms would continue to undertake *R&D* if there was no expectation of future benefit; if future benefits exist, then *R&D costs* should be assets that

appear, like other assets, at *historical cost*. *IFRS* allows *capitalization* of costs once the projects reach the development stage. *U.S. GAAP* requires *capitalization* of *software* development costs once the projects reach the development stage.

reserve The worst word in accounting because almost everyone not trained in accounting, and some who are, misunderstand it. The common confusion is that reserves represent a pool of *cash* or other *assets* available when the *firm* needs them. Wrong. Cash always has a *debit balance*. Reserves always have a *credit balance*. When properly used in accounting, “reserves” refer to an *account* that appropriates *retained earnings* and restricts dividend declarations. Appropriating retained earnings is itself a poor and vanishing practice, so the word should seldom appear in accounting. In addition, “reserve” was used in the past to indicate an asset *contra account* (for example, reserve for *depreciation*) or an *estimated liability* (for example, reserve for *warranty costs*). In any case, reserve accounts have *credit balances* and are not pools of *funds*, as the unwary reader might infer. If a company has set aside a pool of *cash* (or *marketable securities*) to serve some specific purpose such as paying for a new *factory*, then it will call that cash a *fund*. No other word in accounting causes so much misunderstanding by nonexperts as well as by “experts” who should know better. A leading unabridged dictionary defines “reserve” as “cash, or assets readily convertible into cash, held aside, as by a *corporation*, bank, state or national government, etc. to meet expected or unexpected demands.” This definition is absolutely wrong in accounting. Reserves are not funds. For example, the firm creates a *contingency fund* of \$10,000 by depositing cash in a fund and makes the following entry:

Contingency Fund (Asset Increase)	10,000
Cash (Asset Decrease)	10,000

The following entry may accompany the previous entry, if the firm wants to appropriate retained earnings:

Retained Earnings (Shareholders' Equity Decrease)	10,000
Reserve for Contingencies (Liability Increase)	10,000

The transaction leading to the first entry has economic significance. The second entry has little economic impact for most firms. The problem with the word “reserve” arises because the firm can make the second entry without the first—a company can create a reserve, that is, appropriate retained earnings, without creating a fund. The problem results, at least in part, from the fact that in common usage, “reserve” means a pool of assets, as in the phrase “oil reserves.” The *Internal Revenue Service* does not help

in dispelling confusion about the term “reserves.” The *federal income tax* return for corporations uses the title Reserve for Bad Debts to mean Allowance for Uncollectible Accounts and speaks of the Reserve Method in referring to the *allowance method* for estimating *revenue* or *income* reductions from *estimated uncollectibles*. See *Accounting Terminology Bulletin*, one of which in the 1940s suggested that accountants not use the word.

reserve recognition accounting (RRA) One form of *accounting* for *natural resources*. In exploration for natural resources, the problem arises of how to treat the *expenditures* for exploration, both before the *firm* knows the outcome of the efforts and after it knows the outcome. Suppose that the firm spends \$10 million to drill 10 holes (\$1 million each) and that nine of them are dry whereas one is a gusher containing oil with a *net realizable value* of \$40 million. Dry hole, or *successful efforts*, accounting would *expense* \$9 million and *capitalize* \$1 million, which the firm will *deplete* as it lifts the oil from the ground. *Full costing* would expense nothing but would capitalize the \$10 million of drilling costs that the firm will deplete as it lifts the oil from the single productive well. *Reserve recognition accounting* would capitalize \$40 million, which the firm will deplete as it lifts the oil, with a \$30 million *credit to income* or *contributed capital*. The *balance sheet* shows the *net realizable value* of proven oil and gas reserves. The *income statement* has three sorts of items: (1) current income resulting from production or “lifting profit,” which is the *revenue* from *sales* of oil and gas less the *expense* based on the current valuation amount at which these items have appeared on the balance sheet; (2) *profit* or *loss* from exploration efforts in which the current value of new discoveries is revenue and all the exploration cost is expense; and (3) gain or loss on changes in current value during the year, which accountants in other contexts call a *holding gain* or *loss*.

reset bond A *bond*, typically a *junk bond*, that specifies that periodically the issuer will reset the *coupon rate* so that the bond sells at *par* in the market. *Investment* bankers created this type of instrument to help ensure the purchasers of such bonds of getting a fair *rate of return*, given the riskiness of the issuer. If the issuer gets into financial trouble, its bonds will trade for less than par in the market. The issuer of a reset bond promises to raise the *interest rate* and *preserve* the *value* of the bond. Ironically, the reset feature has often had just the opposite effect. The *default risk* of many issuers of reset bonds has deteriorated so much that the bonds have dropped to less than 50% of par. To raise the value to par, the issuer would have to raise the interest rate to more than 25% per year. That rate is so large that issuers have declared *bankruptcy* rather than attempt to make the new large *interest payments*; this then reduces the *market value* of the bonds rather than increases them.

residual income In an *external reporting* context, a term that refers to *net income* to *common shares* (= net income less *preferred stock dividends*). In *managerial accounting*,

this term refers to the excess of income for a *division* or *segment* of a company over the *product* of the *cost of capital* for the company multiplied by the average amount of capital *invested* in the division during the *period* over which the division earned the *income*.

residual security A *potentially dilutive security*. *Options, warrants, convertible bonds, and convertible preferred stock*.

residual value At any time, the estimated or actual *net realizable value* (that is, *proceeds* less *removal costs*) of an *asset*, usually a depreciable *plant asset*. In the context of *depreciation accounting*, this term is equivalent to *salvage value* and is preferred to *scrap value* because the *firm* need not scrap the asset. It is sometimes used to mean *net carrying value*. In the context of a *non-cancellable lease*, it is the estimated *value* of the leased asset at the end of the lease period. See *lease*.

resources supplied *Expenditures* made for an activity.

resources used *Cost driver rate* times *cost driver volume*.

responsibility accounting Accounting for a *business* by considering various units as separate entities, or *profit centers* or *revenue centers*, or *cost centers*, or *investment centers*, giving management of each unit responsibility for the unit's *revenues* and *expenses*. See *transfer price*.

responsibility center An organization part or *segment* that top *management* holds accountable for a specified set of activities. Also called *accountability center*. See *cost center, investment center, profit center, and revenue center*.

restricted assets Governmental resources restricted by legal or contractual requirements for specific purpose.

restricted retained earnings That part of *retained earnings* not legally available for *dividends*. See *retained earnings, appropriated*. *Bond indentures* and other *loan contracts* can curtail the legal ability of the *corporation* to declare dividends without formally requiring a *retained earnings appropriation*, but the *firm* must disclose such restrictions.

restructuring (liability, provisions) The *FASB Codification*, quoting *IFRS*, defines this as “a program that is planned and controlled by *management*, and materially changes either the scope of the *business* undertaken by an *entity*, or the manner in which that business is conducted.” The *liability* or, in *IFRS*, the *provision* reports the amounts the business expects to pay as a result of the plan. *U.S. GAAP* and *IFRS* differ in details as to when the *firm* recognizes a liability (*U.S. GAAP*) or provision (*IFRS*); see discussion in **Chapter 8**.

retail inventory method Ascertaining *cost* amounts of *ending inventory* as follows (assuming *FIFO*): *Cost of Ending Inventory* = (*Selling Price of Goods Available for Sale* – *Sales*) × *Cost Percentage*. The analyst then computes *cost of goods sold* from the *inventory equation*; costs of *beginning inventory*, purchases, and ending inventory are all known. (When the *firm* uses *LIFO*, the method resembles the *dollar-value LIFO method*.) See *markup*.

retail terminology See *markup*.

retained earnings *Net income* over the life of a *corporation* less all *dividends* (including capitalization through *stock dividends*); *owners' equity* less *contributed capital*.

retained earnings, appropriated An *account* set up by *crediting* it and *debiting retained earnings*; used to indicate that a portion of retained earnings is not available for *dividends*. The practice of appropriating retained earnings is misleading unless the *firm* marks all *capital* with its use, which is not practicable, nor sensible, since capital is fungible—all the *equities* jointly *fund* all the *assets*. The use of formal retained earnings *appropriations* is declining.

retained earnings statement A *reconciliation* of the beginning and the ending *balances* in the *retained earnings account*; required by *generally accepted accounting principles* whenever the *firm* presents *comparative balance sheets* and an *income statement*. This reconciliation can appear in a separate statement, in a combined statement of income and retained earnings, or in the balance sheet.

retirement method of depreciation A method in which the *firm* records no entry for *depreciation expense* until it retires an *asset* from service. Then, it makes an entry *debiting* depreciation expense and *crediting* the *asset account* for the *cost* of the asset retired. If the retired asset has a *salvage value*, the firm reduces the amount of the *debit* to depreciation expense by the amount of salvage value with a corresponding debit to cash, *receivables*, or salvaged materials. The *replacement system of depreciation* is similar, except that the debit to depreciation expense equals the cost of the new asset less the salvage value, if any, of the old asset. Some public utilities used these methods. For example, if the firm acquired 10 telephone poles in Year 1 for \$60 each and replaces them in Year 10 for \$100 each when the salvage value of the old poles is \$5 each, the accounting would be as follows:

RETIREMENT METHOD

Plant Assets (Asset Increase)	600	
Cash (Asset Decrease)		600
To acquire assets in Year 1.		
Retained Earnings (Depreciation Expense)		
(Shareholders' Equity Decrease)	550	
Salvage Receivable (Asset Increase)	50	
Plant Assets (Asset Decrease)		600
To record retirement and depreciation in Year 10.		
Plant Assets (Asset Increase)	1,000	
Cash (Asset Decrease)		1,000
To record acquisition of new assets in Year 10.		

REPLACEMENT METHOD

Plant Assets (Asset Increase)	600	
Cash (Asset Decrease)		600
To acquire assets in Year 1.		
Depreciation Expense (Shareholders' Equity		
Decrease)	950	
Salvage Receivable (Asset Increase)	50	
Cash (Asset Decrease)		1,000
To record depreciation on old asset in amount		
quantified by net cost of replacement asset in		
Year 10.		

The retirement method is like *FIFO* in that it records the cost of the first assets as *depreciation* and puts the cost of the second assets on the balance sheet. The replacement method is like *LIFO* in that it records the cost of the second assets as depreciation expense and leaves the cost of the first assets on the balance sheet.

retirement plan *Pension plan.*

retroactive benefits In initiating or amending a *defined-benefit pension plan*, benefits that the benefit formula attributes to employee *services* rendered in *periods* prior to the initiation or amendment. See *prior service costs*.

return A *schedule* of information required by governmental bodies, such as the *tax return* required by the *Internal Revenue Service*; also the physical return of *merchandise*. See also *return on assets* and *return on investment*.

return and risk Modern financial economics shows that under most realistic circumstances, if an *investor* wants to earn a higher *rate of return on investment*, then the investor must *bear* more *risk*. Conversely, an investor who bears more risk expects to earn a higher return on investment as compensation for that risk bearing.

return on assets (ROA) *Net income* plus after-tax *interest charges* plus *noncontrolling interest* in *income* divided by average total *assets*; perhaps the single most useful *ratio* for *assessing management's* overall *operating* performance. Most financial economists would subtract average noninterest-bearing *liabilities* from the denominator. Economists realize that when liabilities do not provide for explicit *interest* charges, the *creditor* adjusts the terms of contract, such as setting a higher selling *price* or lower *discount*, to those who do not pay cash immediately. (To take an extreme example, consider how much higher *salary* a worker who receives a salary once per year, rather than once per month, would demand.) This ratio requires in the numerator the income amount before the *firm* *accrues* any charges to suppliers of *funds*. We cannot measure the interest charges implicit in the noninterest-bearing liabilities because they cause items such as *cost of goods sold* and salary expense to be somewhat larger, since the interest is implicit. Subtracting their amounts from the denominator adjusts for their implicit cost. Such subtraction assumes that assets financed with noninterest-bearing liabilities have the same *rate of return* as all the other assets.

return on equity (ROE) Net income for a period divided by Average *Owners' Equity* for the period.

return on investment (ROI), return on capital Income (before distributions to suppliers of *capital*) for a *period*; as a rate, this amount divided by *average* total *assets*. The analyst should add back *interest*, *net of tax* effects, to *net income* for the numerator. See *ratio*.

revenue The *owners' equity* increase accompanying the *net assets* increase caused by selling *goods* or rendering *services*; in short, a service rendered; *sales of products, merchandise, and services* and *earnings* from *interest, dividends, rents, and the like*. Conceptually (in contrast to specific guidance in *accounting standards*) measure *revenue* as the expected *net present value* of the net

assets the firm will receive. Do not confuse with *receipt of funds*, which may occur before, when, or after revenue is recognized. Contrast with *gain* and *income*. See also *holding gain*. Some writers use the term “gross income” synonymously with *revenue*; avoid such usage.

revenue center Within a *firm*, a *responsibility center* that has control only over *revenues* generated. Contrast with *cost center*. See *profit center* or *investment center*.

revenue expenditure A term sometimes used to mean an *expense*, in contrast to a capital *expenditure* to acquire an *asset* or to discharge a *liability*. Avoid using this term; use *period expense* instead.

revenue measurement See *revenue recognition*. When the firm recognized revenue, it must record an amount. This term refers to the computation of the amount. While *U.S. GAAP* and *IFRS* contain a variety of details for these computations, for most purposes, one can think of the amount as the expected *present value* of the cash receipts from the customer.

revenue received in advance An inferior term for *advances from customers*.

revenue recognition Standard setters prescribe when a *firm* can *recognize revenue*. The general criteria require that the firm have delivered a *product* or *service* to the customer, have received *cash* or a *financial asset* capable of reasonably precise measurement, and be able to measure with reasonable *precision* the remaining *costs* (such as for *warranties, technical services, and software* upgrades) to complete the *transaction*.

reversal (reversing) entry An *entry* in which all *debits* and *credits* are the credits and debits, respectively, of another entry, and in the same amounts. The accountant usually records a reversal entry on the first day of an *accounting period* to reverse a previous *adjusting entry*, usually an *accrual*. The purpose of such entries is to make the bookkeeper's tasks easier. Suppose that the *firm* pays salaries every other Friday, with paychecks compensating employees for the two weeks just ended. Total salaries *accrue* at the rate of \$5,000 per five-day workweek. The bookkeeper is accustomed to making the following entry every other Friday:

(1) Retained Earnings (Salary Expense)	
(Shareholders' Equity Decrease)	10,000
Cash (Asset Decrease)	10,000
To record salary expense and salary payments.	

If the firm delivers paychecks to employees on Friday, November 25, then the *adjusting entry* made on November 30 (or perhaps later) to record *accrued* salaries for November 28, 29, and 30 would be as follows:

(2) Retained Earnings (Salary Expense)	
(Shareholders' Equity Decrease)	3,000
Salaries Payable (Liability Increase)	3,000
To charge November operations with all salaries earned in November.	

The firm would close the Salary Expense *account* as part of the November 30 closing entries. On the next payday, December 9, the salary entry would be as follows:

<hr/>	
(3) Retained Earnings (Salary Expense)	
(Shareholders' Equity Decrease)	7,000
Salaries Payable (Liability Decrease) . . .	3,000
Cash (Asset Decrease)	10,000
To record salary payments split between expense for December (seven days) and liability carried over from November.	
<hr/>	

To make entry (3), the bookkeeper must look back into the records to see how much of the debit is to Salaries Payable accrued from the previous month in order to split the total debits between December expense and the liability carried over from November. Notice that this entry forces the bookkeeper both (a) to refer to balances in old accounts and (b) to make an entry different from the one customarily made, entry (1). The reversing entry, made just after the books have been closed for the second quarter, makes the salary entry for December 9 the same as that made on all other Friday paydays. The reversing entry merely *reverses* the adjusting entry (2):

<hr/>	
(4) Salaries Payable (Liability Decrease)	3,000
Retained Earnings (Salary Expense)	
(Shareholders' Equity Increase)	3,000
To reverse the adjusting entry.	
<hr/>	

This entry results in a zero balance in the Salaries Payable *account* and a credit balance in the Salary Expense *account*. If the firm makes entry (4) just after it closes the books for November, then the entry on December 9 will be the customary entry (1). Entries (4) and (1) together have exactly the same effect as entry (3).

The procedure for using reversal entries is as follows: the firm makes the required adjustment to record an accrual (payable or receivable) at the end of an *accounting period*; it makes the closing entry as usual; as of the first day of the following period, it makes an entry reversing the adjusting entry; when the firm makes (or receives) a payment, it records the entry as though it had not recorded an adjusting entry at the end of the preceding period. Whether a firm uses reversal entries affects the record-keeping procedures but not the financial statements.

This term is also used to describe the entry reversing an incorrect entry before recording the correct entry.

reverse stock split A stock split in which the *firm* decreases the number of *shares outstanding*. See *stock split*.

revolving fund A *fund* whose amounts the *firm* continually spends and replenishes; for example, a *petty cash fund*.

revolving loan A *loan* that both the *borrower* and the *lender* expect to renew at *maturity*.

right The privilege to subscribe to new *stock* issues or to purchase stock. Usually, securities called *warrants*

contain the rights, and the owner of the warrants may sell them. See also *preemptive right*.

risk A measure of the variability of the *return on investment*. For a given expected amount of *return*, most people prefer less risk to more risk. Therefore, in rational markets, *investments* with more risk usually promise, or *investors* expect to receive, a higher *rate of return* than investments with lower risk. Most people use “risk” and “*uncertainty*” as synonyms. In technical language, however, these terms have different meanings. We use “risk” when we know the probabilities attached to the various outcomes, such as the probabilities of heads or tails in the flip of a fair coin. “*Uncertainty*” refers to an event for which we can only estimate the probabilities of the outcomes, such as winning or losing a lawsuit.

risk-adjusted discount rate Rate used in discounting *cash flows* for projects more or less risky than the *firm's average*. In a *capital budgeting* context, a decision analyst compares projects by comparing their net *present values* for a given *interest rate*, usually the *cost of capital*. If the analyst considers a given project's outcome to be much more or much less risky than the normal undertakings of the company, then the analyst will use a larger interest rate (if the project is riskier) or a smaller interest rate (if less risky) in discounting, and the rate used is risk-adjusted.

risk-free rate An *interest rate* reflecting only the pure interest rate plus an amount to compensate for *inflation* anticipated over the life of a *loan*, excluding a *premium* for the *risk of default* by the *borrower*. Financial economists usually measure the *risk-free rate* in the United States from U.S. government securities, such as Treasury bills and *notes*.

risk premium Extra compensation paid to employees or extra *interest* paid to *lenders*, over amounts usually considered normal, in *return* for their undertaking to engage in activities riskier than normal.

ROA *Return on assets*.

ROI *Return on investment*; usually used to refer to a single project and expressed as a *ratio*: *income* divided by average *cost of assets* devoted to the project.

royalty Compensation for the use of property, usually a *patent*, *copyrighted material*, or *natural resources*. The amount is often expressed as a percentage of *receipts* from using the property or as an amount per unit produced.

RRA *Reserve recognition accounting*.

RRR *Required rate of return*. See *cost of capital*.

rule of 69 Rule stating that an amount of *cash* invested at $r\%$ per *period* will double in $69/r + 0.35$ periods. This approximation is accurate to one-tenth of a period for *interest rates* between 0.25% and 100% per period. For example, at 10% per period, the rule says that a given sum will double in $69/10 + 0.35 = 7.25$ periods. At 10% per period, a given sum actually doubles in 7.27+ periods.

rule of 72 Rule stating that an amount of *cash* invested at $r\%$ per *period* will double in $72/r$ periods. A reasonable approximation for *interest rates* between 4% and 10% but not nearly as accurate as the *rule of 69* for

An Open Account, Ruled and Balanced

(Steps indicated in parentheses correspond to steps described in “ruling an account.”)

	Date 2013	Explanation	Ref.	Debit (1)	Date 2013	Explanation	Ref.	Credit (2)	
	Jan. 2	Balance	✓	100.00					
	Jan. 13		VR	121.37	Sept. 15		J	0.42	
	Mar. 20		VR	56.42	Nov. 12		J	413.15	
	June 5		J	1,138.09	Dec. 31	Balance	✓	1,050.59	(3)
	Aug. 18		J	1.21					
	Nov. 20		VR	38.43					
	Dec. 7		VR	8.64					
(4)	2014			<u>1,464.16</u>	2014			<u>1,464.16</u>	(4)
(5)	Jan. 1	Balance	✓	1,050.59					

interest rates outside that range. For example, at 10% per period, the rule says that a given sum will double in $72/10 = 7.2$ periods.

rule of 78 The rule followed by many *finance* companies for *allocating earnings* on *loans* among the months of a year on the sum-of-the-months'-digits basis when the *borrower* makes equal monthly payments to the *lender*. The sum of the digits from 1 through 12 is 78, so the rule *allocates* 12/78 of the year's earnings to the first month, 11/78 to the second month, and so on. This approximation allocates more of the early payments to *interest* and less to principal than does the correct, compound-interest method. Hence, lenders still use this method even though present-day computers can make the compound-interest computation as easily as they can carry out the approximation. See *sum-of-the-years'-digits depreciation*.

ruling (and balancing) an account The process of summarizing a series of entries in an *account* by computing a new *balance* and drawing double lines to indicate that the new balance summarizes the information above the double lines. An illustration appears below. The steps are as follows: (1) Compute the sum of all *debit* entries including opening debit balance, if any—\$1,464.16. (2) Compute the sum of all *credit* entries including opening credit balance, if any—\$413.57. (3) If the amount in (1) exceeds the amount in (2), then write the excess as a credit with a check mark— $\$1,464.16 - \$413.57 = \$1,050.59$. (4) Add both debit and credit columns, which should both now sum to the same amount, and show that identical total at the foot of both columns. (5) Draw double lines under those numbers and write the excess of debits over credits as the new debit balance with a check mark. (6) If the amount in (2) exceeds the amount in (1), then write the excess as a debit with a check mark. (7) Do steps (4) and (5) except that the excess becomes the new credit balance. (8) If the amount in (1) equals the amount in (2), then the balance is zero, and only the totals with the double lines beneath them need appear.

S

S corporation A *corporation* taxed like a *partnership*. Corporation (or partnership) agreements *allocate* the periodic *income* to the individual *shareholders* (or

partners) who report these amounts on their individual *income tax* returns. Contrast with *C corporation*.

SA (*société anonyme*) France: A *corporation*.

SAB *Staff Accounting Bulletin* of the *SEC*.

safe-harbor lease A form of *tax-transfer lease*.

safety stock Extra items of *inventory* kept on hand to protect against running out.

salary Compensation earned by *managers*, administrators, and professionals, not based on an hourly rate. Contrast with *wage*.

sale A *revenue transaction* in which the *firm* delivers *goods* or *services* to a customer in *return* for *cash* or a contractual obligation to pay.

sale and leaseback A *financing transaction* in which the *firm* sells improved property but takes it back for use on a long-term *lease*. Such *transactions* often have advantageous *income tax* effects but usually have no effect on *financial statement income*.

sales activity variance *Sales volume variance*.

sales allowance A sales *invoice* price reduction that a seller grants to a buyer because the seller delivered *goods* different from, perhaps because of damage, those the buyer ordered. The seller often accumulates amounts of such *adjustments* in a temporary *revenue contra account* having this, or a similar, title. See *sales discount*.

sales basis of revenue recognition Recognition of *revenue* not when a firm produces *goods* or when it receives orders but only when it has completed the *sale* by delivering the goods or *services* and has received *cash* or a claim to cash. Most firms recognize revenue on this basis. Compare with the *percentage-of-completion method* and the *installment method*. This is identical with the *completed contract method*, but the latter term ordinarily applies only to *long-term* construction projects.

sales contra, estimated uncollectibles A title for the *contra-revenue account* to *recognize* estimated reductions in *income* caused by *accounts receivable* that will not be collected. See *bad debt expense*, *allowance for uncollectibles*, and *allowance method*.

sales discount A *sales invoice price* reduction usually offered for prompt payment. See *terms of sale* and *2/10, n/30*.

sales return The physical *return* of *merchandise*. The seller often accumulates amounts of such returns in a temporary *revenue contra account*.

sales-type (capital) lease A form of *lease*. See *capital lease*.

When a manufacturer (or other *firm*) that ordinarily sells *goods* enters a capital lease as *lessor*, the lease is a “sales-type lease.” When a financial firm, such as a bank or *insurance* company or leasing company, acquires the *asset* from the manufacturer and then enters a capital lease as lessor, the lease is a “direct-financing-type lease.” The manufacturer recognizes its ordinary *profit* (*sales price* less *cost of goods sold*, where sales price is the *present value* of the contractual lease payments plus any down payment) on executing the sales-type capital lease, but the financial firm does not recognize profit on executing a capital lease of the direct-financing type. Instead, it earns interest because the sum of lease payments exceed the cost of the leased asset. Manufacturers who enter a sales-type lease earn both an ordinary profit on the sale and interest.

sales value method *Relative sales value method*. See *net realizable value method*.

sales volume variance Budgeted *contribution margin* per unit times (actual *sales* volume minus planned sales volume).

salvage value Actual or estimated selling *price*, *net* of removal or disposal *costs*, of a used *asset* that the firm expects to sell or otherwise retire. See *residual value*.

SAR *Summary annual report*.

Sarbanes-Oxley Act (SOX) The law passed in 2002 in the wake of the Enron, WorldCom, and other scandals to stiffen the requirements for corporate governance, including accounting issues. It speaks, among other things, to the regulation of the accounting profession, the standards for *audit committees* of public companies, the certifications *managements* must sign, and standards of *internal control* that companies must meet.

SARL (société à responsabilité limitée) France: a *corporation* with *limited liability* and a life of no more than 99 years; must have at least two and no more than 50 *shareholders*.

SAS Statement on Auditing Standards of the *AICPA*.

scale effect See *discounted cash flow*.

scatter diagram A graphic representation of the relation between two or more variables within a *population*.

schedule A supporting set of calculations, with explanations, that show how to derive figures in a *financial statement* or tax return.

scientific method *Effective interest method* of *amortizing bond discount* or *premium*.

scope paragraph A section of the *auditor's report* where the *auditor* describes the nature of the work undertaken, the procedures performed, and any limitations.

scrap value *Salvage value* assuming the owner intends to junk the item. A *net realizable value*. *Residual value*.

SEC (Securities and Exchange Commission) An agency authorized by the U.S. Congress to regulate, among other things, the financial reporting practices of most public *corporations*. The SEC has indicated that it will usually allow the *FASB* to set *accounting principles*, but it often requires more *disclosure* than the *FASB* requires. The SEC states its accounting requirements in its *Accounting Series Releases (ASR)*—replaced in 1982 by the following two), *Financial Reporting Releases*,

Accounting and Auditing Enforcement Releases, *Staff Accounting Bulletins* (these are, strictly speaking, *interpretations* by the accounting staff, not rules of the commissioners themselves), and *Regulation S-X* and *Regulation S-K*. See also *registration statement*, *10-K*, *10-Q*, and *20-F*.

secret reserve *Hidden reserve*.

Securities and Exchange Commission SEC.

securitization The bundling of *financial assets* into groups that can become the basis for raising *cash*. For example, a bank might have loaned to hundreds of customers under home *mortgages*. It could bundle a defined set of mortgages and offer for *sale* fractional interests, called *securities*, in the cash inflows from the pool of mortgages. An example of financial engineering. This has roughly the same economic effect as using the *assets* as *collateral* for a borrowing, but the securitization *transaction* enables the seller to sell to many *investors* and the items sold are *marketable securities*.

security Document that indicates ownership, such as a *share* of *stock*, or indebtedness, such as a *bond*, or potential ownership, such as an *option* or *warrant*.

security available for sale According to *SFAS No. 115* (1993) (**Codification Topic 320**), a *debt* or *equity security* that is not a *trading security*, or a debt security that is not a *security held to maturity*. See *available for sale*.

security held to maturity According to *SFAS No. 115* (1993) (**Codification Topic 320**), a *debt security* the holder has both the ability and the intent to hold to *maturity*; valued in the *balance sheet* at amortized *acquisition cost*: the carrying value of the *security* at the end of each *period* is the carrying value at the beginning of the period multiplied by one plus the historical *yield* on the security (measured as of the time of purchase) less any *cash* the holder receives at the end of this period from the security. The preceding assumes that cash receipts come at the end of a period. If they come before period-end, the computations are more complex.

segment (of a business) As defined by *APB Opinion No. 30* (**Codification Topic 845**), “a component of an *entity* whose activities represent a separate major line of *business* or class of customer. . . . [It may be] a *subsidiary*, a *division*, or a department, . . . provided that its *assets*, results of *operations*, and activities can be clearly distinguished, physically and operationally for financial reporting purposes, from the other assets, results of operations, and activities of the entity.” *SFAS No. 131* (**Codification Topic 280**) defines *operating segments* using the “*management approach*” as components of the *enterprise* engaging in revenue- and expense-generating business activities “whose operating results are regularly reviewed by the enterprise’s chief operating decision maker to make decisions about resources . . . and asset performance.”

The *IFRS* defines a segment as “a component of an *entity* that engages in business activities . . . whose operating results are regularly reviewed by the entity’s chief operating decision maker to make decisions about resources to be *allocated* to the segment . . . for which discrete financial information is available.”

- segment reporting** Reporting of *sales, income, and assets* by *segments of a business*, usually classified by nature of *products* sold but sometimes by geographical area where the firm produces or sells *goods* or by type of customers; sometimes called “line of *business* reporting.” The accounting for segment income does not *allocate central corporate expenses* to the segments.
- self-balancing** A set of records with equal *debits and credits* such as the *ledger* (but not individual *accounts*), the *balance sheet*, and a *fund* in nonprofit accounting.
- self-check(ing) digit** A digit forming part of an *account* or code number, normally the last digit of the number, which is mathematically derived from the other numbers of the code and is used to detect errors in transcribing the code number. For example, assume the last digit of the account number is the remainder after summing the preceding digits and dividing that sum by nine. Suppose the computer encounters the account numbers 7027261-7 and 9445229-7. The program can tell that something has gone wrong with the encoding of the second account number because the sum of the first seven digits is 35, whose remainder on *division* by 9 is 8, not 7. The first account number does not show such an error because the sum of the first seven digits is 25, whose remainder on division by 9 is, indeed, 7. The first account number may be in error, but the second surely is.
- self-insurance** See *insurance*.
- self-sustaining foreign operation** A foreign operation both financially and operationally independent of the reporting *enterprise* (owner) so that the owner’s exposure to exchange-rate changes results only from the owner’s *net investment* in the foreign *entity*.
- selling and administrative expenses** *Expenses* not specifically identifiable with, or assigned to, production.
- semifixed costs** *Costs* that increase with activity as a step *function*.
- semivariable costs** *Costs* that increase strictly linearly with activity but that are positive at zero activity level. *Royalty* fees of 2% of *sales* are variable; royalty fees of \$1,000 per year plus 2% of sales are semivariable.
- senior securities; senior rights** *Bonds* as opposed to *preferred stock*; preferred stock as opposed to *common stock*. The firm must meet the senior *security* claim against *earnings* or *assets* before meeting the claims of less-senior securities.
- sensitivity analysis** A study of how the outcome of a decision-making process changes as one or more of the assumptions change.
- separable criterion** An *intangible* can be an *asset* if it meets this criterion, which requires that the *firm* be able to sell or to transfer or to license or to *rent* or to *exchange* it with a *counterparty*.
- sequential access** Computer-storage access in which the analyst can locate information only by a sequential search of the storage file. Compare *direct access*.
- serial bonds** An *issue* of *bonds* that mature in part at one date, another part on another date, and so on. The various *maturity* dates usually occur at equally spaced intervals. Contrast with *term bonds*.
- service basis of depreciation** *Production method*.
- service bureau** A commercial data-processing center providing service to various customers.
- service cost, (current) service cost** *Pension plan expenses incurred* during an *accounting period* for employment *services* performed during that *period*. Contrast with *prior service cost*. See *funded*.
- service department** A department, such as the personnel or computer department, that provides *services* to other departments rather than direct work on a salable *product*. Contrast with *production department*. A firm must *allocate costs* of service departments to *product costs* under *full absorption costing* if the services benefit manufacturing *operations*.
- service department cost allocation** A procedure in which firms *allocate* the *costs* of *operating service departments* to other departments.
- service life** *Period* of expected usefulness of an asset; may differ from *depreciable life* for *income tax* purposes.
- service potential** The future benefits that cause an item to be classified as an *asset*. Without service potential, an item has no future benefits, and accounting will not classify the item as an asset. *SFAC No. 6* suggests that the primary characteristic of service potential is the ability to generate future *net cash* inflows.
- services** Useful work done by a person, a machine, or an organization. See *goods*.
- setup** The time or *costs* required to prepare production equipment for doing a *job*.
- SFAC** *Statement of Financial Accounting Concepts* of the *FASB*.
- SFAS; FAS** *Statement of Financial Accounting standards*. See *FASB*.
- shadow price** An *opportunity cost*. A *linear programming* analysis provides as one of its *outputs* the potential *value* of having available more of the scarce resources that constrain the production process, for example, the value of having more time available on a machine tool critical to the production of two products. Common terminology refers to this value as the “shadow price” or the “dual value” of the scarce resource.
- share** A unit of *stock* representing ownership in a *corporation*.
- share premium** United Kingdom: *additional paid-in capital* or *capital contributed in excess of par method*.
- shareholder** One who owns a *share*.
- shareholders’ equity** *Proprietorship* or *owners’ equity* of a *corporation*. Because *stock* means *inventory* in Australia, the United Kingdom, and Canada, their writers use the term “shareholders’ equity” rather than the term “stockholders’ equity.”
- short run; short term** Contrast with *long run*. *Managers* mean a *period* of time long enough to allow change the level of production or other activity within the constraints of current total *productive capacity*. In a *balance sheet* context, it means *current*, ordinarily due within one year. Use a hyphen when the phrase is an adjective, but no hyphen when it is a noun.
- short-term liquidity risk** The *risk* that an *entity* will not have enough *cash* in the *short run* to pay its *debts*.
- short-term operating budget** *Management’s* quantitative action plan for the coming year.

- shrinkage** An excess of *inventory* shown on the *books* over actual physical quantities on hand; can result from theft or shoplifting as well as from evaporation, excess scrap, or general wear and tear. Some accountants, in an attempt to downplay their own errors, use the term to mean record-keeping mistakes that they later must correct, with some embarrassment, and that result in material changes in reported *income*. One should not use the term “shrinkage” for the correction of mistakes because adequate terminology exists for describing mistakes.
- shutdown cost** Those *fixed costs* that the *firm* continues to incur after it has ceased production; the costs of closing down a particular production facility.
- side letter** See *channel stuffing*.
- sight draft** A demand for payment drawn by Person A to whom Person B owes cash. Person A presents the *draft* to Person B’s (the *debtor*’s) bank in expectation that Person B will authorize his or her bank to disburse the *funds*. Sellers often use such *drafts* when selling *goods* to a new customer in a different city. The seller is uncertain whether the buyer will pay the *bill*. The seller sends the bill of lading, or other evidence of ownership of the goods, along with a sight draft to the buyer’s bank. Before the warehouse holding the goods can release them to the buyer, the buyer must instruct its bank to honor the sight draft by withdrawing funds from the buyer’s *account*. Once the bank honors the sight draft, it hands to the buyer the bill of lading or other document evidencing ownership, and the goods become the property of the buyer.
- significant influence** An *investor* has significant influence over an *investee* if it can change the course of *operations* from those the investee would otherwise have undertaken. *U.S. GAAP* contains a rebuttable presumption that an investor has (does not have) significant influence if it does (does not) own 20% or more of the investee’s voting *shares*.
- simple interest** *Interest* calculated on *principal* where interest earned during *periods* before *maturity* of the *loan* does not increase the principal amount earning interest for the subsequent periods and the *lender* cannot *withdraw* the *funds* before maturity. Interest = Principal \times Interest Rate \times Time, where the rate is a rate per period (typically a year) and time is expressed in units of that period. For example, if the *rate* is annual and the time is two months, then in the formula, use 2/12 for *time*. Simple interest is seldom used in economic calculations except for periods of less than one year and then only for computational convenience. Contrast with *compound interest*.
- single-entry accounting** Accounting that is neither *self-balancing* nor *articulated*. That is, it does not rely on equal *debits* and *credits*. The firm makes no *journal entries* and must *plug* to derive *owners’ equity* for the *balance sheet*.
- single proprietorship** *Sole proprietorship*.
- single-step** Said of an *income statement* in which *ordinary revenue* and *gain* items appear first, with their total. Then come all ordinary *expenses* and *losses*, with their total. The difference between these two totals, plus the effect of *income from discontinued operations* and *extraordinary items*, appears as *net income*. Contrast with *multiple-step*, and see *proprietorship theory*.
- sinking fund** *Assets* and their *earnings* earmarked for the retirement of *bonds* or other long-term obligations. Earnings of sinking fund *investments* become *taxable income* of the company.
- sinking fund method of depreciation** Method in which the periodic *charge* is an equal amount each *period* so that the *future value* of the charges, considered as an *annuity*, will accumulate at the end of the *depreciable life* to an amount equal to the *acquisition cost* of the *asset*. The firm does not necessarily, or even usually, accumulate a *fund of cash*. Firms rarely use this method.
- skeleton account** *T-account*.
- slide** The name of a record-keeping error where in recording the number, the bookkeeper moves the decimal point from where it should be; for example, recording \$12,500.00 as \$125,000.00 or \$1,250.00.
- SMAC (Society of Management Accountants of Canada)** The *national association of accountants* whose provincial associations engage in industrial and governmental accounting. The association undertakes research and administers an educational program and comprehensive examinations; those who pass qualify to be designated *CMA (Certified Management Accountants)*, formerly called *RIA (Registered Industrial Accountant)*.
- SNC (*société en nom collectif*)** France: a *partnership*.
- soak-up method** The *equity method*.
- Social Security taxes** *Taxes* levied by the federal government on both employers and employees to provide *funds* to pay retired persons (or their survivors) who are entitled to receive such *payments*, either because they paid Social Security taxes themselves or because Congress has declared them *eligible*. Unlike a *pension plan*, the Social Security system does not collect funds and invest them for many years. The tax collections in a given year pay primarily for benefits distributed that year. At any given time the system has a multitrillion-dollar *unfunded* obligation to current workers for their eventual retirement benefits. See *Old Age, Survivors, and Disability Insurance*.
- software** The programming aids, such as operating systems, programming languages, compilers, application programs, and report writers that extend the capabilities of and simplify the use of the computer. Compare *hardware*.
- sole proprietorship** A firm in which all *owners’ equity* belongs to one person and that is not incorporated.
- solvent** Able to meet *debts* when due.
- SOP** *Statement of Position* (of the *AcSEC* of the *AICPA*).
- source of funds** Any *transaction* that increases *cash* and *marketable securities* held as *current assets*.
- sources and uses statement** *Statement of cash flows*.
- SOX** *Sarbanes-Oxley Act*.
- SOYD** *Sum-of-the years’-digits depreciation*.
- SP (*société en participation*)** France: a silent *partnership* in which the managing partner acts for the partnership as an individual in transacting with others who need not know that the person represents a partnership.

- special assessment** A compulsory levy made by a governmental unit on property to pay the *costs* of a specific *improvement* or *service* presumed not to benefit the general public but only the owners of the property so assessed; accounted for in a special assessment *fund*.
- special journal** A *journal*, such as a *sales journal* or *cash disbursements journal*, to record *transactions* of a similar nature that occur frequently.
- special purpose entity; SPE; QSPE** In general, the goal of creating a SPE or *variable interest entity* is for an *investor* to achieve *off-balance-sheet financing*, by constructing a *business* which itself engages in substantial borrowing, for which the investor has economic obligation to repay under some circumstances, but which the investor need not *consolidate*. In *U.S. GAAP*, the name for a business now known as a *qualifying special-purpose entity (QSPE)* or a variable interest entity. *U.S. GAAP* never defined the SPE, but brought it into existence with an *EITF* consensus in 1990. *U.S. GAAP (Codification Topic 860-40)* gives detailed guidance as to when an entity qualifies as a QSPE and becomes exempt from consolidation. *IFRS* defines SPE in terms of control: if the investor has control, then it must consolidate. *IFRS* gives several indicia of control, but no rules.
- special revenue debt** A governmental unit's *debt* backed only by *revenues* from specific sources, such as tolls from a bridge.
- specific identification method** Method for valuing *ending inventory* and *cost of goods sold* by identifying actual units sold and remaining in *inventory* and summing the *actual costs* of those individual units; usually used for items with large unit values, such as precious jewelry, automobiles, and fur coats.
- specific item sampling** Sampling in which the analyst selects particular items because of their nature, *value*, or method of recording. Compare *representative item sampling*.
- specific price changes** Changes in the *market prices* of specific *goods* and *services*. Contrast with *general price-level changes*.
- specific price index** A measure of the *price* of a specific *good* or *service*, or a small group of similar goods or services, at one time relative to the price during a base *period*. Contrast with *general price index*. See *dollar-value LIFO method*.
- spending variance** In *standard cost systems*, the *rate* or *price variance* for *overhead costs*.
- split** *Stock split*. Sometimes called split-up.
- split-off point** In accumulating and allocating *costs* for *joint products*, the point at which all costs are no longer *joint costs* but at which an analyst can identify costs associated with individual *products* or perhaps with a smaller number of joint products.
- spoilage** See *abnormal spoilage* and *normal spoilage*.
- spot price** The *price* of a commodity for delivery on the day of the *price* quotation. See *forward price* for contrast.
- spreadsheet** Since personal-computer *software* has become widespread, this term has come to refer to any file created by programs such as Microsoft Excel®. Such files have rows and columns, but they need not represent *debits* and *credits*. Moreover, they can have more than two dimensions.
- squeeze** A term sometimes used for *plug*.
- SSARS** *Statement on Standards for Accounting and Review Services*.
- stabilized accounting** *Constant-dollar accounting*.
- stable monetary unit assumption** In spite of *inflation*, which appears to be a way of life, the assumption that underlies *historical cost/nominal-dollar accounting*—namely, that one can meaningfully add together current dollars and dollars of previous years. The assumption gives no specific recognition to changing *values* of the dollar in the usual *financial statements*. See *constant-dollar accounting*.
- Staff Accounting Bulletin** An interpretation issued by the staff of the Chief Accountant of the *SEC* “suggesting” how the accountants should apply various *Accounting Series Releases* in practice. The suggestions are part of *U.S. GAAP*.
- stakeholder** An individual or group, such as employees, suppliers, customers, and *shareholders*, who have an interest in the *corporation's* activities and outcomes.
- standard(s)** See *standard cost* for manufacturing context and *GAAP* for another.
- standard (cost)** Anticipated *cost* of producing a unit of *output*; a predetermined cost to be assigned to *products* produced. Standard cost implies a norm—what costs should be. *Budgeted cost* implies a *forecast*—something likely, but not necessarily, a “should,” as implied by a norm. Firms use standard costs as the *benchmark* for gauging good and bad performance. Although a firm may similarly use a *budget*, it need not. A budget may be a planning document, *subject* to changes whenever plans change, whereas standard costs usually change annually or when *technology* significantly changes or when costs of labor and *materials* significantly change.
- standard costing** *Costing* based on *standard costs*.
- standard costing system** *Product costing* using *standard costs* rather than *actual costs*. The firm may use either *full absorption* or *variable costing* principles, although the *IRS*, *FASB*, and *IASB* allow only full absorption costing.
- standard error (of regression coefficients)** A measure of the *uncertainty* about the magnitude of the estimated parameters of an equation fit with a *regression analysis*.
- standard manufacturing overhead** *Overhead costs* expected to be incurred per unit of time and per unit produced.
- standard price (rate)** Unit *price* established for materials or labor used in *standard cost systems*.
- standard quantity allowed** The direct *material* or direct labor (inputs) quantity that production should have used if it had produced the units of *output* in accordance with preset *standards*.
- standby costs** A type of *capacity cost*, such as property *taxes*, incurred even if a firm shuts down *operations* completely. Contrast with *enabling costs*.
- stated capital** Amount of *capital* contributed by *shareholders*; sometimes used to mean *legal capital*.

- stated value** A term sometimes used for the *face amount of capital stock*, when the *board* has not designated a *par method*. Where there is stated value per *share*, *capital contributed in excess of stated value* may come into being.
- statement of affairs** A *balance sheet* showing immediate *liquidation* amounts rather than *historical costs*, usually prepared when *insolvency* or *bankruptcy* is imminent. Such a statement specifically does not use the *going-concern assumption*.
- statement of cash flows** A *schedule of cash receipts and payments*, classified by *investing*, *financing*, and *operating activities*; required by the *FASB* for all for-profit companies. Companies may report operating activities with either the *direct method* (which shows only receipts and payments of *cash*) or the *indirect method* (which starts with *net income* and shows adjustments for *revenues* not currently producing cash and for *expenses* not currently using cash). Cash includes *cash equivalents* such as Treasury bills, *commercial paper*, and some *marketable securities* held as *current assets* (not as *investments*). This is sometimes called the *funds statement*. Before 1987, the *FASB* required the presentation of a similar statement called the *statement of changes in financial position*, which tended to emphasize *working capital*, not cash.
- statement of changes in financial position** A *statement*, required by *U.S. GAAP* in the 1970s, that explains the changes in *working capital* (or *cash*) *balances* during a *period* and shows the changes in the *working capital* (or *cash*) *accounts* themselves. The *statement of cash flows* has replaced this statement.
- statement of charge and discharge** A *financial statement*, showing *net assets* or *income*, drawn up by an executor or administrator, to account for *receipts* and *dispositions of cash* or other *assets* in an estate or trust.
- Statement of Financial Accounting Concepts (SFAC)** One of a series of *FASB* publications in its *conceptual framework* for *financial accounting* and reporting. Such *statements* set forth *objectives* and fundamentals to be the basis for specific *financial accounting* and reporting standards.
- Statement of Financial Accounting standards (SFAS, FAS)** See *FASB*.
- statement of financial position** *Balance sheet*.
- Statement of Position (SOP)** A recommendation, on an emerging accounting problem, issued by the *AcSEC* of the *AICPA*. The *AICPA's* Code of Professional Ethics specifically states that *CPAs* need not treat *SOPs* as they do rules from the *FASB*, but a *CPA* would be wary of departing from the recommendations of an *SOP*.
- statement of profit and loss** The *IFRS* term for *income statement*.
- statement of retained earnings (income)** A *statement* that reconciles the beginning-of-*period* and the end-of-*period* *balances* in the *retained earnings account*. It shows the effects of *earnings*, *dividend* declarations, and *prior-period adjustments*.
- statement of significant accounting policies (principles)** A summary of the significant *accounting principles* used in compiling an *annual report*; required by *APB Opinion No. 22 (Codification Topic 235)*. This summary may be a separate exhibit or the first *note* to the *financial statements*.
- Statement on Auditing Standards (SAS)** A series addressing specific auditing standards and procedures. *No. 1* (1973) of this series codifies all *statements* on auditing standards previously promulgated by the *AICPA*. Contrast with *auditing standards* and *PCAOB*.
- Statement on Standards for Accounting and Review Services (SSARS)** Pronouncements issued by the *AICPA* on unaudited *financial statements* and unaudited financial information of nonpublic entities.
- static budget** *Fixed budget*. Budget developed for a set level of the driving variable, such as production or *sales*, which the analyst does not change if the actual level deviates from the level set at the outset of the analysis.
- status quo** Events or *cost* incurrences that will happen or that a *firm* expects to happen in the absence of taking some contemplated action.
- statutory tax rate** The *tax* rate specified in the *income tax* law for each type of *income* (for example, *ordinary income*, *capital gain* or *loss*).
- step allocation method** *Step-down method*.
- step cost** *Semifixed cost*.
- step-down method** In *allocating service department costs*, a method that starts by allocating one service department's costs to *production departments* and to all other service departments. Then the firm allocates a second service department's costs, including costs allocated from the first, to production departments and to all other service departments except the first one. In this fashion, a firm may allocate all service departments costs, including previous allocations, to production departments and to those service departments whose costs it has not yet allocated.
- step method** *Step-down method*.
- step(ped) cost** *Semifixed cost*.
- sterilized allocation** Desirable characteristics of *cost allocation* methods. Optimal decisions result from considering *incremental costs* only. Optimal decisions never require *allocations* of *joint* or *common costs*. A "sterilized allocation" causes the optimal decision choice not to differ from the one that occurs when the accountant does not allocate joint or common costs "sterilized" with respect to that decision. Arthur L. Thomas first used the term in this context. Because *absorption costing* requires that *product costs* absorb all *manufacturing costs* and because some allocations can lead to bad decisions, Thomas (and we) advocate that the analyst choose a sterilized allocation scheme that will not alter the otherwise optimal decision. No single allocation scheme is always sterilized with respect to all decisions. Thus, Thomas (and we) advocate that decisions be made on the basis of incremental costs before any allocations.
- stewardship** Principle by which *management* is accountable for an *entity's* resources, for their efficient use, and for protecting them from adverse impact. Some theorists believe that accounting has as a primary goal

- aiding users of *financial statements* in their assessment of management's performance in stewardship.
- stock** A measure of the amount of something on hand at a specific time. Because of this meaning, careful writers do not use this word to refer to *common* or *preferred shares*. Contrast with *flow*. See *inventory* and *capital stock*.
- stock appreciation rights** An employer's promise to pay to the employee an amount of *cash* on a certain future date, with the amount of cash being the difference between the *market value* of a specified number of *shares of stock* in the employer's company on the given future date and some base *price* set on the date the rights are granted. *Firms* sometimes use this form of compensation because changes in tax laws in recent years have made *stock options* relatively less attractive. *U.S. GAAP* computes compensation based on the difference between the market value of the shares and the base price set at the time of the grant.
- stock dividend** A so-called *dividend* in which the *firm* distributes additional *shares of capital stock* without *cash payments* to existing *shareholders*. It results in a *debit to retained earnings* in the amount of the *market value* of the shares issued and a *credit to capital stock* accounts. Firms ordinarily use stock dividends to indicate that they have permanently reinvested *earnings* in the business. Contrast with a *stock split*, which requires no entry in the capital stock accounts other than a notation that the *par* or *stated value* per share has changed.
- stock option** The *right* to purchase or sell a specified number of *shares of stock* for a specified *price* at specified times. *Employee stock options* are purchase rights granted by a *corporation* to employees, a form of compensation. Traded stock options are *derivative securities*, rights created and traded by *investors*, independent of the corporation whose stock is optioned. Contrast with *warrant*.
- stock (purchase) right** See *right*.
- stock split(up)** Increase in the number of *common shares outstanding* resulting from the issuance of additional *shares* to existing *shareholders* without additional *capital* contributions by them. Does not increase the total *value* (or *stated value*) of common shares outstanding because the *board* reduces the *par* (or stated) *value* per share in inverse proportion. A three-for-one stock split reduces *par* (or stated) *value* per share to one-third of its former amount. A stock split usually implies a distribution that increases the number of shares outstanding by 20% or more. Compare with *stock dividend*.
- stock subscriptions** See *subscription* and *subscribed stock*.
- stock warrant** See *warrant*.
- stockholders' equity** See *shareholders' equity*.
- stockout** Occurs when a firm needs a unit of *inventory* to use in production or to sell to a customer but has none available.
- stockout costs** *Contribution margin* or other measure of *profits* not earned because a seller has run out of *inventory* and cannot fill a customer's order. A firm may incur an extra *cost* because of delay in filling an order.
- stores** *Raw materials*, parts, and supplies.
- straight-debt value** An estimate of the *market value* of a *convertible bond* if the bond did not contain a *conversion* privilege.
- straight-line (time or use) depreciation (method)** Method in which, if the *depreciable life* is *n* periods, the periodic *depreciation charge* is $1/n$ of the *depreciable cost*; results in equal periodic charges. Accountants sometimes call it straight-time depreciation.
- strategic plan** A *statement* of the method for achieving an organization's goals.
- stratified sampling** In choosing a sample, a method in which the investigator first divides the entire *population* into relatively homogeneous subgroups (strata) and then selects random samples from these subgroups.
- strike price** *Exercise price* of a *stock option*. See *option* for discussion of this and related terms.
- street security** A *stock certificate* in immediately transferable form, most commonly because the issuing firm has registered it in the name of the broker, who has endorsed it with "payee" left blank.
- subchapter S corporation** A firm legally organized as a *corporation* but taxed as if it were a *partnership*. Tax terminology calls the corporations paying their own *income taxes* *C corporations*.
- subject to** In an *auditor's report*, qualifications usually caused by a *material uncertainty* in the valuation of an item, such as future promised *payments* from a foreign government or outcome of pending litigation.
- subordinated (rights)** *Debt* (or other *security*) whose claim on *income* or *assets* has lower priority than claims of other debt (or other security).
- subscribed stock** A *shareholders' equity account* showing the *capital* that the *firm* will receive as soon as the share-purchaser pays the *subscription price*. A subscription is a legal contract, so once the share-purchaser signs it, the firm makes an entry *debiting an owners' equity contra account* and *crediting* subscribed stock.
- subscription** Agreement to buy a *security* or to purchase periodicals, such as magazines.
- subsequent events** *Post-statement events*.
- subsidiary** A company in which another company owns more than 50% of the voting *shares*.
- subsidiary ledger** The *ledger* that contains the detailed *accounts* whose total appears in a *controlling* account of the *general ledger*.
- subsidiary (ledger) accounts** The *accounts* in a *subsidiary ledger*.
- successful efforts costing** In petroleum accounting, the *capitalization* of the drilling *costs* of only those wells that contain gas or oil. See *reserve recognition accounting* for an example.
- summary annual report (SAR)** Condensed *financial statements* distributed in lieu of the usual *annual report*. Since 1987, the *SEC* has allowed *firms* to include such *statements* in the annual report to *shareholders* as long as the firm includes full, detailed statements in SEC filings and in *proxy materials* sent to shareholders.
- summary of significant accounting principles** *Statement of significant accounting policies (principles)*.
- sum-of-the-years'-digits depreciation method (SYD, SOYD)** An *accelerated depreciation* method for an asset with

depreciable life of n years where the *charge* in period i ($i = 1, \dots, n$) is the fraction $(n + 1 - i)/[n(n + 1)/2]$ of the *depreciable cost*. If an asset has a depreciable cost of \$15,000 and a five-year depreciable life, for example, the depreciation charges would be \$5,000 ($= 5/15 \times \$15,000$) in the first year, \$4,000 in the second, \$3,000 in the third, \$2,000 in the fourth, and \$1,000 in the fifth. The name derives from the fact that the denominator in the fraction is the sum of the digits 1 through n .

sunk cost Past *costs* that current and future decisions cannot affect and, hence, that are irrelevant for decision making aside from *income tax* effects. Contrast with *incremental costs* and *imputed costs*. For example, the *acquisition cost* of machinery is irrelevant to a decision of whether to scrap the machinery. The *current exit value* of the machinery is the *opportunity cost* of continuing to own it, and the cost of, say, the electricity to run the machinery is an incremental cost of its operation. Sunk costs become relevant for decision making when the analysis requires taking income taxes (*gain* or *loss* on disposal of asset) into account, since the *cash payment* for income taxes depends on the *tax basis of the asset*. Avoid this term in careful writing because it is ambiguous. Consider, for example, a machine costing \$100,000 with current *salvage value* of \$20,000. Some (including us) would say that \$100,000 (the *gross* amount) is “sunk”; others would say that only \$80,000 (the *net* amount) is “sunk.”

supplementary statements (schedules) *Statements (schedules)* in addition to the four basic *financial statements* (*balance sheet, income statement, statement of cash flows, and the statement of retained earnings*).

surplus A word once used but now considered poor terminology; prefaced by “earned” to mean *retained earnings* and prefaced by “capital” to mean *capital contributed in excess of par (or stated) value*.

surplus reserves *Appropriated retained earnings*. A phrase with nothing to recommend it: of all the words in accounting, *reserve* is the most objectionable, and *surplus* is the second-most objectionable.

suspense account A *temporary account* used to record part of a *transaction* before final analysis of that transaction. For example, if a *business* regularly classifies all *sales* into a dozen or more different categories but wants to deposit the proceeds of *cash* sales every day, it may *credit* a sales suspense account pending detailed classification of all sales into Durable Goods Sales, Women’s Clothing Sales, Men’s Clothing Sales, Housewares Sales, and so on.

sustainable income The part of *distributable income* (computed from *current cost* data) that the *firm* can expect to earn in the next *accounting period* if it continues *operations* at the same levels as were maintained during the current period. *Income from discontinued operations*, for example, may be distributable but not sustainable.

swap A currency swap is a *financial instrument* in which the holder promises to pay to (or receive from) the *counterparty* the difference between *debt* denominated in one currency (such as U.S. dollars) and the

payments on debt denominated in another currency (such as German marks). An interest-rate swap typically obligates the party and counterparty to *exchange* the difference between fixed- and floating-rate *interest payments* on otherwise similar *loans*.

S-X See *Regulation S-X*.

SYD *Sum-of-the-years'-digits depreciation*.

T

T-account *Account form* shaped like the letter T with the title above the horizontal line. *Debits* appear on the left of the vertical line, *credits* on the right.

T-account work sheet A group of *T-accounts* used to work problems or to construct a *statement of cash flows*.

take-home pay The amount of a paycheck; earned *wages* or *salary* reduced by deductions for *income taxes, Social Security taxes*, contributions to fringe-benefit plans, union dues, and so on. Take-home pay might be as little as half of earned compensation.

take-or-pay contract As defined by *SFAS No. 47 (Codification Topic 440)*, a purchaser-seller agreement that provides for the purchaser to pay specified amounts periodically in *return for products or services*. The purchaser must make specified minimum *payments* even if it does not take delivery of the contracted products or services.

taking a bath To incur a large *loss*. See *big bath*.

tangible (asset) Having physical form. Accounting has never satisfactorily defined the distinction between *tangible* and *intangible assets*. Typically, accountants define intangibles by giving an exhaustive list, and everything not on the list is defined as tangible. See intangible asset for such a list.

target cost *Standard cost*. Sometimes, *target price* less expected *profit margin*.

target price Selling *price* based on customers’ *value in use* of a *good* or *service*, constrained by competitors’ prices of similar items.

tax A nonpenal, but compulsory, *charge* levied by a government on *income, consumption, wealth, or other basis*, for the benefit of all those governed. The term does not include fines or specific charges for benefits accruing only to those paying the charges, such as licenses, permits, *special assessments*, admission fees, and tolls.

tax allocation: interperiod See *deferred income tax liability*.

tax allocation: intrastatement The showing of income tax effects on *extraordinary items, income from discontinued operations, and prior-period adjustments*, along with these items, separately from income taxes on other *income*. See *net of tax reporting*.

tax avoidance See *tax shelter* and *loophole*.

tax basis of assets and liabilities A concept important for applying *SFAS No. 109 (Codification Topic 740)* on *deferred income taxes*. Two *assets* will generally have different *carrying values* if the *firm* paid different amounts for them, *amortizes* them on a different *schedule*, or both. Similarly a single asset will generally have a *carrying value* different from what it will have for *tax* purposes if the firm recorded different

- acquisition* amounts for the asset for *book* and for tax purposes, amortizes it differently for book and for tax purposes, or both. The difference between financial carrying value and income *tax basis* becomes important in computing deferred income tax amounts. The adjusted *cost* in the financial records is the book basis, and the adjusted amount in the tax records is the tax basis. Differences between book and tax basis can arise for *liabilities* as well as for *assets*.
- tax credit** A subtraction from *taxes* otherwise *payable*. Contrast with *tax deduction*.
- tax deduction** A subtraction from *revenues* and *gains* to arrive at *taxable income*. Tax deductions differ technically from tax *exemptions*, but both reduce gross income in computing taxable income. Both differ from *tax credits*, which reduce the computed tax itself in computing taxes payable. If the tax rate is the fraction *t* of *pretax income*, then a tax credit of \$1 is worth \$1/*t* of tax deductions.
- tax evasion** The fraudulent understatement of taxable *revenues* or overstatement of deductions and *expenses* or both. Contrast with *tax shelter* and *loophole*.
- tax-exempts** See *municipal bonds*.
- tax shelter** The legal avoidance of, or reduction in, *income taxes* resulting from a careful reading of the complex income-tax regulations and the subsequent rearrangement of financial affairs to take advantage of the regulations. Often writers use the term pejoratively, but the courts have long held that a taxpayer has no obligation to pay taxes any larger than the legal minimum. If the public concludes that a given tax shelter is “unfair,” then Congress can, and has, changed the laws and regulations but courts have ruled some tax shelters illegal without the need for legislative action. The term is sometimes used to refer to the *investment* that permits *tax avoidance*. See *loophole*.
- tax shield** The amount of an *expense*, such as *depreciation*, that reduces *taxable income* but does not require *working capital*. Sometimes this term includes expenses that reduce taxable income and use working capital. A depreciation deduction (or *R&D expense* in the expanded sense) of \$10,000 provides a tax shield of \$3,700 when the *marginal tax rate* is 37%.
- tax-transfer lease** One form of *capital lease*. Congress has in the past provided *business* with an incentive to invest in qualifying *plant and equipment* by granting an *investment credit*, which, though it occurs as a reduction in *income taxes* otherwise *payable*, effectively reduces the purchase *price* of the *assets*. Similarly, Congress continues to grant an incentive to acquire such assets by allowing the *Modified Accelerated Cost Recovery System (MACRS, form of unusually accelerated depreciation)*. Accelerated depreciation for tax purposes allows a reduction of taxes paid in the early years of an asset’s life, providing the firm with an increased *net present value* of *cash flows*. The *IRS* administers both of these incentives through the income tax laws, rather than paying an outright cash payment. A business with no *taxable income* in many cases had difficulty reaping the benefits of the investment credit or of accelerated depreciation because Congress had not provided for tax refunds to those who acquire qualifying assets but who have no taxable income. In principle, a company without taxable income could *lease* from another *firm* with taxable income an asset that it would otherwise purchase. The second firm acquires the asset, gets the tax-reduction benefits from the acquisition, and becomes a lessor, leasing the asset (presumably at a lower price reflecting its own costs lowered by the tax reductions) to the unprofitable company. Before 1981, tax laws discouraged such leases. That is, although firms could enter into such leases, they could not legally transfer the tax benefits. Under certain restrictive conditions, the tax law now allows a profitable firm to earn *tax credits* and take deductions while leasing to the firm without tax liability in such leases. These are sometimes called *safe-harbor leases*.
- taxable income** *Income* computed according to *IRS* regulations and *subject to income taxes*. Contrast with *income*, *net income*, *income before taxes* (in the *income statement*), and *comprehensive income* (a *financial reporting* concept). Use the term “*pretax income*” to refer to *income before taxes* on the *income statement* in financial reports.
- Technical Bulletin** The *FASB* has authorized its staff to issue bulletins to provide guidance on *financial accounting* and reporting problems. Although the *FASB* does not formally approve the contents of the bulletins, their contents are part of *U.S. GAAP*.
- technology** As an *account* classification, typically the sum of a *firm’s* technical *trade secrets* and *know-how*, as distinct from its *patents*, which tend to be in their own account.
- temporary account** *Account* that does not appear on the *balance sheet*; *revenue* and *expense accounts*, their *adjuncts* and *contras*, *production cost accounts*, *dividend distribution accounts*, and purchases-related accounts (which *close* to the various *inventories*); sometimes called a “*nominal account*.”
- temporary difference** According to the *SFAS No. 109 (Codification Topic 740)* definition: “A difference between the *tax basis of an asset or liability* and its reported amount in the *financial statements* that will result in taxable or deductible amounts in future years.” Temporary differences include *timing differences* and differences between *taxable income* and *pretax income* caused by different cost bases for assets. For example, a *plant* asset might have a cost of \$10,000 for financial reporting but a basis of \$7,000 for income tax purposes. This temporary difference might arise because the firm has used an *accelerated depreciation* method for tax but *straight-line* for book, or the firm may have purchased the asset in a transaction in which the fair *value* of the asset exceeded its tax basis. Both situations create a temporary difference.
- temporary investments** *Investments* in *marketable securities* that the owner intends to sell within a short time, usually one year, and hence classifies as *current assets*.
- term bonds** A *bond issue* whose component bonds all mature at the same time. Contrast with *serial bonds*.

- term loan** A *loan* with a *maturity* date, as opposed to a *demand loan*, which is due whenever the *lender* requests *payment*. In practice, bankers and *auditors* use this phrase only for loans for a year or more.
- term structure** A phrase with different meanings in *accounting* and financial economics. In accounting, it refers to the pattern of times that must elapse before *assets* turn into, or produce, *cash* and the pattern of times that must elapse before *liabilities* require cash. In financial economics, the phrase refers to the pattern of *yields* or *interest rates* as a *function* of the time that elapses for *loans* to come due. For example, if six-month loans cost 6% per year and 10-year loans cost 9% per year, this is called a “normal” term structure because the longer-term *loan* carries a higher rate. If the six-month loan costs 9% per year and the 10-year loan costs 6% per year, the term structure is said to be “inverted.” See *yield curve*.
- terminal cash flows** *Cash flows* that occur at the end of an *investment* project. Often include proceeds of *salvage* of equipment and *tax* on *gain* (*loss*) on disposal. See *terminal value*.
- terminal value** In *cash flow projections* that persist for many *periods*, the analyst often summarizes the far distant future in a medium distant period. For example, the analyst might give a *cash* inflow for Year 20, which is the *present value* of expected cash flows for all the years after Year 20. That last value is called the “terminal value” and is often derived using the *perpetuity growth model*.
- terms of sale** The conditions governing payment for a *sale*. For example, the terms 2/10, n(et)/30 mean that if the purchaser makes payment within 10 days of the *invoice* date, it can take a *discount* of 2% from *invoice price*; the purchaser must pay the *invoice* amount, in any event, within 30 days, or it becomes overdue.
- theory of constraints (TOC)** Concept of improving *operations* by identifying and reducing *bottlenecks* in *process flows*.
- thin capitalization** A state of having a high *debt–equity ratio*. Under *income tax* legislation, the term has a special meaning.
- throughput contract** As defined by *SFAS No. 47 (Codification Topic 440)*, an agreement that is signed by a shipper (processor) and by the owner of a transportation facility (such as an oil or natural gas pipeline or a ship) or a manufacturing facility and that provides for the shipper (processor) to pay specified amounts periodically in return for the transportation (processing) of a *product*. The shipper (processor) must make *cash payments* even if it does not ship (process) the contracted quantities.
- throughput contribution** Sales dollars minus the sum of all short-run *variable costs*.
- tickler file** A collection of *vouchers* or other memoranda arranged chronologically to remind the person in charge of certain duties to make *payments* (or to do other tasks) as *scheduled*.
- time-adjusted rate of return** *Internal rate of return*.
- time cost** *Period cost*.
- time deposit** *Cash* in bank earning *interest*. Contrast with *demand deposit*.
- time-series analysis** See *cross-section analysis* for definition and contrast.
- time value element in stock options** The longer one can hold an *option* before exercising it or letting it *lapse*, the more valuable the option. In assessing the *fair value* of options, one can try to isolate the two components of *value*: this time value and the benefit value, which equals *intrinsic value*.
- times-interest (charges) earned** Ratio of *pretax income* plus *interest charges* to interest charges. See *ratio* and **Exhibit 7.12**.
- timing difference** The major type of *temporary difference* between *taxable income* and *pretax income* reported to *shareholders*; reverses in a subsequent *period* and requires an entry in the *deferred income tax account*; for example, the use of *accelerated depreciation* for *tax returns* and *straight-line depreciation* for financial reporting. Contrast with *permanent difference*.
- Toronto Stock Exchange (TSX)** A public market where various corporate securities trade.
- total assets turnover ratio** *Sales* divided by average total *assets*. See *ratio* and **Exhibit 7.12**.
- total quality management (TQM)** Concept of organizing a company to excel in all its activities in order to increase the *quality* of *products* and *services*.
- traceable cost** A *cost* that a firm can identify with or assign to a specific *product*. Contrast with a *joint cost*.
- trade acceptance** A *draft* that a seller presents for signature (*acceptance*) to the buyer at the time it sells *goods*. The draft then becomes the equivalent of a *note receivable* of the seller and a *note payable* of the buyer.
- trade credit** Occurs when one *business* allows another to buy from it in *return* for a promise to pay later. Contrast with “consumer *credit*,” which occurs when a business extends a retail customer the privilege of paying later.
- trade discount** A *list price discount* offered to all customers of a given type. Contrast with a *discount* offered for prompt payment and with *quantity discount*.
- trade-in** Acquiring a new *asset* in *exchange* for a used one and perhaps additional cash. See *boot* and *trade-in transaction*.
- trade-in transaction** The accounting for a *trade-in*—an *exchange* of similar assets without much cash payment. The accounting depends on whether future cash flows of the reporting entity will change as a result of the transaction, that is, whether the transaction has *commercial substance*. When a firm swaps one non-monetary asset for another, there will usually be *uncertainty* as to whether the estimate of the fair value of the asset given up is more reliably measureable than the estimate of the fair value of the new asset acquired. If the transaction has commercial substance, the firm will record the transaction using whichever estimate it deems more reliable. To illustrate, suppose the firm owns a van that originally cost \$275,000 and has \$25,000 of *accumulated depreciation*, with net carrying value of \$250,000. The firm estimates the fair

value of the van to be \$240,000. The generic entry for the trade-in transaction is as follows:

New Van (Asset Increase)	A	
Accumulated Depreciation (Old Asset Decrease)	25,000	
Loss or Gain on Exchange	B	or B
Old Asset (Asset Decrease)	275,000	

- (1) If the firm decides that the estimate of the fair value of the old van is more reliable, then it will record the new van at \$240,000; A = \$240,000. It will then *plug* for B, which results in a loss of \$10,000.
- (2) If the firm decides that the estimate of fair value of the new van is more reliable, then it will record the new van at \$270,000; A = \$270,000. It will then *plug* for B which results in a gain of \$20,000.

If the trade-in transaction lacks commercial substance, then the firm will record the new van at the carrying value of the old, \$250,000; A = \$250,000. There will, by design, be no gain or loss on the transaction.

trade payables (receivables) *Payables (receivables)* arising in the ordinary course of *business transactions*. Most *accounts payable (receivable)* are of this kind.

trade secret Technical or *business* information such as formulas, recipes, computer programs, and marketing data not generally known by competitors and maintained by the *firm* as a secret; theoretically capable of having an indefinite, *finite life*. A famous example is the secret process for Coca-Cola® (a registered *trademark* of the company). Compare with *know-how*. The firm will *capitalize* this *intangible asset* only if purchased. If this *intangible* has a finite, expected *useful life*, U.S. GAAP requires *amortization* over that estimate of its life. If the *right* has indefinite life, then U.S. GAAP requires no amortization, but annual tests for *impairment*. If the firm develops the intangible internally, the firm will *expense* the *costs* as incurred and show no asset.

trademark A distinctive word or symbol that is affixed to a *product*, its package, or its dispenser and that uniquely identifies the *firm's* products and *services*. See *trademark right*.

trademark right The *right* to exclude competitors in *sales* or advertising from using words or symbols that are so similar to the *firm's trademarks* as possibly to confuse consumers. Trademark rights last as long as the firm continues to use the trademarks in question. In the United States, trademark rights arise from use and not from government registration. They therefore have a legal life independent of the life of a registration. Registrations last 20 years, and the holder may renew them as long as the holder uses the trademark. If this *intangible* has a finite, expected *useful life*, U.S. GAAP requires *amortization* over that estimate of its life. If the right has *indefinite life*, then U.S. GAAP requires no amortization, but annual tests for *impairment*. Under SFAS No. 2 (Codification Topic 730),

the firm must *expense* internally developed trademark rights.

trading on the equity Said of a *firm* engaging in *debt financing*; frequently said of a firm doing so to a degree considered abnormal for a firm of its kind. *Leverage*.

trading securities *Marketable securities* that a *firm* holds and expects to sell within a relatively short time; a classification important in SFAS No. 115 (Codification Topic 320), which requires the owner to carry *marketable equity securities* on the *balance sheet* at *market value*, not at *cost*. Contrast with *available for sale, securities* and *held-to-maturity securities*. Under SFAS No. 115 (Codification Topic 320), the balance sheet reports trading securities at market value on the balance sheet date, and the *income statement* reports *holding gains and losses* on trading securities. When the firm sells the securities, it reports *realized gain* or loss as the difference between the selling *price* and the market value at the last balance sheet date.

tranche A slice or portion. Used in *finance* to refer to securities with different *rights*, usually along a common spectrum. For example one group of *investors* might be entitled to the first \$1 million of *cash flows* from an *asset* and a second group might be entitled to the second \$1 million. The groups are referred to as tranches.

transaction A *transfer* (of more than promises—see *executory contract*) between the *accounting entity* and another party or parties.

transfer Under SFAC No. 6, consists of two types: reciprocal and nonreciprocal. In a reciprocal transfer, or *exchange*, the *entity* both receives and sacrifices. In a *nonreciprocal transfer*, the entity sacrifices but does not receive (examples include gifts, distributions to owners) or receives but does not sacrifice (*investment* by owner in entity). SFAC No. 6 suggests that the term “internal transfer” is self-contradictory and that writers should use the term “internal event” instead.

transfer agent Usually a bank or trust company designated by a *corporation* to make legal transfers of *stock (bonds)* and, perhaps, to pay *dividends* or *debt service payments*.

transfer price A substitute for a *market*, or *arm's length, price* used in *profit*, or *responsibility center, accounting* when one segment of the *business* “sells” to another segment. Incentives of *profit center managers* will not coincide with the best interests of the entire business unless a *firm* sets transfer prices properly.

transfer-pricing problem The problem of setting *transfer prices* so that both buyer and seller have *goal congruence* with respect to the parent organization's goals.

translation adjustment The effect of *exchange-rate* changes caused by converting the *value* of a *net investment* denominated in a *foreign currency* to the *entity's* reporting currency. SFAS No. 52 (Codification Topic 830) requires *firms* to translate their net investment in relatively self-contained foreign operations at the *balance sheet* date. Year-to-year changes in value caused by exchange-rate changes accumulate in an *owners' equity account*, sometimes called the cumulative translation adjustment.

translation gain (or loss) *Foreign exchange gain (or loss).*

transportation-in *Freight-in.*

transposition error An error in problem solving resulting from reversing the order of digits in a number, such as recording “32” for “23.” If the only errors in a *trial balance* result from one or more transposition errors, then the difference between the sum of the *debits* and the sum of the *credits* will be divisible by nine. Not all such differences result from transposition errors.

treasurer The financial officer responsible for managing *cash* and raising *funds*.

treasury bond A *bond* issued by a *corporation* and then reacquired. Such bonds are treated as retired when reacquired, and an *extraordinary gain or loss* on reacquisition is *recognized*. This term usually refers to a bond issued by the U.S. Treasury Department.

treasury shares *Capital stock* issued and then reacquired by the *corporation*. Such reacquisitions result in a reduction of *shareholders’ equity* and usually appear on the *balance sheet* as *contra* to *shareholders’ equity*. Accounting recognizes neither *gain* nor *loss* on *transactions* involving *treasury stock*. The accounting *debits* (if positive) or *credits* (if negative) any difference between the amounts paid and received for *treasury stock* transactions to *additional paid-in capital*. See *cost method* and *par method*.

treasury stock *Treasury shares.*

treatment of changes in periodic depreciation and amortization See *accounting changes*.

trend analysis Investigation of *sales* or other economic trends. Can range from a simple visual extrapolation of points on a graph to a sophisticated computerized time series analysis.

trial balance A two-column listing of *account balances*. The left-hand column shows all accounts with *debit* balances and their total. The right-hand column shows all accounts with *credit* balances and their total. The two totals should be equal. Accountants compute trial balances as a partial check of the arithmetic accuracy of the entries previously made. See *adjusted, preclosing, post-closing, unadjusted trial balance, plug, slide, and transposition error*.

troubled debt restructuring As defined in *SFAS No. 15 (Codification Topics 310 and 470)*, a concession (changing of the terms of a *debt*) that is granted by a *creditor* for economic or legal reasons related to the *debtor’s* financial difficulty and that the creditor would not otherwise consider.

true up In accounting, an *adjusting entry* to match an ending *account balance* with physical reality. In *finance*, it sometimes refers to a *cash expenditure* to have total expenditures match a number given by some rules or regulations; for example, the employer contributed an extra \$12,000 to the *pension fund* at the end of December to *true up* the amount in the fund to the amount required by year end.

t-statistic For an estimated *regression* coefficient, the estimated coefficient divided by the *standard error* of the estimate.

TSX *Toronto Stock Exchange*. Abbreviated TSE until 2001.

turnover The number of times that *assets*, such as *inventory* or *accounts receivable*, are replaced on average during the *period*. *Accounts receivable turnover*, for example, is total *sales* on account for a period divided by the average *accounts receivable balance* for the period. See *ratio* and **Exhibit 7.12**. In the United Kingdom, “turnover” means *sales*.

turnover of plant and equipment See *ratio* and **Exhibit 7.12**.

t-value In *regression analysis*, the *ratio* of an estimated regression coefficient divided by its *standard error*.

two T-account method A method for computing either (1) *foreign exchange gains and losses* or (2) *monetary gains or losses* for *constant-dollar accounting statements*. The left-hand *T-account* shows actual *net balances* of *monetary items*, and the right-hand *T-account* shows implied (common) dollar amounts.

U

unadjusted trial balance *Trial balance* taken before the accountant makes *adjusting* and *closing entries* at the end of the *period*.

unappropriated retained earnings *Retained earnings* not *appropriated* and therefore against which the *board* can declare *dividends* in the absence of *retained earnings* restrictions. See *restricted retained earnings*.

unavoidable cost A *cost* that is not an *avoidable cost*.

uncertainty See *risk* for definition and contrast.

uncollectible account; uncollectible amount An *account receivable* that the *debtor* will not pay. If the *firm* uses the preferable *allowance method*, the entry on judging a specific account to be uncollectible *debits* the allowance for uncollectible accounts and *credits* the specific account receivable. See *bad debt expense* and *sales contra, estimated uncollectibles*.

unconsolidated subsidiary A *subsidiary* not consolidated perhaps because it is a foreign country from which the *parent* cannot take *assets*.

uncontrollable cost The opposite of *controllable cost*.

underapplied (underabsorbed) overhead An excess of actual *overhead costs* for a *period* over *costs* applied, or *charged, to products* produced during the period; a *debit balance* remaining in an *overhead account* after the accounting assigns overhead to product. See *over-applied overhead*.

underlying document The record, memorandum, *voucher*, or other signal that is the authority for making an *entry* into a *journal*.

underlyings A *derivative* contract specifies its various payoffs in terms of variables, called *underlyings* such as a *common stock*, or specified *interest rate*, or *commodity price*, or *foreign exchange rate*.

underwriter One who agrees to purchase a *security issue* for a specified *price*, usually for resale to others. Often underwriters join together to buy the entire issue then *allocate* the issue among themselves for subsequent resale.

undistributed earnings *Retained earnings*. Typically, this term refers to that amount retained for a given year.

unearned income (revenue) *Advances from customers*; strictly speaking, a contradiction in terms because the terms “*income*” and “*revenue*” mean earned.

unemployment tax See *FUTA*.

unencumbered appropriation In governmental accounting, portion of an *appropriation* not yet spent or encumbered.

unexpired cost An *asset*.

unfavorable variance In *standard cost* accounting, an excess of expected *revenue* over actual revenue or an excess of *actual cost* over standard cost.

unfunded Not *funded*. An obligation or *liability*, usually for *pension costs*, exists, but no *funds* have been set aside to discharge the obligation or liability.

Uniform Partnership Act A model law, enacted by many states, to govern the relations between partners when the *partnership* agreement fails to specify the agreed-upon treatment.

unissued capital stock *Stock* authorized but not yet issued.

uniting-of-interests method The *IASB's* term for the *pooling-of-interests method*. No longer allowed.

unit-level activities Work that converts resources into individual *products*. Examples include *direct materials*, *direct labor*, and energy to run the machines.

units-of-production method The *production method of depreciation*.

unlimited liability The legal obligation of *general partners* or the sole proprietor for all *debts* of the *partnership* or *sole proprietorship*.

unqualified opinion See *auditor's report*.

unrealized appreciation An *unrealized holding gain*; frequently used in the context of *marketable securities*.

unrealized gain (loss) on marketable securities An *income statement account* title for the amount of *gain (loss)* during the *current period* on the portfolio of *marketable securities* held as *trading securities*. *SFAS No. 115 (Codification Topic 320)* requires the *firm* to *recognize*, in the income statement, gains and losses caused by changes in *market values*, even though the firm has not yet *realized* them.

unrealized gross margin (profit) A *contra account* to *installment accounts receivable* used with the *installment method of revenue recognition*; shows the amount of *profit* that the *firm* will eventually *realize* when it collects the *receivable*. Some accountants show this account as a *liability*.

unrealized holding gain See *inventory profit* for the definition and an example.

unrecovered cost *Carrying value* of an *asset*.

unsecured borrowing Borrowing without specified *collateral*. See *debenture bond*.

unused capacity The difference between *resources supplied* and *resources used*.

U.S. GAAP *Generally accepted accounting principles*; a singular noun. In this book, we use U.S. GAAP for this concept. The international analog is *IFRS*.

U.S. GAAP hierarchy See *generally accepted accounting principles*.

U.S. SEC registrant A *firm* incorporated based in the United States that lists and trades its *securities* in the United States; a non-*U.S. SEC registrant* (sometimes called “*foreign private issuer*”) is a firm incorporated

outside the United States that has filed the necessary documents with the SEC to list and trade its securities in the United States.

usage variance *Efficiency variance*.

use of funds Any *transaction* that reduces *funds* (however “*funds*” is defined).

useful life *Service life*.

V

valuation account A *contra account* or *adjunct account*.

When the *firm* reports *accounts receivable* at expected *collectible* amounts, it will *credit* any expected uncollectible amounts to the *allowance for uncollectibles*, a valuation account. In this way, the firm can show both the *gross receivables* amount and the amount it expects to collect. *SFAC No. 6* says a valuation account is “a separate item that reduces or increases the carrying amount” of an *asset* (or *liability*). The accounts are part of the related assets (or liabilities) and are not assets (or liabilities) in their own right.

valuation allowance A *contra account* for *deferred income tax assets*, reducing its *nominal amount* to the amount the *firm* expects to *realize* because it has future *taxable income* that the *expenses* and *losses* reflected in the *deferred tax assets* can offset. Deferred income tax assets arise when the taxpayer records expenses on the *financial statements* before it can take deductions on its *tax returns*. Examples are for *bad debts* and *warranty costs*. In some future *period*, the firm will be able to deduct the bad debt and warranty costs from its taxable income in those future periods. If the firm has some doubts that it will earn future *income*, which the bad debt and warranty costs can offset, then it will report a reduction in deferred tax assets in the earlier periods.

value Monetary worth. This term is usually so vague that you should not use it without a modifying adjective unless most people would agree on the amount. Do not confuse with cost. See *fair market value*, *fair value*, *entry value*, and *exit value*.

value added *Cost* of a *product* or *work-in-process* minus the cost of the *material* purchased for the product or work-in-process.

value-added activity Any activity that increases the usefulness to a customer of a *product* or *service*.

value chain The set of *business functions* that increase the usefulness to the customer of a *product* or *service*; typically including *research and development*, design of products and services, production, marketing, distribution, and customer service.

value engineering An evaluation of the activities in the *value chain* to reduce *costs*.

value variance *Price variance*.

variable annuity An *annuity* whose periodic payments depend on some uncertain outcome, such as *stock market prices*.

variable budget *Flexible budget*.

variable costing In allocating *costs*, a method that assigns only *variable manufacturing costs* to *products* and

treats *fixed manufacturing costs* as *period expenses*. Contrast with *full absorption costing*.

variable costs *Costs* that change as activity levels change. Strictly speaking, variable costs are zero when the activity level is zero. See *semivariable costs*. In accounting, this term most often means the sum of *direct costs* and variable *overhead*.

variable interest entity (VIE) An *entity* arranged so that one cannot ascertain controlling financial *interest* by analyzing voting interest because the entity meets either or both of the following conditions:

- (1) The entity has insufficient *owners' equity at risk*, which means it cannot *finance* its *operations* without additional financial support, such as the promises of another entity.
- (2) The entity's owners' equity lacks one or more of the attributes associated with equity: the ability to absorb *losses*, the *right* to receive residual *returns*, and the ability, conveyed by voting rights, to make decisions.

A *VIE* may, but need not, have a *primary beneficiary*, which absorbs (or receives) a majority of the variability of outcomes of the entity. If there is a primary beneficiary, that *business* will consolidate the *VIE*, regardless of ownership.

variable overhead efficiency variance The difference between the *actual* and *standard cost driver* volume times the *standard cost driver rate*.

variable overhead price variance The difference between the *actual* and *standard cost driver rate* times the *actual cost driver* volume.

variable overhead variance Difference between actual and *standard variable overhead costs*.

variable rate debt Debt whose *interest rate* results from the periodic application of a formula, such as "three-month LIBOR [London Interbank Offered Rate] plus 1% [one hundred *basis points*] set on the 8th day of each February, May, August, and November."

variables sampling The use of a sampling technique in which the sampler infers a particular quantitative characteristic of an entire *population* from a sample (for example, mean amount of *accounts receivable*). See also *estimation sampling*. See *attribute(s) sampling* for contrast and further examples.

variance Difference between *actual* and *standard costs* or between *budgeted* and actual *expenditures* or, sometimes, *expenses*. The word has completely different meanings in accounting and in statistics, where it means a measure of dispersion of a distribution.

variance analysis *Variance investigation*. This term's meaning differs in statistics.

variance investigation A step in managerial control processes. *Standard costing systems* produce *variance* numbers of various sorts. These numbers seldom exactly equal to zero. *Management* must decide when a variance differs sufficiently from zero to study its cause. This term refers both to the decision about when to study the cause and to the study itself.

variation analysis Analysis of the causes of changes in *financial statement* items of *interest* such as *net income* or *gross margin*, or of variances from *budget* or from *standard costs*.

VAT (value-added tax) A *tax* levied on the *market value* of a *firm's outputs* less the market value of its purchased inputs.

vendor A seller; sometimes spelled "vender."

verifiability See *verifiable*.

verifiable A qualitative *objective* of financial reporting specifying that accountants can trace items in *financial statements* back to *underlying documents*—supporting *invoices*, canceled *checks*, and other physical pieces of evidence.

verification The *auditor's* act of reviewing or checking items in *financial statements* by tracing back to *underlying documents*—supporting *invoices*, canceled *checks*, and other *business* documents—or sending out *confirmations* to be returned. Compare with *physical verification*.

vertical analysis Analysis of the *financial statements* of a single *firm* or across several firms for a particular time, as opposed to *horizontal* or *time-series analysis*, in which the analyst compares items over time for a single firm or across firms.

vertical integration The extension of activity by an organization into *business* directly related to the production or distribution of the organization's end *products*. Although a *firm* may sell products to others at various stages, a vertically integrated firm devotes the substantial portion of the *output* at each stage to the production of the next stage or to end products. Compare *horizontal integration*.

vested An employee's *pension plan* benefits that are not contingent on the employee's continuing to work for the employer.

vesting The process of becoming *vested*.

VIE *Variable interest entity*.

visual curve fitting method One crude form of *cost estimation*. Sometimes, when a *firm* needs only rough approximations of the amounts of *fixed* and *variable costs*, *management* need not perform a formal *regression analysis* but can plot the data and draw a line that seems to fit the data. Then it can use the parameters of that line for the rough approximations.

volume variance *Production volume variance*; less often, used to mean *sales volume variance*.

voucher A document that signals recognition of a *liability* and authorizes the *disbursement* of *cash*; sometimes used to refer to the written evidence documenting an *accounting entry*, as in the term *journal voucher*.

voucher system In controlling *cash*, a method that requires someone in the *firm* to authorize each *check* with an approved *voucher*. The firm makes no *disbursements* of currency or coins except from *petty cash funds*.

vouching The *function* performed by an *auditor* to ascertain that underlying data or documents support a *journal entry*.

W

wage Compensation of employees based on time worked or *output of product* for manual labor. But see *take-home pay*.

Wages and Salaries Payable A *liability account* title.

warning signal Tool used to identify quality-control problems; only signals a problem. Contrast with *diagnostic signal*, which both signals a problem and suggests its cause.

warrant A *certificate* entitling the owner to buy a specified number of *shares* at a specified time(s) for a specified *price*; differs from a *stock option* only in that the *firm* grants options to employees and issues warrants to the public. Warrants are similar to stock options originated on an *exchange*. See *right*.

warranty A promise by a seller to correct deficiencies in *products* sold. When the seller gives warranties, proper accounting practice *recognizes* an estimate of *warranty expense* and an *estimated liability* at the time of *sale*. See *allowance method*. See *guarantee* for contrast in proper usage.

Warranty Liability (Provision) *Account* title in *U.S. GAAP (IFRS)* for the estimated *cost* to satisfy *warranties*.

wash sale The *sale* and purchase of the same or similar *asset* within a short time period. For *income tax* purposes, the taxpayer may not *recognize losses* on a sale of *stock* if the taxpayer purchases equivalent stock within 30 days before or after the date of sale.

waste *Material* that is a residue from manufacturing *operations* and that has no *sale value*. Frequently, this has negative value because a *firm* must incur additional *costs* for disposal.

wasting asset A *natural resource* that diminishes in *value* because of extractions of oil, or ore, or gas, or the removal of timber and, hence, is *subject to amortization*, called *depletion*.

watered stock *Shares* issued for *assets* with *fair market value* less than *par* or *stated value*. The *firm* records the assets on the *books* at the overstated values. In the law, for shares to be considered watered, the *board of directors* must have acted in bad faith or fraudulently in issuing the shares under these circumstances. The term originated from a former practice of cattle owners who fed cattle (“*stock*”) large quantities of salt to make them thirsty. The cattle then drank much water before their owner took them to market. The owners did this to make the cattle appear heavier and more valuable than otherwise.

weighted average An *average* computed by counting each occurrence of each *value*, not merely a single occurrence of each value. For example, if a *firm* purchases one unit for \$1 and two units for \$2 each, then the simple average of the purchase *prices* is \$1.50, but the weighted average price per unit is $\$5/3 = \1.67 . Contrast with *moving average*.

weighted-average cost of capital Measured as the *weighted average* of the after-tax *cost* of *long-term debt* and the cost of *equity*.

weighted-average inventory method Valuing either *withdrawals* or *ending inventory* at the *weighted average*

purchase price of all units on hand at the time of withdrawal or of computation of ending inventory. The *firm* uses the *inventory equation* to calculate the other quantity. If a firm uses the *perpetual inventory method*, accountants often call it the *moving average method*.

weighted average number of common shares outstanding

The number of *common shares* outstanding at the start of an *accounting period*, adjusted for issuances, repurchases, and cancellations of shares, with each change in the number of shares outstanding weighted by the length of time between changes. The calculation is number of shares outstanding \times the length of time (as a fraction of the accounting period) those shares are outstanding. For example, assume the number of shares outstanding at the start of a year is 20; the firm issues 8 shares at the end of 6 months and repurchases 4 shares at the end of 9 months. The weighted average number of shares outstanding is 23 ($= 20 \times 0.50 + 28 \times 0.25 + 24 \times 0.25$).

where-got, where-gone statement A term allegedly used in the 1920s by W. M. Cole for a statement much like the *statement of cash flows*. Noted accounting historian S. Zeff reports that Cole actually used the term “where-got-gone” statement.

wind up To bring to an end, such as the life of a *corporation*. The *board* winds up the life of a corporation by following the winding-up *provisions* of applicable statutes, by surrendering the *charter*, or by following *bankruptcy* proceedings. See also *liquidation*.

window dressing The attempt to make *financial statements* show *operating* results, or a *financial position*, more favorable than they would otherwise show.

with recourse See *note receivable discounted*.

withdrawals *Assets* distributed to an owner. *Partner's drawings*. See *inventory equation* for another context.

withholding Deductions that are taken from *salaries* or *wages*, usually for *income taxes*, health insurance, and social security and that the employer remits, in the employee's name, to the taxing authority or insurance firm.

without recourse See *note receivable discounted*.

work-in-process; work-in-progress (inventory account) Partially completed *product*; appears on the *balance sheet* as *inventory*. *SEC Regulation S-X* requires that *firms* report inventory amounts for *raw material*, *work-in-process*, and *finished goods*.

work sheet (program) (1) A computer program designed to combine explanations and calculations. This type of program helps in preparing *financial statements* and *schedules*. (2) A tabular schedule for convenient summary of *adjusting* and *closing entries*. The work sheet usually begins with an *unadjusted trial balance*. Adjusting entries appear in the next two columns, one for *debits* and one for *credits*. The work sheet carries the horizontal sum of each line to the right into either the *income statement* or the *balance sheet* column, as appropriate. The *plug* to equate the income statement column totals is, if a debit, the income or, if a credit, a *loss* for the *period*. That income will *close* retained earnings on the balance sheet. The income statement credit columns are the *revenues* for the period, and

the *debit* columns are the expenses (and revenue contras) that appear on the income statement. “Work sheet” also refers to schedules for ascertaining other items that appear on the financial statements and that require *adjustment* or compilation.

working capital *Current assets minus current liabilities; sometimes called net working capital or net current assets.*

working capital ratio See *ratio* and **Exhibit 7.12**.

work(ing) papers The *schedules* and analyses prepared by the *auditor* in carrying out investigations before issuing an *opinion* on *financial statements*.

worth *Value. See net worth.*

worth–debt ratio Reciprocal of the *debt–equity ratio*. See *ratio* and **Exhibit 7.12**.

write down To *write off*, except that the *firm* does not *charge* all the *asset’s cost* to *expense* or *loss*; generally used for *nonrecurring* items.

write (writing) off To *charge* an *asset* to *expense* or *loss*; that is, to *debit* expense (or loss) and *credit* the asset. To *derecognize* a specific *account receivable* that the holder has decided is uncollectible; the *debit* is to the *Allowance for Uncollectibles* account.

write-off method For treating *uncollectible accounts*, a method that *debts bad debt expense* and *credits accounts receivable* of specific customers as the *firm* identifies specific accounts as uncollectible. The firm cannot use this method when it can estimate uncollectible amounts and they are significant. See *bad debt expense*, *sales contra*, *estimated uncollectibles*, and the *allowance method* for contrast.

write up To increase the recorded *cost* of an *asset* with no corresponding *disbursement of funds*; that is, to *debit* asset and *credit revenue* or, perhaps, *owners’ equity*; seldom done in the United States because currently accepted *accounting principles* await actual *transactions* before recording asset increases. An exception occurs in accounting for *marketable equity securities*.

writing off See *write off*.

X

XBRL eXtensible Business Reporting Language. A specification of information taxonomies and classifications used, and required by the *SEC*, to make information retrieval and analysis easier than otherwise.

Y

yield (rate) *Internal rate of return* of a stream of *cash flows*. *Cash yield* is cash flow divided by carrying *value*. See also *dividend yield*.

yield curve The relation between *interest rates* and the term to *maturity of loans*, or the duration (a technical term in financial economics) of *bonds* and *notes*. Ordinarily, longer-term loans have higher interest rates than shorter-term loans. This is called a normal yield curve. Sometimes long-term and short-term rates are approximately the same—a flat yield curve. Sometimes short-term loans have a higher rate than long-term ones—an inverted yield curve. *Term structure* of interest rates.

yield to maturity At a given time, the *internal rate of return* of a series of *cash flows*.

yield variance Measures the input-output relation while holding the standard mix of inputs constant: (*standard price* multiplied by actual amount of input used in the standard mix) – (standard price multiplied by *standard quantity allowed* for the actual *output*). It is the part of the *efficiency variance* not called the *mix variance*.

Z

zero-base(d) budgeting (ZBB) One philosophy for setting budgets. In preparing an ordinary *budget* for the next *period*, a manager starts with the budget for the current period and makes adjustments as seem necessary because of changed conditions for the next period. Since most *managers* like to increase the scope of the activities managed and since most prices increase most of the time, amounts in budgets prepared in the ordinary, incremental way seem to increase period after period. The authority approving the budget assumes that managers will carry out *operations* in the same way as in the past and that next period’s *expenditures* will have to be at least as large as those of the current period. Thus, this authority tends to study only the increments to the current period’s budget. In ZBB, the authority questions the process for carrying out a program and the entire budget for the next period. The authority studies every dollar in the budget, not just the dollars incremental to the previous period’s amounts. The advocates of ZBB claim that in this way, (1) management will more likely delete programs or *divisions* of marginal benefit to the *business* or governmental unit, rather than continuing with *costs* at least as large as the present ones, and (2) *management* may discover and implement alternative, more *cost-effective* ways of carrying out programs. ZBB implies questioning the existence of programs and the fundamental nature of the way that *firms* carry them out, not merely the amounts used to fund them. Experts appear to divide evenly as to whether the middle word should be “base” or “based.”

zero coupon bond A *debt* issue with a single promised *cash flow* on the *maturity date*; a single-payment *note*.

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Simplified Statement of Cash Flows (Exhibit 6.12, p. 192)

OPERATIONS	
Cash Receipts from Customers	(1)
Less: Cash Payments to Suppliers, Employees, and Others	–(2)
Cash Flow from Operations [= (1) – (2)]	–S1
Reconciliation of Net Income to Cash Flow from Operations	
Net Income	(3)
Additions to Net Income to Compute Cash Flow from Operations	+(4)
Subtractions from Net Income to Compute Cash Flow from Operations	–(5)
Cash Flow from Operations [= (3) + (4) – (5)]	S1
INVESTING	
Proceeds from Dispositions of “Investing” Assets	+(6)
Cash Used to Acquire “Investing” Assets	–(7)
Cash Flow from Investing [= (6) – (7)]	S2
FINANCING	
Cash Provided by Increases in Debt or Capital Stock	+(8)
Cash Used to Reduce Debt or Capital Stock	–(9)
Cash Used for Dividends	–(10)
Cash Flow from Financing [= (8) – (9) – (10)]	S3
Net Change in Cash [= S1 + S2 + S3]	(11)
Cash, Beginning of the Period	S4
Cash, End of the Period [= (11) + S4]	S5

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Effects of Various Methods of Accounting for Short- and Long-Term Investments in Corporate Securities (Exhibit 14.8, p. 567)

Method of Accounting	Balance Sheet	Income Statement
Fair value method for marketable securities available for sale (generally used when equity ownership percentage is less than 20%) and for cash flow hedges. ^a	Investment account or derivative appears at fair value. Unrealized gains and losses appear in Other Comprehensive Income.	Dividends declared by investee included in revenue of investor. Gains and losses included in income when realized in arm’s-length transactions with outsiders.
Fair value method for trading securities (generally used when ownership percentage is less than 20%) and for fair value hedges.	Investment account or derivative appears at fair value. Unrealized gains and losses appear in income statement, and the effects increase or decrease the Retained Earnings account.	Dividends declared by investee included in revenue of investor. Gains and losses (from then-current carrying values) included in income when fair values change.
Amortized cost method (used only for debt where holder has both intent and ability to hold to maturity). ^a	Acquisition cost plus accrued interest not yet received in cash.	Carrying value at start of period multiplied by historical market interest rate on the date of acquisition of debt security.
Equity method (generally used when ownership percentage is at least 20% but not more than 50%). ^a	Investment account appears at acquisition cost plus share of investee’s net income less share of investee’s dividends since acquisition minus amortization of excess of purchase price over fair value of identifiable assets with limited lives.	Equity in investee’s net income is part of the investor’s income in the period that investee earns income. Reduce (increase) by the amount, if any, of intercompany gains (losses).
Consolidation (generally used when ownership percentage exceeds 50% [U.S. GAAP] or when the investor controls the investee [IFRS]).	Eliminate investment account, and replace it with individual assets and liabilities of subsidiary. Show noncontrolling interest in shareholders’ equity. Eliminate inter-company assets and liabilities.	Combine individual revenues and expenses of subsidiary with those of parent, and eliminate intercompany items. Subtract noncontrolling interest in subsidiary’s net income.

^aFirms can elect the fair value option to account for these securities. The effects on the balance sheet and income statement are the same as those described for trading securities and fair value hedges.

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Common Accounting Terms

(Glossary, pp. 735–832)

account.	A device for keeping track of the amount on one line (or part of one line) of a balance sheet.
adjunct account.	An account for accumulating additions to another account.
advances from customers.	Liability title used on receipt of cash for future goods or service.
advances to suppliers.	Asset title used on paying cash for future goods or service.
asset.	Future benefit that (1) the firm controls and (2) arises from something other than an executory contract.
capital.	Avoid using this word because it has so many different meanings, such as cash, assets, funding sources, and owners' equity.
closing entry.	Journal entry made after preparing income statement to move balances in revenue and expense accounts to Retained Earnings.
contra account.	An account for accumulating subtractions from another account.
conservatism.	Defer income to later periods, showing low cumulative income; show low asset totals.
control(ling) account.	An account showing the sum of balances in other, similar accounts.
depreciation, amortization.	An allocation of costs to periods of benefit (and, in manufacturing, subsequently to products). Not a decline in market value.
equity.	A source of assets. A claim to assets.
executory contract.	A mere exchange of promises.
expenditure.	Outflow of cash.
expense.	Gone (net) asset. Effect on Balance Sheet: The decrease in owners' equity accompanying the decrease in (net) assets caused by the sale of goods, the rendering of services, or the passage of time.
goodwill.	The excess of purchase price (fair value of consideration given) over the fair market value of identifiable net assets in a purchased acquisition.
income statement.	Not the Purpose: To report income. Purpose: To tell why income was what it was to allow comparisons across time or across companies (divisions), or both.
liability.	An obligation (1) for a reasonably definite amount, (2) due at a reasonably definite time, (3) arising from something other than an executory contract.
make (making) money.	One of at least seven possible meanings. Don't say this unless you can be precise about your meaning.
net assets.	Assets minus liabilities.
partially executory contract.	Executory contract in which one or both parties have done something other than merely promise.
periodic inventory.	Compute cost of goods sold once per period, at the end as: beginning inventory (from books) plus purchases minus ending inventory (go out into the warehouse; then count and cost it). Contrast with perpetual inventory, where firm tracks cost of goods sold with each withdrawal from inventory.
product cost.	A manufacturing cost; debited to work in process, not to expense.
receipt.	Inflow of cash.
revenue.	Service rendered. Effect on balance sheet: The increase in owners' equity accompanying the increase in (net) assets caused by the selling of goods or the rendering of service. Measured by the expected net present value of the cash receipts.

make money. making money. Do not use these phrases as they can mean any of the following: **1.** Earn *income*: "Microsoft made a lot of money last year." **2.** Earn *other comprehensive income*: "I still hold the Microsoft shares I bought in 1990, and I've made a lot of money on them." This is an *unrealized holding gain*, an increase in wealth, but not an increase in *cash*. **3.** Save *opportunity costs* or opportunity losses: "If I'd only sold those shares in 1999, I'd have made more money. I didn't sell the shares, so I lost money." This use refers to the lost benefits from not doing something. Accounting does not recognize opportunity costs. **4.** Earn revenues: "He made a lot of money touting cooking devices on TV." He earned income and received payments, but this use subtracts no costs. **5.** Earn gross margin. **6.** Sell for cash. **7.** Generate cash flow from operations. Many companies can have positive income but negative cash flow from operations. Some analysts will say such a company made no money in such a year. **8.** Counterfeit.

Debit-Credit Rules

(Glossary, p. 762)

Typical Asset Account

Opening Balance	
Increase	Decrease
+	-
Dr.	Cr.
Ending Balance	

Typical Liability Account

	Opening Balance
Decrease	Increase
-	+
Dr.	Cr.
	Ending Balance

Typical Owners' Equity Account

	Opening Balance
Decrease	Increase
-	+
Dr.	Cr.
	Ending Balance

Owners' Equity

Decrease		Increase	
-	Dr.	+	Cr.
Expenses		Revenues	
Dr.	Cr.	Dr.	Cr.
+	-	-	+
*			*

*Normal balance before closing.