

Real financial data for focus companies illustrate key concepts of each module.

cash within one year from the balance sheet date. For example, the first short-term asset listed is cash, then accounts receivable (amounts owed to Apple by its customers that will be collected in cash in the near future), and then inventories (goods available for sale that must first be sold before cash can be collected). Land, buildings, and equipment (often referred to as property, plant, and equipment or just PPE) will generate cash over a long period of time and are, therefore, classified as long-term assets.

Exhibit 1.3 ■ Balance Sheet (\$ millions)

APPLE, INC.
Consolidated Balance Sheet*
September 29, 2018

Assets		
Short-term assets	.....	\$131,339
Long-term assets	.....	234,386
Total assets	.....	<u>\$365,725</u>
Liabilities		
Short-term liabilities	.....	\$116,866
Long-term liabilities	.....	141,712
Total liabilities	.....	<u>258,578</u>
Stockholders' Equity		
Contributed capital	.....	40,201
Retained earnings	.....	70,400
Other equity	.....	(3,454)
Total stockholders' equity†	.....	<u>107,147</u>
Total liabilities and equity	.....	<u>\$365,725</u>

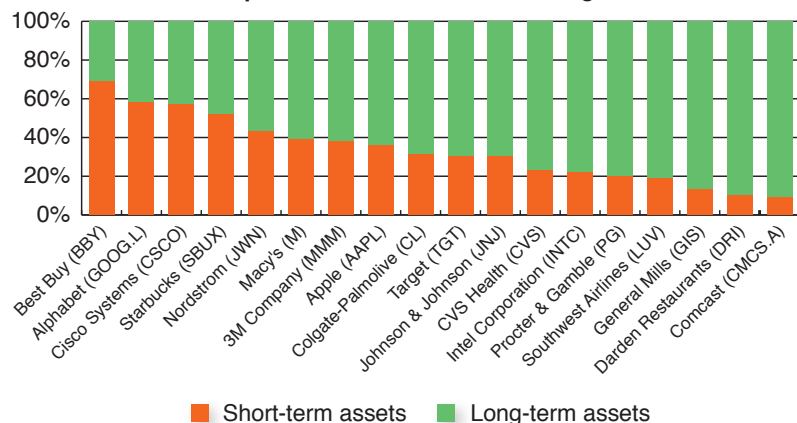
* Financial statement titles often begin with the word *consolidated*. This means the financial statement includes a parent company and one or more subsidiaries, which are companies the parent company controls.

† Components of equity are explained as part of Exhibit 1.5.

The relative proportion of short- and long-term assets is largely determined by a company's industry and business model. This is evident in the graph to the side that depicts the relative proportion of short- and long-term assets for a number of well-known companies.

- Larger investments in short-term assets occur at companies such as **Best Buy**, **Starbucks**, and **Nordstrom's** that carry relatively high levels of inventories. High current assets also occur for technology companies like **Alphabet** (formerly Google) and **Cisco** that have high cash balances and large investments in marketable securities that are classified as short-term because they can be sold quickly in financial markets.
- Manufacturers such as **3M**, **Johnson & Johnson**, and **Colgate-Palmolive** require more investment in property, plant, and equipment in addition to large investments in inventories and accounts receivable from customers.

Relative Proportion of Short-Term and Long-Term Assets



- At the other end of the spectrum are transportation companies like **Southwest Airlines** and communications companies like **Comcast** whose business models require significant investment in long-term equipment, such as planes and telecom infrastructure.

Although managers can influence the relative amounts and proportion of assets, their flexibility is somewhat limited by the nature of their industries.

Ongoing Project

An important part of learning is application. To learn accounting, we must practice the skills taught and apply those skills to real-world problems. To that end, we have designed a project to reinforce the lessons in each module and apply them to real companies. The goal of this project is to complete a comprehensive analysis of two (or more) companies in the same industry. We will then create a set of forecasted financial statements and a valuation of the companies' equity. This is essentially what financial analysts and many creditors do. We might not aspire to be an analyst or creditor, but by completing a project of this magnitude, we will have mastered financial reporting at a sufficient level to be able to step into any role in an organization. The goal of Module 1's assignment is to obtain and begin to explore the financial reports for two publicly traded companies that compete with each other.

- Select two publicly traded companies that compete with each other. They must be publicly traded, as private company financial statements will not be publicly available. While the two companies do not need to be head-to-head competitors, their main lines of business should broadly overlap.
- Download the annual reports for each company and peruse them. At this stage, choose companies that are profitable (net income is positive) and that have positive retained earnings and stockholders' equity. Select companies whose financial statements are not overly complicated. (Probably avoid the automotive, banking, insurance, and financial services industries. Automotive companies have large financial services subsidiaries that act like banks for customers, which complicates the analysis. Banking, insurance, and financial services have operations that differ drastically from the usual industrial companies common in practice. While these companies can be analyzed, they present challenges for the beginning analyst.)
- Use the SEC EDGAR website to locate the recent Form 10-K (or other annual report such as 20-F or 40-F) (www.sec.gov). Download a spreadsheet version of financial statements. Use Appendix 1A as a guide.
- Use the annual report and the financial statements, along with any websites, to assess the companies' business environment. Use Porter's five forces or a SWOT analysis to briefly analyze the competitive landscape for the two companies. The aim is to understand the competitive position of each company so we can assess their financial statements in a broader business context.
- Explore the financial statements, and familiarize yourself with the company basics. The following give an indication of some questions that guide us as we look for answers.
 - What accounting standards are used, U.S. GAAP, IFRS, or other?
 - What is the date of the most recent fiscal year-end?
 - Determine the relative proportion of short- and long-term assets.
 - Determine the relative proportion of liabilities and equity.
 - Calculate the return on assets (ROA) for the most recent year.
 - Disaggregate ROA into the two component parts as shown in Exhibit 1.7. Compare the numbers/ratios for each company.
 - Find the companies' audit reports. Who are the auditors? Are any concerns raised in the reports?
 - Do the audit reports differ significantly from the one shown in this module?

Solutions to Review Problems

Review 1-1—Solution

1. Companies engage in the following three types of ongoing business activities: operating activities, investing activities, and financing activities.
2. A company's strategic plan reflects how it plans to achieve its goals and objectives.
3. Investors use financial statement information to make reasonable estimates of the value of the company's stock.
4. Lenders use financial statement information to assess the company's ability to repay its debt.
5. Company managers use financial statements to decide where to invest scarce resources.
6.

• Manufacturing products	OPERATING	• Constructing new manufacturing facilities	INVESTING
• Issuing stock to investors	FINANCING	• Hiring and training employees	OPERATING
• Repaying a mortgage	FINANCING	• Gaining control of the voting stock of a supplier to secure the supply chain	INVESTING
• Selling services to a client	OPERATING	• Entering into a bank loan	FINANCING
• Acquiring land	INVESTING		
• Engaging in after-sales support	OPERATING		

earnings increases. Cash from operations increases on the statement of cash flows, and the statement of stockholders' equity is affected via retained earnings. With such an understanding, we can more accurately answer questions such as the following.

- What are the financial statement effects of purchasing new PPE versus renting it?
- How is ROA affected when the company discontinues certain operations?
- What are the income statement and balance sheet effects of outsourcing production?
- How will a proposed merger affect profit margin and asset turnover?

LO5 Review 2-5

Assume **Microsoft Corporation** reports the following balances for the prior-year balance sheet and current-year income statement (\$ millions). Prepare the articulation of Microsoft's financial statements for fiscal years 2017 and 2018 following the format of Exhibit 2.10.



Balance Sheet, June 30, 2017		Income Statement, For Year Ended June 30, 2018	
Assets		Revenues	\$110,360
Cash	\$ 7,663	Expenses	93,789
Noncash assets	242,649	Net income	\$ 16,571
Total assets	\$250,312		
Liabilities and equity		Statement of Cash Flows, For Year Ended June 30, 2018	
Total liabilities	\$162,601	Operating cash flows	\$43,884
Equity		Investing cash flows	(6,061)
Contributed capital	69,315	Financing cash flows	(33,540)
Retained earnings	17,769	Net change in cash	4,283
Other stockholders' equity	627	Cash balance, June 30, 2017	7,663
Liabilities and equity	\$250,312	Cash balance, June 30, 2018	\$11,946

- Notes: 1. Stock issuances for the year are **\$1,908**.
 2. Dividends for the year are \$12,917.
 3. Other decreases in retained earnings are \$7,741.
 4. Change in other stockholders' equity for the year is \$(2,814).
 5. Total assets at June 30, 2018 are \$258,848.

Solution on p. 2-41.

Additional Information Sources

The four financial statements are only a part of the information available to financial statement users. Additional information from a variety of sources provides useful insight into company operating activities and future prospects. This section highlights additional information sources.

Form 10-K

Companies with publicly traded securities must file with the SEC a detailed annual report and discussion of their business activities in their Form 10-K (quarterly reports are filed on Form 10-Q). Many of the disclosures in the 10-K are mandated by law and include the following general categories:

- **Item 1**, Business
- **Item 1A**, Risk Factors
- **Item 2**, Properties
- **Item 3**, Legal Proceedings
- **Item 4**, Submission of Matters to a Vote of Security Holders
- **Item 5**, Market for Registrant's Common Equity and Related Stockholder Matters

LO6
 Locate and use additional financial information from public sources.

Review 3-2—Solution

	Balance Sheet						Income Statement		
	Cash Assets +	Noncash Assets =	Liabilities +	Contrib. Capital +	Earned Capital	Revenues -	Expenses =	Net Income	
Balance January 1, 2020	10,000	41,000	26,000	10,000	15,000	0	0	0	
Transactions									
1. Issue common stock for \$3,000 cash	3,000			3,000					
2. Purchase inventory for \$8,000 on credit.		8,000 Inventory	8,000 Accounts payable						
3. Sell inventory costing \$8,000 for \$15,000 on credit		(8,000) Inventory 15,000 Accounts receivable			7,000 Retained earnings	15,000 Revenue	8,000 Cost of goods sold	7,000	
4. Issue long-term debt for \$10,000 cash	10,000		10,000 Long-term debt						
5. Pay \$15,000 cash for PPE	(15,000)	15,000 PPE							
6. Pay \$500 cash for salaries	(500)				(500) Retained earnings		500 Salaries expense	(500)	
7. Receive \$300 cash in advance for future consulting services . . .	300		300 Unearned revenue						
8. Pay \$50 cash for interest on long-term debt.	(50)				(50) Retained earnings		50 Interest expense	(50)	
9. Receive \$3,000 cash from accounts receivable	3,000	(3,000) Accounts receivable							
10. Pay \$2,500 cash toward accounts payable	(2,500)		(2,500) Accounts payable						
11. Perform consulting services for client who previously paid in 7 . . .			(300) Unearned revenue		300 Retained earnings	300 Revenue		300	
12. Pay \$100 cash for dividends	(100)				(100) Retained earnings				

Review 3-3—Solution

	Balance Sheet						Income Statement							
	Cash Assets	+	Noncash Assets	=	Liabil- ities	+	Contrib. Capital	+	Earned Capital	Reven- ues	-	Expens- es	=	Net Income
Accounting Adjustments														
13. Record depreciation of \$600			(600) PPE						(600) Retained earnings			600 Depreciation expense		(600)
14. Accrue salaries of \$1,000					1,000 Salaries payable				(1,000) Retained earnings			1,000 Salaries expense		(1,000)
15. Advertising costing \$1,300 is aired			(1,300) Prepaid expense						(1,300) Retained earnings			1,300 Advertising expense		(1,300)
16. Accrue income taxes of \$1,200					1,200 Taxes payable				(1,200) Retained earnings			1,200 Tax expense		(1,200)
Balance January 31, 2020	8,150		66,100		43,700		13,000		17,550	15,300		12,650		2,650

continued from previous page

Required

- Determine net operating profit before tax (NOPBT) for fiscal 2018.
- Compute tax on operating profit for fiscal 2018, assuming a 22% statutory tax rate.
- Compute NOPAT using the formula: NOPBT – Tax on operating profit.
- Compute after-tax net nonoperating expense, NNE.

Solution on p. 4-60. e. Calculate NOPAT using the formula: Net income + NNE

Return on Net Operating Assets (RNOA)



LO6

Compute and interpret return on net operating assets (RNOA).

To determine average NOA, we take a simple average of two consecutive years' numbers. Return on net operating assets (RNOA) for Boston Scientific for 2018 is computed as follows (\$ millions).

$$\text{RNOA} = \frac{\text{Net operating profit after tax}}{\text{Average net operating assets}} = \frac{\$1,737}{(\$15,636 + \$12,440)/2} = 12.37\%$$

Boston Scientific's 2018 RNOA is 12.37%. By comparison, the average RNOA for S&P 500 companies is 11.3% in 2018 and has ranged from 9.3% to 12.5% over the 2010-2018 period (see the Research Insight titled "Ratio Behavior over Time").

RNOA vs ROA A comparison of Boston Scientific's RNOA of 12.37% with the ROA of 8.35%, computed earlier, yields insight into the benefits of an operating focus.

DuPont vs Operating Focus, \$ millions	DuPont	Operating	Computation
Net income	\$ 1,671		
Net operating profit after tax (NOPAT)		\$ 1,737	
Average assets	\$20,021		(\$20,999 + \$19,042)/2
Average net operating assets (NOA)		\$14,038	(\$15,636 + \$12,440)/2
ROA	8.35%		\$1,671/\$20,021
RNOA		12.37%	\$1,737/\$14,038
ROE	21.24%	21.24%	\$1,671/[((\$8,726 + \$7,012)/2)]
ROE / ROA (or RNOA):			
DuPont (ROE/ROA)	2.54		21.24%/8.35%
Operating (ROE/ RNOA)		1.72	21.24%/12.37%

Boston Scientific's RNOA of 12.37% is larger than its ROA of 8.35% derived from the DuPont analysis. The reason for the difference is twofold.

- Numerator effect** RNOA focuses on NOPAT, which is \$66 million higher than net income used in the DuPont ROA. The larger numerator in RNOA vis-a-vis the numerator in ROA pushes RNOA higher.
- Denominator effect** The operating approach focuses on net operating assets (NOA) while the DuPont analysis uses total assets. NOA is lower than total assets because operating liabilities have been subtracted to arrive at NOA. This creates a smaller denominator in the RNOA calculation (\$14,038) as compared to ROA (\$20,021), which makes the RNOA ratio higher.

We can disaggregate ROE into operating and nonoperating components.

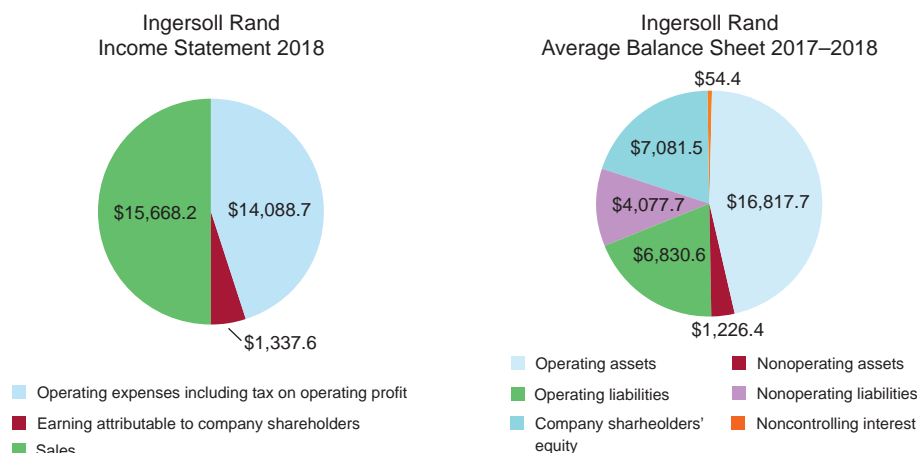
$$\text{ROE} = \text{Operating return (via RNOA)} + \text{Nonoperating return}$$

Boston Scientific's ROE of 21.24% consists of an operating return of 12.37% (via RNOA) and nonoperating return of 8.87% (ROE – RNOA).

E4-35. Compute, Disaggregate, and Interpret ROE and RNOA

Graphical representations of the **Ingersoll Rand** 2018 income statement and average balance sheets (2017–2018) follow.

LO1, 6, 7
Ingersoll Rand (IR)



- Compute the 2018 return on equity (ROE) and 2018 return on net operating assets (RNOA).
- Disaggregate RNOA into net operating profit margin (NOPM) and net operating asset turnover (NOAT). What observations can we make about NOPM and NOAT?
- Compute nonoperating return for 2018.

E4-36. Compute and Compare ROE, ROA, and RNOA

Refer to the balance sheet and income statement information for **KLA-Tencor Corporation** in E4-34.

LO1, 2, 6
KLA-Tencor (KLAC)



- Compute return on equity (ROE).
- Compute return on ~~net~~ assets (ROA).
- Compute return on net operating assets (RNOA).
- Compare the three return metrics and explain what each one measures.

E4-37. Directly Compute Nonoperating Return with Noncontrolling Interest

Selected balance sheet and income statement information from **Abbott Laboratories** for 2018 follows (\$ millions).

LO8
Abbott Laboratories (ABT)



Net income	\$ 2,368
Net income attributable to Company shareholders	2,368
Net operating profit after tax (NOPAT)	2,940
Net nonoperating expense (NNE)	572
Average net operating assets (NOA)	48,222
Average net nonoperating obligations (NNO)	17,312
Average total equity	30,910
Average equity attributable to Company shareholders	30,711

Compute the following measures *a* through *h*.

- Return on equity = (Net income attributable to Company shareholders/Average equity attributable to Company shareholders)
- RNOA = NOPAT/Average NOA
- Nonoperating return = ROE – RNOA
- NNEP = NNE/Average NNO
- Spread = RNOA – NNEP
- FLEV = Average NNO/Average total equity
- NCI ratio = (Net income attributable to Company shareholders/Net income)/(Average equity attributable to Company shareholders/Average total equity)
- ROE = (RNOA + (Spread × FLEV)) × NCI ratio

Performance Obligations Satisfied Over Time

Many companies enter into long-term contracts that obligate them to future performance. For example:

- **Spitz Inc.** enters into a construction contract with Disney World to design, manufacture, and install massive projection domes in the new Guardians of the Galaxy roller coaster experience.
- **Boeing** enters into a contract with domestic and international airlines and the U.S. military to construct planes.
- **Tata Consultancy Services** enters into long-term contracts with companies to design IT services, implement systems, and provide cloud-based services.

For these types of contracts, companies must determine the point at which their performance obligations have been satisfied so that revenue can be recognized. For a multiple-year contract, waiting to recognize revenue until the good is delivered would be problematic because the expense of constructing the product would be recognized as incurred whereas the revenue recorded only at the end of the contract. Although total revenue, expense, and profit would be accurate over the life of the contract, financial statements issued during the interim would report losses with a substantial profit at the end, making evaluation of the company's financial performance difficult during the interim.

Cost-to-Cost Method An accepted practice for many years has been to recognize revenue over the life of a long-term contract in amounts that track the percentage of completion of the contract. Companies typically use the percentage of projected contract costs that have been incurred to estimate the contract's percentage of completion. This method is called the *cost-to-cost method*. (There are other ways to determine percentage of completion, but cost-to-cost is the most common.) For example, if a company incurred 15% of the total expected cost to create the product in the current period, it would recognize revenues equal to 15% of the contract amount. **Raytheon**, a U.S. conglomerate ranked 114 among the Fortune 500, specializes in aerospace, defense, civil government, and cybersecurity. The company describes its revenue recognition practice as follows.

Because of control transferring over time, revenue is recognized based on the extent of progress towards completion of the performance obligation. . . We generally use the cost-to-cost measure of progress for our contracts because it best depicts the transfer of control to the customer which occurs as we incur costs on our contracts. Under the cost-to-cost measure of progress, the extent of progress towards completion is measured based on the ratio of costs incurred to date, to the total estimated costs at completion of the performance obligation. Revenues, including estimated fees or profits, are recorded proportionally as costs are incurred.

To illustrate accounting for long-term contracts using the *cost-to-cost* approach, assume Raytheon signs a \$10 million contract to develop a prototype for a defense system. Raytheon estimates construction will take two years and will cost \$7,500,000. This means the contract yields an expected gross profit of \$2,500,000 over two years. The following table summarizes costs incurred each year and the revenue Raytheon recognizes.

	Costs Incurred	Percentage Complete	Revenue Recognized
Year 1	\$4,500,000	$\frac{\$4,500,000}{\$7,500,000} = 60\%$	$\$10,000,000 \times 60\% = \$6,000,000$
Year 2	\$3,000,000	$\frac{\$3,000,000}{\$7,500,000} = 40\%$	$\$10,000,000 \times 40\% = \$4,000,000$

This table reveals Raytheon would report \$6 million in revenue and \$1.5 million (\$6 million – \$4.5 million) in gross profit on the project in the first year; it would report \$4 million in revenue and \$1 million (\$4 million – \$3 million) in gross profit in the second year.

Accounting for Accounts Receivable

To account for uncollectible amounts, companies use an allowance account similar to the ones discussed above for sales returns and other allowances. The *allowance for uncollectible accounts* (also called the allowance for doubtful accounts) reduces the gross amount of receivables that are reported on the balance sheet.

To illustrate, assume the company sells goods on account for \$100,000 and, at the end of the accounting period, performs an aging analysis and establishes the allowance for uncollectible accounts in the amount of \$2,900. Our financial statement effects for the sale and the estimate of uncollectible accounts receivable are as follows.

Transaction	Balance Sheet						Income Statement			
	Cash Asset	+ Noncash Assets	= Liabilities	+ Contrib. Capital	+ Earned Capital		Revenues	- Expenses	= Net Income	
Sale on account		100,000 Accounts Receivable	=		100,000 Retained Earnings		100,000 Sales	-	= 100,000	AR 100,000 Rev 100,000 AR 100,000 | Rev 100,000
Establish allowance and record bad debts expense		-2,900 Allowance for Uncollectible Accounts	=		-2,900 Retained Earnings			+ 2,900 Bad Debts Expense	= -2,900	BDE 2,900 AU 2,900 BDE 2,900 | AU 2,900

The allowance for uncollectible accounts is subtracted from the gross accounts receivable, and the net amount collectible is reported on the balance sheet.

Accounts receivable (gross amount owed)	\$100,000
Less: Allowance for uncollectible accounts	(2,900)
Accounts receivable, net (reported on balance sheet)	<u>\$ 97,100</u>

Companies typically report the allowance for uncollectible accounts along with accounts receivable as follows.

Accounts receivable, less allowance for uncollectible accounts of \$2,900.	\$97,100
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By setting up the allowance, the company has established a reserve, or a cushion, that it can use to absorb credit losses as they occur. To see how this works, assume a customer who owes \$500 files for bankruptcy. If the company determines the receivable is now uncollectible, it must write off the receivable. This is absorbed by the allowance for uncollectible accounts as follows.

Transaction	Balance Sheet						Income Statement			
	Cash Asset	+ Noncash Assets	= Liabilities	+ Contrib. Capital	+ Earned Capital		Revenues	- Expenses	= Net Income	
Write off \$500 of uncollectible accounts receivable		500 Allowance for Uncollectible Accounts -500 Accounts Receivable	=					-	=	AU 500 AR 500 AU 500 | AR 500

The write-off of the uncollectible account receivable results in the following balances at the end of the period.

2. “Deductions” is the dollar value of actual returns offset by the value of the merchandise returned (that reduces COGS by the same amount). The actual returns number is \$10.1 million, which is close to the estimated amount charged to costs and expenses of \$12.6 million. This indicates that **Tiffany & Co** is fairly accurate in its estimation process.

3. a.

\$ millions	2019	2018	2017
Net sales.	\$4,442.1	\$4,169.8	\$4,001.8
Charged to costs and expenses.	12.6	7.5	2.5
Gross sales.	\$4,454.7	\$4,177.3	\$4,004.3
Allowance at year end	\$17.5	\$15	\$9.6
Allowance/Gross sales.	0.39%	0.36%	0.24%

The sales return allowance is small at year end, compared to gross sales, likely because sales returns are made quickly after the purchase so the balance outstanding at any time is small. In fact, the amount outstanding is roughly equal to one day’s sales ($\$4,442.1/365 \text{ days} = \12.2). The amount has been increasing over time but is not of concern given its magnitude.

b.

\$ millions	2019	2018	2017
Charged to costs and expenses.	\$ 12.6	\$ 7.5	\$ 2.5
Gross sales.	\$4,454.7	\$4,177.3	\$4,004.3
% returned merchandise	0.28%	0.18%	0.06%

The % of merchandise that Tiffany estimates will be returned has steadily increased over the three years, but the amount is so low as to be immaterial. There is no cause for concern here.

- c. Tiffany’s sales returns allowance seems a bit high considering the following ratio of actual to estimate.

\$ millions	2019	2018	2017
Estimated returns for the year	\$12.6	\$7.5	\$2.5
Actual returns during the year	\$10.1	\$2.1	\$1.2
Adequacy	125%	357%	208%

Review 5-3—Solution

The amount of cash received from the customers is the amount added to the liability.

Advanced Billings and Customer Deposits (\$ millions)	
Balance at 1/1/2018	\$26,656
+ Cash prepayments by customers during the year	??
– Revenue recognized during the year	(55,078)
= Balance at 12/31/2018	\$32,720
Cash prepayments by customers during the year = $\$32,720 + \$55,078 - \$26,656 = \$61,142$	

Review 5-4—Solution

- In 2018, Google’s EMEA revenues were 4 percentage points higher (24% versus 20% growth) as a result of the weakening \$US vis-à-vis the other currencies in that region. As the \$US weakened, foreign currency denominated income statements grew when translated into in \$US. In 2017, the opposite was true, EMEA revenue growth would have been 2 percentage points higher (19% versus 21%) if not for the negative effect of the stronger \$US.
- All accounts in the income statement grow when the \$US weakens: revenues, expenses, and profit. Because Alphabet is profitable (revenues are greater than expenses), the company will appear more profitable as a result of the weakening U.S. dollar.

Disclosures for a LIFO Reserve Because companies can choose among the various inventory costing methods, their financial statements are often not comparable. The problem is most serious when companies hold large amounts of inventory and when prices markedly rise or fall. For example, consider comparing CAT to **Kubota**, a close competitor that uses the FIFO method to cost its inventory. The table below reports certain financial information for both companies for fiscal 2018.

Monetary amounts in millions	CAT LIFO as Reported	CAT FIFO as Adjusted	Kubota as Reported
Inventory	\$11,529	\$13,538	¥ 370,698
LIFO reserve, 2018	\$ 2,009	—	—
LIFO reserve, 2017	\$ 1,934	—	—
Total assets	\$78,509	\$80,518	¥2,895,655
Inventory as a % of total assets	15%	17%	13%
Cost of goods sold	\$36,997	\$36,922	¥1,332,930
Revenue (equipment sales)	\$51,822	\$51,822	¥1,850,316
Cost of goods sold as a % of revenue . . .	71.39%	71.25%	72.04%

If we compare the information reported on each company's financial statements ('CAT LIFO as Reported' vs. 'Kubota as Reported') we would conclude that Caterpillar holds slightly more inventory than Kubota—15% of total assets for CAT vs. 13% for Kubota. But this is not an apples-to-apples comparison and such a conclusion is erroneous. Fortunately, companies that use LIFO must report their LIFO reserve, and we can use these disclosures to adjust the LIFO numbers to their FIFO equivalents. Once we convert CAT's inventory and its total assets to FIFO (by adding the LIFO reserve, as explained above), we find that the company holds 17% of total assets as inventory, a greater difference than first noted.

Balance Sheet Adjustments for a LIFO Reserve In general, to adjust for LIFO on the balance sheet, we must make three modifications and then recompute balance sheet totals and subtotals (current assets, total assets, and total equity).

- Increase inventories by the LIFO reserve.
- Increase tax liabilities by the tax rate applied to the LIFO reserve.
- Increase retained earnings for the difference.


As an example, to adjust CAT's 2018 balance sheet, we would:

- Increase inventories by \$2,009 million.
- Increase tax liabilities by \$693 million (see our computation on page 6-8).
- Increase retained earnings by the difference of \$1,316 million (computed as \$2,009 million – \$693 million).

Income Statement Adjustments for a LIFO Reserve To compare the income statements of companies that use LIFO, we must adjust cost of goods sold from LIFO to FIFO. Recall that: Cost of Goods Sold = Beginning Inventories + Purchases – Ending Inventories. To determine FIFO COGS, we must use the *change* in the LIFO reserve as follows.

$$\text{FIFO COGS} = \text{LIFO COGS} - \text{Increase in LIFO Reserve (or + Decrease)}$$

During 2018, the change in CAT's LIFO reserve was \$75 million (\$2,009 million – \$1,934 million). Had CAT *always used* FIFO, its 2018 COGS would have been \$75 million lower (meaning gross profit and pretax income would be \$75 million higher), and the company would have paid \$16 million (\$75 million × 21%) more in taxes. This does not make much difference either in dollar or percentage terms for CAT in 2018 because the LIFO reserve increased only slightly during the year. But in other years, and for other companies, the impact can be great.

Assignments with the  logo in the margin are available in [my BusinessCourse](#).
See the Preface of the book for details.

Mini Exercises

M6-13. Computing Cost of Goods Sold and Ending Inventory Under FIFO, LIFO, and Average Cost

L01

Assume that Madden Company reports the following initial balance and subsequent purchase of inventory.

Inventory balance at beginning of year.	1,300 units @ \$150 each	\$195,000
Inventory purchased during the year	1,700 units @ \$180 each	306,000
Cost of goods available for sale during the year . . .	3,000 units	\$501,000



Assume that 2,000 units are sold during the year. Compute the cost of goods sold for the year and the inventory on the year-end balance sheet under the following inventory costing methods.

- FIFO
- LIFO
- Average Cost

M6-14. Computing Cost of Goods Sold and Ending Inventory Under FIFO, LIFO, and Average Cost

L01

Wong Corporation reports the following beginning inventory and inventory purchases.

Inventory balance at beginning of year.	400 units @ \$12 each	\$ 4,800
Inventory purchased during the year	700 units @ \$14 each	9,800
Cost of goods available for sale during the year . . .	1,100 units	\$14,600



Wong sells 600 of its inventory units during the year. Compute the cost of goods sold for the year and the inventory on the year-end balance sheet under the following inventory costing methods.

- FIFO
- LIFO
- Average Cost

M6-15. Computing and Evaluating Inventory Turnover for Two Companies

L03

[PriceSmart](#) and [Nordstrom](#) report the following information in their respective ~~January 2016~~ 10-K reports relating to their two most recent fiscal years.

[PriceSmart \(PSMT\)](#)
[JW Nordstrom \(JWN\)](#)

	PriceSmart (\$ thousands)			Nordstrom (\$ millions)		
	Sales	Cost of Goods Sold	Inventories	Sales	Cost of Goods Sold	Inventories
2018	\$3,053,754	\$2,610,111	\$321,025	\$15,480	\$10,155	\$1,978
2017	2,910,062	2,487,146	310,946	15,137	9,890	2,027



- Compute the 2018 inventory turnover for each of these two retailers.
- Discuss any difference we observe in inventory turnover between these two companies. Does the difference confirm our expectations given their respective business models? Explain. (*Hint:* Nordstrom is a higher-end retailer and PriceSmart operates no-frills, warehouse stores.)
- Describe ways that a retailer can improve its inventory turnover.

M6-16. Computing Depreciation

L04

A delivery van costing \$37,000 is expected to have a \$2,900 salvage value at the end of its useful life of five years. Assume that the truck was purchased on January 1. Compute the depreciation expense for the first two calendar years under the straight-line depreciation method.



	Carrefour Group in € millions		Tesco PLC in £ millions	
	2018	2017	2018	2017
Sales.	€76,000	€78,315	£57,491	£55,917
Cost of sales.	60,850	62,311	54,141	53,015
Gross profit.	15,150	16,004	3,350	2,902
Inventory.	6,135	6,690	2,263	2,301
Total assets.	47,378	47,813	44,862	45,853

Required

- Calculate gross profit margin for each year for both companies.
- Determine the common-size inventory for each year for both companies.
- Compute inventory turnover and days average inventory outstanding for 2018.
- Based on the metrics in parts *a*, *b*, and *c*, how do we assess the two companies' inventory management?

LO5, 6 I6-42.

Husky Energy (HSE)

**Estimating Useful Life, Percent Used Up, and Gain or Loss on Disposal**

Husky Energy is one of Canada's largest integrated energy companies. Based in Calgary, Alberta, Husky is publicly traded on the Toronto Stock Exchange. The Company operates in Western and Atlantic Canada, the United States and the Asia Pacific Region with upstream and downstream business segments. The company uses IFRS to prepare its financial statements. During 2018, the company reported depreciation expense of \$2,591 million. The property and equipment footnote follows.

Property, Plant and Equipment (in C\$ millions)	Oil and Gas Properties	Processing, Transportation and Storage	Upgrading	Refining	Retail and Other	Total
Cost						
December 31, 2017	\$ 41,815	\$ 86	\$ 2,599	\$ 9,191	\$ 2,930	\$ 56,621
Additions	2,465	12	62	744	151	3,434
Acquisitions	64	—	—	3	—	67
Transfers from exploration and evaluation	79	—	—	—	—	79
Intersegment transfers	—	—	—	(5)	5	—
Changes in asset retirement obligations	43	2	(2)	(5)	7	45
Disposals and derecognition	(632)	—	—	(10)	(1)	(643)
Exchange adjustments	362	1	—	773	3	1,139
December 31, 2018	\$ 44,196	\$ 101	\$ 2,659	\$ 10,691	\$ 3,095	\$ 60,742
Accumulated depletion, depreciation, amortization, and impairment						
December 31, 2017	\$(26,016)	\$(47)	\$(1,462)	\$(3,176)	\$(1,842)	\$(32,543)
Depletion, depreciation, amortization, and impairment.	(1,811)	(2)	(123)	(503)	(152)	(2,591)
Disposals and derecognition	586	—	—	10	—	596
Exchange adjustments	(138)	(1)	—	(264)	(1)	(404)
December 31, 2018	\$(27,379)	\$(50)	\$(1,585)	\$(3,933)	\$(1,995)	\$(34,942)
Net book value						
December 31, 2017	\$15,799	\$ 39	\$ 1,137	\$ 6,015	\$ 1,088	\$ 24,078
December 31, 2018	16,817	51	1,074	6,758	1,100	25,800

Required

- Compute the average useful life of Husky Energy's depreciable assets in 2018. Assume that land is 10% of "Refining."
- Estimate the percent used up of Husky Energy's depreciable assets in 2018. How do we interpret this figure?
- Consider the disposals and derecognition during the year. This refers to assets that were sold and removed from the balance sheet during 2018. Calculate the net book value of the total PPE disposed during the year. Assume that Husky Energy received \$4 million cash proceeds for the year. Determine the gain or loss on the disposal.

3. The LIFO reserve is computed as the difference between the inventory cost at LIFO and FIFO. This is $\$37,600 - \$36,250 = \$1,350$. Using LIFO for inventory costing for the subsidiary resulted in \$284 of taxes being deferred in the current period, computed as $\$1,350 \times 21\%$.

Review 6-3—Solution

\$ millions	2019	2018	2017
1. Gross profit margin	$\frac{\$22,915}{\$71,309} = 32.1\%$	$\frac{\$22,434}{\$68,619} = 32.7\%$	$\frac{\$21,674}{\$65,017} = 33.3\%$
2. Days inventory outstanding . .	$\frac{365}{\left[\frac{\$48,394}{\frac{\$12,561 + \$11,393}{2}} \right]} = 90.3$	$\frac{365}{\left[\frac{\$46,185}{\frac{\$11,393 + \$10,458}{2}} \right]} = 86.3$	
3. Days payable outstanding . . .	$\frac{365}{\left[\frac{\$48,394}{\frac{\$8,279 + \$6,590}{2}} \right]} = 56.1$	$\frac{365}{\left[\frac{\$46,185}{\frac{\$6,590 + \$6,651}{2}} \right]} = 52.3$	
4. Cash conversion cycle	$0 + 90.3 - 56.1 = 34.2$	$0 + 86.3 - 52.3 = 34.0$	
Analysis:	Cash conversion cycle did not improve; the cycle got longer (worsened), going from 34.0 days to 34.2 days.		
5. Δ Cash = Δ Cash Conversion Cycle Days \times (COGS/365)	$= -0.2$ days \times ($\$48,394/365$ days)	$= \$ (26.5)$ million	

Review 6-4—Solution

- Straight-line depreciation expense = $(\$95,000 - \$10,000)/5$ years = \$17,000 per year
- The HD subsidiary reports equipment on its balance sheet at its net book value of \$44,000.

Equipment, cost	\$95,000
Less accumulated depreciation ($\$17,000 \times 3$)	51,000
Equipment, net (end of Year 3)	<u>\$44,000</u>

Review 6-5—Solution**Part 1.**

- The equipment is impaired since the undiscounted expected cash flows of \$40,000 are less than the \$44,000 net book value of the equipment. The HD subsidiary must write down the equipment to its fair value of \$36,000. The effect of this write-down is to reduce the net book value of the equipment by \$8,000 ($\$44,000 - \$36,000$) and recognize a loss in the income statement.
- The HD subsidiary must report a gain on this sale of \$6,000, computed as proceeds of \$50,000 less the net book value of the equipment of \$44,000 (see Review 6-4, part 2).

Part 2.

- Coca-Cola's restructuring expense for 2018 is the increase in the restructuring liability of \$508 million.
- Coca-Cola reports a restructuring liability of \$90 million on its 2018 balance sheet.

Review 6-6—Solution

\$ millions	2019	2018
PPE turnover	$\frac{\$71,309}{\left(\frac{\$18,432 + \$19,721}{2} \right)} = 3.7$	$\frac{\$68,619}{\left(\frac{\$19,721 + \$19,949}{2} \right)} = 3.5$
Average useful life	$\frac{(\$18,052 + \$10,090 + \$18,521 + \$10,475) / 2}{\$1,454} = 19.6$	$\frac{(\$18,521 + \$10,475 + \$18,147 + \$10,978) / 2}{\$1,540} = 18.9$
Percent used up	$\frac{\$17,431}{(\$18,052 + \$10,090 + \$18,521 + \$10,475) / 2} = 61\%$	$\frac{\$17,219}{(\$18,521 + \$10,475 + \$18,147 + \$10,978) / 2} = 59\%$

**LO1 E7-28. Analyzing Contingent and Other Liabilities**

The following independent situations represent various types of liabilities. Analyze each situation and indicate which of the following is the proper accounting treatment for the company: (a) record a liability on the balance sheet, (b) disclose the liability in a financial statement footnote, or (c) neither record nor disclose any liability.

1. A stockholder has filed a lawsuit against Windsor Corporation. Windsor's attorneys have reviewed the facts of the case. Their review revealed that similar lawsuits have never resulted in a cash award and it is highly unlikely that this lawsuit will either.
2. Sterling Company signed a 60-day, 10% note when it purchased items from another company.
3. The Environmental Protection Agency notifies Stark Industries that a state where it has a plant is filing a lawsuit for groundwater pollution against Stark and another company that has a plant adjacent to Stark's plant. Test results have not identified the exact source of the pollution. Stark's manufacturing process often produces by-products that can pollute groundwater.
4. Franklin Company manufactured and sold products to a retailer that later sold the products to consumers. Franklin Company will replace the product if it is found to be defective within 90 days of the sale to the consumer. Historically, 1.2% of the products are returned for replacement.

LO1
Harley-Davidson Inc.
(HOG)

**LO1 E7-29. Recording and Analyzing Warranty Accrual and Payment**

Refer to the discussion of and excerpt from the Harley-Davidson Inc. warranty reserve on page 7-6 to answer the following questions.

- a. Using the financial statement effects template, record separately the 2018 warranty liability transactions relating to the (1) "Warranties issued during the period," (2) "Recalls and changes to preexisting warranty obligations," and (3) "Settlements made during the period."
- b. Does the level of Harley-Davidson's warranty accrual appear to be reasonable?

**LO1 E7-30. Analyzing and Computing Accrued Wages Liability and Expense**

Demski Company pays its employees on the 1st and 15th of each month. It is March 31 and the company is preparing financial statements for this quarter. Its employees have earned \$96,000 since the 15th of March and have not yet been paid. How will Demski's balance sheet and income statement reflect the accrual of wages on March 31? What balance sheet and income statement accounts would be incorrectly reported if Demski failed to make this accrual (for each account indicate whether it would be overstated or understated)?

LO3, 4 E7-31. Analyzing and Reporting Financial Statement Effects of Bond Transactions

On January 1, Remington Corp. issued \$500,000 of 15-year, 10% bonds payable for \$586,460 yielding an effective interest rate of 8%. Interest is payable semiannually on June 30 and December 31.

- a. Show computations to confirm the issue price of \$586,460.
- b. Indicate the financial statement effects using the template for (1) bond issuance, (2) semiannual interest payment and premium amortization on June 30 of the first year, and (3) semiannual interest payment and premium amortization on December 31 of the first year.

**LO4 E7-32. Analyzing and Reporting Financial Statement Effects of Mortgages**

On January 1, Patterson Inc. borrowed \$1,000,000 on a 10%, 15-year mortgage note payable. The note is to be repaid in equal semiannual installments of \$65,051 (payable on June 30 and December 31). Each mortgage payment includes principal and interest. Interest is computed using the effective interest method. Indicate the financial statement effects using the template for (a) issuance of the mortgage note payable, (b) payment of the first installment on June 30, and (c) payment of the second installment on December 31.

LO5
Ford Motor Co. (F)

E7-33. Assessing the Effects of Bond Credit Rating Changes

Ford Motor Co. reports the following information from the Risk Factors and the Management Discussion and Analysis sections of its 2018 10-K report.

Credit Ratings Our short-term and long-term debt is rated by four credit rating agencies designated as nationally recognized statistical rating organizations ("NRSROs") by the U.S. Securities and Exchange Commission: DBRS, Fitch, Moody's, and S&P Global Ratings.

In several markets, locally-recognized rating agencies also rate us. A credit rating reflects an assessment by the rating agency of the credit risk associated with a corporate entity or

continued

continued from previous page

At December 31, 2018, Altria's carrying amount of its equity investment in AB InBev exceeded its share of AB InBev's net assets attributable to equity holders of AB InBev by approximately \$11.8 billion. Substantially all of this difference is comprised of goodwill and other indefinite-lived intangible assets (consisting primarily of trademarks) . . . The fair value of Altria's equity investment in AB InBev at December 31, 2018 and 2017 was \$13.1 billion and \$22.1 billion, respectively, compared with its carrying value of \$17.7 billion and \$18.0 billion, respectively. Based on Altria's evaluation of the duration and magnitude of the fair value decline, AB InBev's financial condition and near-term prospects, and Altria's intent and ability to hold its investment in AB InBev until recovery, Altria concluded that the decline in fair value of its investment in AB InBev below its carrying value is temporary and, therefore, no impairment was recorded.

From the table above, we can derive AB InBev's 2018 balance sheet as follows.

\$ millions	
Current assets	\$ 20,289
Long-term assets	207,921
Total assets	<u>\$228,210</u>
Current liabilities	\$ 32,019
Long-term liabilities	130,812
Total liabilities	162,831
AB InBev equity	58,128
Noncontrolling interests	7,251
Total equity	<u>65,379</u>
Total liabilities and equity	<u>\$228,210</u>

Altria's share of AB InBev's equity is \$5.9 billion (calculated $10.1\% \times \$58,128$ million). But Altria's footnote discloses that the carrying value of the AB InBev investment is \$17.7 billion. The excess of \$11.8 billion (\$17.7 billion – \$5.9 billion) relates to “goodwill and other indefinite-lived intangible assets.” Because these intangible assets are viewed as “indefinite-lived,” Altria is not required to amortize them, thereby avoiding additional amortization expense in Altria's income statement.


Altria avoided another expense related to the AB InBev investment. As of 2018, the \$17.7 billion carrying value exceeded the investment's \$13.1 billion fair value. Had Altria deemed the decline to be “other than temporary,” the company would have had to write down the investment to fair value. This would have created an impairment loss of \$4.6 billion on Altria's 2018 income statement. Altria concluded, however, that the investment's decline in fair value is temporary, thereby avoiding a significant income-statement impact.

Underlying Financial Statement Components It is helpful to visualize the equity investment in relation to the underlying assets and liabilities. Following is a summary of the Altria 2018 balance sheet (\$ millions).

Altria	
Cash	\$ 1,333
Noncash assets	36,605
Investment in AB InBev	17,700
Total assets	<u>\$55,638</u>

AB InBev	
Total assets	<u>\$228,210</u>
Liabilities	\$162,831
Stockholders' equity	65,379
Liabilities and equity	<u>\$228,210</u>

- Q9-6.** What accounting method is used when a stock investment represents more than 50% of the investee company's voting stock and allows the investor company to "control" the investee company? Explain.
- Q9-7.** What is the underlying objective of consolidated financial statements?
- Q9-8.^A** What is a derivative? How do companies use them to hedge risk?
- Q9-9.^A** For accounting purposes, what are the two types of hedges? How are unrealized derivative gains and losses treated under each accounting method?
- Q9-10.** What are some limitations of consolidated financial statements?
- Q9-11.** How does a weakening \$US affect the consolidated balance sheet of a company with foreign subsidiaries?
- Q9-12.^B** What is the difference between a spin-off and a split-off?

Assignments with the  logo in the margin are available in [myBusinessCourse](#).
See the Preface of the book for details.

Mini Exercises

LO1 M9-13. Accounting for Marketable Equity Securities



Assume that Bava Company purchases 23,000 common shares of Jones Company for \$12 cash per share. During the year, Bava receives a cash dividend of \$1.30 per common share from Jones, and the year-end market price of Jones common stock is \$13 per share. How much income does Bava report relating to this investment for the year?

LO1 M9-14. Interpreting Disclosures of Investment Securities

Amgen Inc. (AMGN)



Amgen Inc. reports the following disclosure relating to its accumulated other comprehensive income.

\$ millions	Foreign Currency Translation	Cash Flow Hedges	Available- for-Sale Securities	Other	AOCI
Balance as of December 31, 2017	\$(529)	\$(6)	\$ (144)	\$—	\$(679)
Cumulative effect of change in accounting principle, net of tax	—	—	(9)	—	(9)
Foreign currency translation adjustments	(141)	—	—	—	(141)
Unrealized (losses) gains	—	61	(556)	—	(495)
Reclassification adjustments to income	—	262	365	—	627
Other	—	—	—	(2)	(2)
Income taxes	—	(76)	6	—	(70)
Balance as of December 31, 2018	\$(670)	\$241	\$(338)	\$ (2)	\$(769)

- a. Amgen reports unrealized gains and losses on available-for-sale securities as part of AOCI. Which of the following types of investments could be included in this account? Select all that apply.
- Bonds issued by US corporations.
 - Common stock traded on US stock exchange.
 - Common stock traded on foreign stock exchange.
 - Debt securities issued by a foreign government.
 - Municipal bonds.
 - U.S. Treasury bills.
- b. Consider the securities held in the available-for-sale portfolio at December 31, 2018. Which of the following is true?
- At December 31, 2018, the fair value of the securities was \$338 million less than their amortized cost.
 - At December 31, 2018, the fair value of the securities was \$338 million greater than their amortized cost.
 - At December 31, 2018, the fair value of the securities was \$338 million lower than their value at December 31, 2017.

- Snapchat's AOCI account includes unrealized gains and losses from two sources. What are those sources?
- Snapchat reported net loss for the year of \$1,255,911 thousand. Determine comprehensive income for the year.
- During 2018, did the currencies in the countries where Snapchat's subsidiaries were headquartered weaken or strengthen?
- Snapchat uses Level 1 and Level 2 inputs to determine fair value for its marketable debt investments. Explain the difference between these two inputs.
- Consider the Level 1 securities, which relate to investments in U.S. government debt securities. On average, has the market rate of interest for these securities increased or decreased since Snapchat bought these securities?

E9-31. Interpreting Footnote Disclosures for Investments

CNA Financial Corporation provides the following footnote to its 2018 10-K report.

Investments The company classifies its fixed maturity securities as either available-for-sale or trading, and as such, they are carried at fair value. Changes in fair value of trading securities are reported within Net investment income on the Consolidated Statements of Operations. Changes in fair value related to available-for-sale securities are reported as a component of Other comprehensive income.

The following table provides a summary of fixed maturity and equity securities.

December 31, 2018 (\$ millions)	Cost or Amortized Cost	Gross Unrealized Gains	Gross Unrealized Losses	Estimated Fair Value
Fixed maturity securities available-for-sale				
Corporate and other bonds	\$18,764	\$791	\$395	\$19,160
States, municipalities and political subdivisions	9,681	1,076	9	10,748
Asset-backed:				
Residential mortgage-backed	4,815	68	57	4,826
Commercial mortgage-backed	2,200	28	32	2,196
Other asset-backed	1,975	11	24	1,962
Total asset-backed	8,990	107	113	8,984
U.S. Treasury and obligations of government sponsored enterprises	156	3	—	159
Foreign government	480	5	4	481
Redeemable preferred stock	10	—	—	10
Total fixed maturity securities available-for-sale	38,081	1,982	521	39,542
Total fixed maturity securities trading	4	—	—	4
Total fixed maturity securities	\$38,085	\$1,982	\$521	\$39,546

- At what amount does CNA report its investment in marketable debt securities on its balance sheet? In your answer, identify the portfolio's fair value, cost, and any unrealized gains and losses.
- Compute the net unrealized gain or loss on CNA's investment portfolio. How do CNA's balance sheet and income statement reflect this net unrealized gain or loss?
- How do CNA's balance sheet and income statement reflect gains and losses realized from the sale of available-for-sale securities?

E9-32. Assessing Financial Statement Effects of Equity Method Securities

Use the financial statement effects template (with amounts and accounts) to record the following transactions involving investments in marketable securities accounted for using the equity method.

- Purchased 12,000 common shares of Bakersfield Co. at \$9 per share; the shares represent 30% ownership in Bakersfield.
- Received a cash dividend of \$1.25 per common share from Bakersfield.
- Bakersfield reported annual net income of \$60,000.
- Sold all 12,000 common shares of Bakersfield for \$114,500.

LO1

CNA Financial Corporation (CNA)

**LO2**

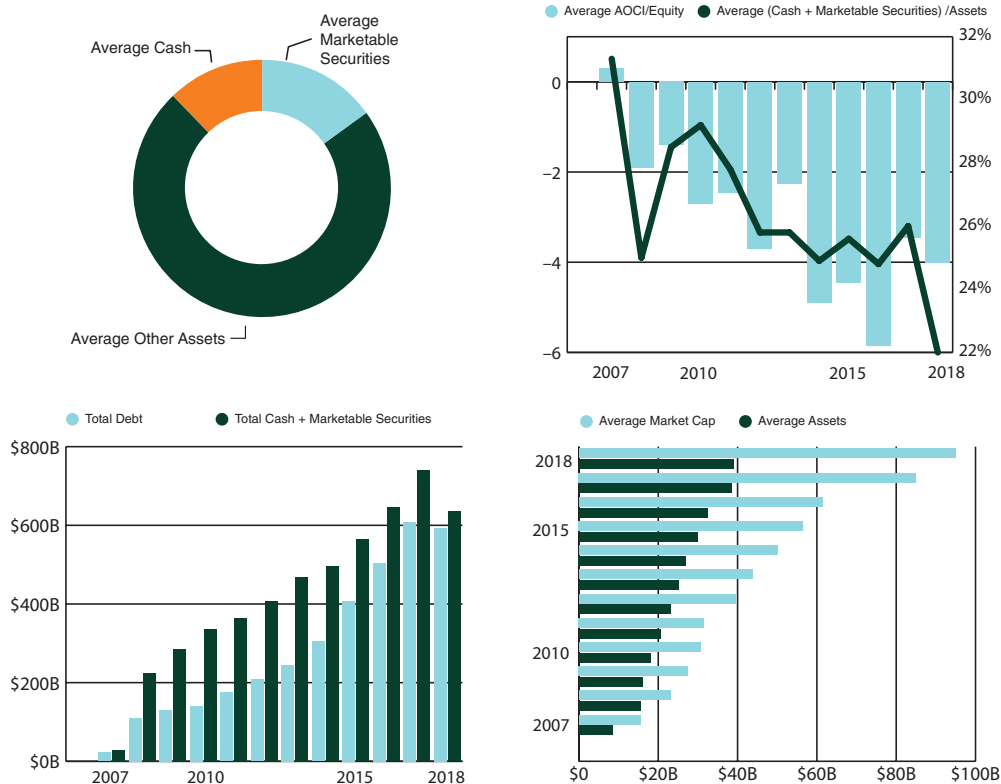
\$ millions	2016	2017	2018
Net income	\$4,600	\$7,757	\$3,695
Other comprehensive income (loss), net of tax			
Foreign currency translation	(1,024)	314	(523)
Marketable securities	(8)	(34)	(11)
Derivative instruments	219	(265)	183
Pension and other postretirement benefits	56	37	(56)
Total other comprehensive income (loss), net of tax	(757)	52	(407)
Comprehensive income	3,843	7,809	3,288
Less: Comprehensive income (loss) attributable to noncontrolling interests . . .	10	24	18
Comprehensive income attributable to Ford Motor Company	\$3,833	\$7,785	\$3,270

Required

- What sort of risks does Ford hedge?
- Ford describes its hedging strategy. What sort of hedges are these, cash flow or fair value? Explain.
- The statement of comprehensive income discloses a line item labeled "Derivative instruments." What does this line item represent?
- The comprehensive income (loss) from derivatives instruments is \$219 million for 2016, \$(265) million for 2017, and \$183 million for 2018. What can we conclude about the fair value of the derivatives for each of these years?

LO1 E9-47. Interpreting Graphical Data to Assess Investments

The graphics below include data for all S&P 500 information-technology companies with positive equity for 2007 to 2018. Access the dashboard at the **myBusinessCourse** website to answer the requirements.

**Required**

- Consider the pie chart. Explain what the graph depicts. What is included in the black portion of the graphic? In what year is the proportion of Cash the smallest? *Hint:* Interact with data in the dashboard to answer this question.
- The bar-line graphic (top right panel) reports the average AOCI as a proportion of equity, by year. What do we observe about the magnitude of AOCI across the 12 years? Does the average firm have

Required

- How does General Mills account for its investments in joint ventures? How are these investments reflected on General Mills' balance sheet, and how, generally, is income recognized on these investments? Estimate the amount of income that General Mills included in its 2019 income statement as Equity method income.
- Does the \$117.5 million investment reported on General Mills' balance sheet sufficiently reflect the assets and liabilities required to conduct these operations? Explain. *Note:* The \$452.9 million disclosed includes cash advances to the joint venture partners of \$249.0 million. The net \$203.9 million represents the equity method investment.
- Do you believe the liabilities of these joint venture entities represent actual obligations of General Mills? Explain.
- What potential problem(s) does equity method accounting present for analysis purposes?

LO3

Snap-on Incorporated
(SNA)

P9-49. Analyzing and Interpreting Disclosures on Consolidations

Snap-on Incorporated consists of two business units: the manufacturing company (parent corporation) and a wholly-owned finance subsidiary. These two units are consolidated in Snap-on's 10-K report. Following is a supplemental disclosure Snap-on includes in its 10-K report that shows the separate balance sheets of the parent and the subsidiary. This supplemental disclosure is not mandated under GAAP but is voluntarily reported by Snap-on as useful information for investors and creditors. Using this disclosure, answer the following questions.

Required

- Do the parent and subsidiary companies each maintain their own financial statements? Explain. Why does GAAP require consolidation instead of separate financial statements of individual companies?
- What is the balance of Investments in Financial Services as of December 31, 2018, on the parent's balance sheet? What is the equity balance of the financial services subsidiary to which this relates as of December 31, 2018? Do you see a relation? Will this relation always exist?
- Refer to your answer for part *a*. How does the equity method of accounting for the investment in the subsidiary obscure the actual financial condition of the parent company as compared with the consolidated financial statements?
- Recall that the parent company uses the equity method of accounting for its investment in the subsidiary and that this account is eliminated in the consolidation process. What is the relation between consolidated net income and the net income of the parent company? Explain.
- What is the implication for the consolidated balance sheet if the fair value of the financial services subsidiary (subsequent to acquisition) is greater than the book value of its stockholders' equity?

\$ millions	Operations*		Financial Services	
	2018	2017	2018	2017
Assets				
Current assets				
Cash and cash equivalents	\$ 140.5	\$ 91.8	\$ 0.4	\$ 0.2
Intersegment receivables	15.1	17.1	—	—
Trade and other accounts receivable—net	692.1	674.9	0.5	0.7
Finance receivables—net	—	—	518.5	505.4
Contract receivables—net	6.6	9.4	91.7	87.4
Inventories—net	673.8	638.8	—	—
Prepaid expenses and other assets	100.2	117.6	0.5	0.7
Total current assets	1,628.3	1,549.6	611.6	594.4
Property and equipment—net	493.5	482.4	1.6	2.0
Investment in Financial Services	329.5	317.4	—	—
Deferred income tax assets	45.8	25.2	18.9	26.8
Intersegment long-term notes receivable	701.3	583.7	—	—
Long-term finance receivables—net	—	—	1,074.4	1,039.2
Long-term contract receivables—net	11.9	13.2	333.0	309.4
Goodwill	902.2	924.1	—	—
Other intangibles—net	232.9	253.7	—	—
Other assets	51.9	63.1	0.1	—
Total assets	\$4,397.3	\$4,212.4	\$2,039.6	\$1,971.8

continued

Leases



A lease is a contract between the owner of an asset (the **lessor**) and the party desiring to use that asset (the **lessee**). Since this is a private arrangement between two willing parties, it is governed only by applicable commercial law and can include whatever provisions the parties negotiate. Leases generally include the following terms.

- Lessor grants the lessee the unrestricted right to use the asset during the lease term.
- Lessee agrees to maintain the asset and make periodic payments to the lessor. Lease payments are set at an amount that yields an acceptable return on the lessor's investment in the leased asset, commensurate with the lessee's credit rating.
- Title to the asset remains with the lessor, who usually takes physical possession of the asset at lease-end unless the lessee negotiates the right to purchase the asset at its market value or other predetermined price.

Leases serve as a financing vehicle similar to a secured bank loan. However, leasing has a few advantages compared to bank financing.

- Leases often require less equity investment by the lessee (borrower). Leases usually require the first lease payment be made at the inception of the lease. For a 60-month lease, this amounts to a 1/60 (1.7%) investment by the lessee, compared with a bank loan typically requiring 20%–30% equity investment by the borrower.
- Because leases are contracts between two parties, their terms can be structured to meet both parties' needs. For example, a lease can allow variable payments to match the lessee's seasonal cash inflows or have graduated payments for start-up companies.
- Leasing can be utilized to finance the acquisition of any asset, including vehicles, equipment, and real estate.

The ability to finance a greater proportion of the asset's cost, coupled with the flexibility that the leasing contract provides, has made this a popular form of financing, amounting to over \$1 trillion in equipment financing alone (Source: Equipment Leasing & Finance Foundation, 2017).

New Lease Reporting Standard

The FASB issued a new lease accounting standard effective for all U.S. companies in 2019. Under the pre-2019 accounting standard, companies' balance sheets did not include the lease assets and lease liabilities if the company classified the lease as an "operating" lease (see the Practice Insight box "Delta Airlines Prospective Adoption of 2019 Lease Accounting Standard"). Under current GAAP, these operating lease assets and liabilities are now included on companies' balance sheets.

The new standard requires companies classify all leases as either a finance lease or an operating lease.

- **Finance leases** transfer **control of the lease asset** to the lessee. Finance leases are effectively like purchasing the asset and financing the purchase with a collateralized loan.
- **Operating leases** transfer **control of the use of the lease asset**, but not the asset itself. Any lease of more than 12 months not classified as a finance lease is classified as an operating lease.

As they adopt the new standard, companies must choose between two transition options.

1. **Retroactive adoption:** implement the new standard in the current year and restate all prior periods presented in the financial statements. This means that the current-year financial statements and the comparative financial statements (the prior year balance sheet and the two prior years' income statements) all conform to the new standard.
2. **Prospective adoption:** implement the new standard without restatement of the prior periods. This means that the company reports current-period leasing activities under the *new* accounting standard and leasing activities in the prior periods under the *old* standard.

Microsoft chose the first (retroactive) approach and restated its prior year's financial statements in the year of adoption. Consequently, Microsoft's current balance sheet reports both operating and finance

Microsoft includes the finance lease assets in PPE and reports the operating lease right-of-use assets (highlighted) on a separate line item. Microsoft reports the lease liabilities on its 2019 balance sheet.

June 30 (\$ in millions)		2019	2018
Liabilities and stockholders' equity			
Current liabilities			
Accounts payable		\$ 9,382	\$ 8,617
Operating and Finance leases → Current portion of long-term debt		5,516	3,998
Accrued compensation		6,830	6,103
Short-term income taxes		5,665	2,121
Short-term unearned revenue		32,676	28,905
Other		9,351	8,744
Total current liabilities		69,420	58,488
Finance leases → Long-term debt		66,662	72,242
Long-term income taxes		29,612	30,265
Long-term unearned revenue		4,530	3,815
Deferred income taxes		233	541
Operating leases → Operating lease liabilities		6,188	5,568
Other long-term liabilities		7,581	5,211
Total liabilities		184,226	176,130
Stockholders' equity			
Common stock and paid-in capital – shares authorized 24,000; outstanding 7,643 and 7,677		78,520	71,223
Retained earnings		24,150	13,682
Accumulated other comprehensive loss		(340)	(2,187)
Total stockholders' equity		102,330	82,718
Total liabilities and stockholders' equity		\$286,556	\$258,848

Under the pre-2019 accounting standard, operating leases were *omitted* from the balance sheet. With over \$7 billion in operating leases, Microsoft's balance sheet demonstrates that these omissions can be large. Under the old standard, assets and liabilities were both understated, which markedly affected profitability, asset use, and especially leverage ratios. The analyst community lobbied FASB for many years to correct this accounting issue, and it was finally resolved by the passage of the new standard.

We now turn to lease accounting: how operating and financing leases are reported on the balance sheet, the ways lease costs are reflected as expenses in the income statement, and how these lease costs affect the statement of cash flows.

Lease Accounting

The first step in lease accounting is to determine whether a lease is operating or financing. If the lease is economically similar to the purchase of an asset, the company must classify the lease as financing. In particular, finance leases meet one or more of the following criteria.

- **Transfer of ownership.** The lease transfers ownership of the underlying asset to the lessee by the end of the lease term.
- **Purchase option.** The lease grants the lessee an option to purchase the underlying asset that the lessee is reasonably certain to exercise.
- **Lease term.** The lease term is for a major part of the remaining economic life of the underlying asset.
- **Present value.** The present value of the sum of the lease payments and any residual value guaranteed by the lessee that is not already included in the lease payments equals or exceeds substantially all of the fair value of the underlying asset.
- **Specialized asset.** The underlying asset is of such a specialized nature that it is expected to have no alternative use to the lessor at the end of the lease term.

Any lease of **more than 12 months** not classified as a finance lease is classified as an operating lease.

The total *operating* lease liability of \$7,703 million consists of a portion maturing in the next year, which is reported as a current liability and the remainder, reported as a long-term liability, as highlighted in Microsoft's balance sheet above. The table above shows a current portion of \$1,627 million, slightly higher than the \$1,515 million Microsoft reports in its footnotes. The difference arises because Microsoft uses a specific discount rate for each lease, whereas we use an average of 3.15% for all leases.

Microsoft uses the same approach to compute the present value of its forecasted *finance* lease payments and reports \$6,574 million on the balance sheet. (See "Maturities of lease liabilities" table above.) Of the total finance lease liability, Microsoft includes \$317 million in the Current portion of long-term debt and \$6,257 million in Long-term debt (disclosed in footnotes). In subsequent years, these leases will be reported at the present value of the remaining lease payments, and are included with any new leases on the balance sheet.

Business Insight ■ Imputed Discount Rate Computation for Leases

Microsoft reports total undiscounted minimum operating lease payments of \$8,664 million and a discounted value for those lease payments of \$7,703 million. Using Excel, we can use the IRR function to estimate the *implicit* discount rate that Microsoft used for its ~~capital~~ lease computations. The following spreadsheet lays out the calculations.

Amounts in cells B2 through G2 are from Microsoft's lease footnote shown earlier in this section. Cells H2 through J2 sum to \$2,438 million, the total lease payments due after 2023 (year 5). We assume that Microsoft continues to pay \$839 million per year (the same as in 2023) with a final payment of \$760 million, until the \$2,438 million is used up. The IRR functions estimates that Microsoft used a discount rate of 3.15% to capitalize its operating leases in its FY2019 balance sheet.

In this method we make assumptions about the remaining useful life of the lease assets (total remaining payments divided by the payment in year 5). Many firms disclose the weighted average discount rate and the weighted average remaining lease term used to determine the present value of future lease payments. If provided, these assumptions are a more exact way to corroborate the disclosed present value or implicit interest rates.

B3 x ✓ fx =IRR(B2:J2,0.1)										
	A	B	C	D	E	F	G	H	I	J
1	N	0	1	2	3	4	5	6	7	8
2	Amount	(7,703)	1,678	1,438	1,235	1,036	839	839	839	760
3	IRR*	3.15%								
4										
5									=2,438	
*Formula for cell B3 is =IRR(B2:J2,0.1), as shown in the formula bar at the top of the sheet										

Lease Accounting and the Income Statement

Total expense over the lifetime of the lease is recognized in the income statement in an amount equal to the total remaining lease payments plus total amortization of any up-front costs. Assume, for example, a company executes a five-year lease requiring annual payments of \$22,463 and pays \$5,000 of initial direct costs prior to commencing the lease. The present value of the lease payments at 4% is \$100,000 and the company recognizes a lease liability for that amount. The company also recognizes a right-of-use asset of \$105,000 (the \$100,000 present value of the lease payments plus the \$5,000 up-front direct costs).

The total lease cost under both operating and finance leases over the five-year life of the lease is: \$22,463 lease payments × 5 years + \$5,000 upfront costs = \$117,314. The income statement will reflect this amount differently, however, for operating and finance leases.

- **Operating lease.** Lease expense of \$23,463 (\$117,314/5 years) is recognized each period as rent expense in arriving at income from operating activities.
- **Finance lease.** Lease expense includes interest on the lease liability plus straight-line amortization of the right-of-use asset. For the first year, lease expense is equal to $\$100,000 \times 4\% + \$105,000/5 = \$25,000$. Also:
 - Amortization of the right-of-use asset will be included in income from operations (similar to depreciation expense relating to PPE assets).
 - Interest expense will be reported after operating income.
 - Operating profit will be higher than by the amount of interest expense recognized as nonoperating.

Accounting Insight ■ Pre-2019 Lease Accounting Standard

Under the pre-2019 lease accounting standard, GAAP identified two different approaches for the reporting of leases by the lessee. These are summarized in Exhibit 10.2.

Exhibit 10.2 ■ Financial Statement Effects of Lease Type for the Lessee				
Lease Type	Assets	Liabilities	Expenses	Cash Flows
Capital	Lease asset reported	Lease liability reported	Depreciation and interest expense	Payments per lease contract
Operating.	Lease asset not reported	Lease liability not reported	Rent expense	Payments per lease contract

Under the **operating lease method**, lease assets and lease liabilities were not recorded on the balance sheet. The company merely disclosed key details of the transaction in the lease footnote. The income statement reported the lease payment as rent expense. The cash outflows (payments to lessor) per the lease contract were included in the operating section of the statement of cash flows. (This is still the case with the post-2019 accounting standards.)

For **capital leases**, both the lease asset and lease liability were reported on the balance sheet. In the income statement, depreciation of the lease asset and interest expense on the lease liability were reported instead of rent expense. Further, although the cash payments to the lessor are identical whether or not the lease is capitalized on the balance sheet, the cash flows were classified differently for capital leases—that is, each payment was part interest (operating cash flow) and part principal (financing cash flow). Consequently, operating cash flows were greater when a lease was classified as a capital lease. (This is still the case with the post-2019 accounting standards.)

The benefits of applying the operating method for leases were obvious to managers (including healthier Du Pont ratios). Thus, some managers actively avoided capital lease treatment. Moreover, the pre-2019 rigid capitalization rules created an unintended negative consequence: managers seeking off-balance-sheet financing could, and routinely did, deliberately structure their leases around GAAP rules so as to avoid capital lease treatment. Analysts and other financial statement users objected to the pre-2019 rules that skewed ratios and created hidden leverage.

Summary of Lease Accounting and Reporting

A summary of the effects of the new standard on the balance sheet, the income statement, and the statement of cash flows follows.

	Operating Lease	Finance Lease
Balance Sheet (same for both operating and finance leases)	<ul style="list-style-type: none"> All leases are recognized on the balance sheet (except leases with a term of 12 months or less). Lease asset is reported as either PPE or a “right-of-use” asset that is amortized over the lease life. Lease liability is reduced by principal payments each period, like a mortgage. Accounting treatment is similar to recording a PPE asset that is purchased and financed with borrowed money (both the asset and liability are reported on the balance sheet). 	
Income Statement	<ul style="list-style-type: none"> Rent expense is recognized for the straight-line amortization of the total lease payments plus up-front costs. 	<ul style="list-style-type: none"> Straight-line amortization expense of the right-of-use asset, <i>plus</i> Interest expense is recognized on the lease liability.
Statement of Cash Flows	<ul style="list-style-type: none"> Lease payments are classified as operating cash flow. 	<ul style="list-style-type: none"> Interest portion of lease payments is classified as operating cash flow. Principal portion of lease payments is classified as financing cash flow.

For both operating and financing leases, the balance sheet treatment is identical. However, the income statement and statement of cash flows presentation depend on the lease classification (operating versus financing).

- Income statement
 - Operating leases: Level rent expense recorded each period (an operating item).

AUTOMATIC DATA PROCESSING INC. Statements of Consolidated Earnings		
For Years Ended (\$ millions)	Jun. 30, 2019 Actual	June 30, 2020 Est.
Revenues, other than interest on funds held for clients and PEO revenues . . .	\$ 9,375.8	\$10,594.7
Interest on funds held for clients	561.9	634.9
PEO revenues	4,237.5	4,788.4
Total revenues	14,175.2	16,018.0
Expenses		
Operating expenses	7,145.9	8,073.1
Systems development and programming costs	636.3	720.8
Depreciation and Amortization	304.4	460.5
Total cost of revenues	8,086.6	9,254.4
Selling, general, and administrative expenses	3,064.2	3,459.9
Interest expense	129.9	129.9
Total expenses	11,280.7	12,844.2
Other (income) expense, net	(111.1)	(111.1)
Earnings before income taxes	3,005.6	3,284.9
Provision for income taxes	712.8	821.2
Net earnings	\$ 2,292.8	\$ 2,463.7

Additional information and assumptions related to the estimated 2020 income statement and balance sheet are as follows (\$ millions):

Depreciation expense	\$ 184.4
Amortization expense	276.1
Stock-based compensation expense . . .	167.3
CAPEX	183.1
Newly acquired intangibles	457.1
Stock repurchases	750.0
Dividends declared	1,389.4

Required

Prepare a forecasted statement of cash flows for 2020 using the indirect method. (*Hint:* Stock-based compensation is a noncash expense like depreciation and must be added back in the operating section. The amount expensed is also added to **ADP's** "Capital in excess of par value" account on the balance sheet.)

P11-48. Statement of Cash Flows (Indirect Method)

Rainbow Company's income statement and comparative balance sheets follow.

RAINBOW COMPANY Income Statement For Year Ended December 31, 2019		
Sales		\$750,000
Dividend income		15,000
		765,000
Cost of goods sold	\$440,000	
Wages and other operating expenses	130,000	
Depreciation expense	39,000	
Patent amortization expense	7,000	
Interest expense	13,000	
Income tax expense	44,000	
Loss on sale of equipment	5,000	
Gain on sale of investments	(10,000)	668,000
Net income		\$ 97,000

LO2, 3, 4



Forecasting the Income Statement

Exhibit 12.2 presents the FY2019 income statement for Procter & Gamble together with our forecast of the statements for FY2020.



Overview Here is a high-level overview—computational details follow.

- **Sales estimate.** The forecasting process begins with an estimate of the sales growth rate. For our illustration, we assume a 3.5% growth rate, informed by P&G's guidance. Given the assumed 3.5% growth in sales, forecasted 2020 sales are \$70,053 million (\$67,684 million \times 1.035).
- **Expense estimates.** To estimate operating expenses (cost of goods sold and selling, general, and administrative [SG&A] expenses) we apply a percentage of sales ratio to forecasted sales. For nonoperating expenses (such as interest expense and interest revenue), we initially assume they will not change ("no change") unless we believe interest rates are likely to shift greatly during the forecast period. (In Appendix 12B, we relax the "no change" assumption because we add debt to achieve a desired level of cash. Additional debt causes interest expense to increase. We discuss these additional steps in Appendix 12B.)
- **One-time item estimates.** One-time items such as asset impairments and discontinued operations, are, by definition, not expected to recur. We forecast these items to be \$0.
- **Tax estimate.** Income tax expense is forecasted based on PG's guidance of 17.5% of pretax income.
- **Noncontrolling interest estimate.** A common assumption is no change in the ratio of noncontrolling interest to consolidated net income. For our P&G illustration, we adopt that assumption.

For each line item in the income statement, we summarize our forecasting assumptions in the right-most column of Exhibit 12.2, and we discuss those assumptions in depth in the following sections.

Exhibit 12.2 ■ Forecast of P&G's FY2020 Income Statement

\$ millions	Actual FY2019	% of Net Sales	Computations	FY2020 Est.	% of Net Sales	Explanation
Net sales.	\$67,684	100.0%	$\$67,684 \times 1.035$	\$70,053	100.0%	Use P&G's guidance that sales will increase about 3.5%. Sales forecast equals current sales \times (1 + growth rate %).
Cost of products sold	34,768	51.4%	$\$70,053 \times 51.4\%$	36,007	51.4%	Assume COGS as % of sales will remain unchanged from FY2019.
Selling, general, and administrative expense . . .	19,084	28.2%	$\$70,053 \times 28.2\%$	19,755	28.2%	Assume SGA as % of sales will remain unchanged from FY2019.
Goodwill & indefinite lived intangibles impairment charges	8,345	12.3%	none	0		The Goodwill impairment charge is a transitory item and we eliminate that expense in FY2020.
Operating income	5,487	8.1%	subtotal	14,291	20.4%	
Interest expense	509	0.8%	computed	483	0.7%	Interest expense is discussed below.
Interest income	220	0.3%	no change	220	0.3%	Assume no change in interest revenue.
Other nonoperating income, net.	871	1.3%	none	0	0.0%	FY2019 nonoperating income relates to the dissolution of a partnership and early extinguishment of debt, and we assume none for FY2020 given no evidence of planned divestitures or debt retirement.
Earnings from continuing operations before income taxes.	6,069	9.0%	subtotal	14,028	20.0%	
Income taxes on continuing operations	2,103	3.1%	$\$14,028 \times 17.5\%$	2,455	3.5%	Assume effective tax rate of 17.5% per P&G guidance.
Net earnings	3,966	5.9%	subtotal	11,573	16.5%	
Less: Net earnings attributable to noncontrolling interests.	69	0.1%	$\$11,573 \times 1.7\%$	197	0.3%	Assume noncontrolling interests as % of net earnings (1.7%) continues.
Net earnings attributable to P&G	<u>\$ 3,897</u>	<u>5.8%</u>	subtotal	<u>\$11,376</u>	<u>16.2%</u>	

P&G begins the FY2020 year with \$30,092 million (\$9,697 million + \$20,395 million) of short-term and long-term debt and predicts contractual payments of \$3,388 for FY2020, yielding an anticipated debt balance of **\$26,704** for FY2020 (\$30,092 – \$3,388). For the initial forecast, we assume no additional borrowing during the year (we relax that assumption in Appendix 12B when we perform a multiyear forecast). Our forecast for FY2020 interest expense is \$483 million calculated as $1.7\% \times (\$30,092 + \$26,704)/2$.

Income Tax Expense Income tax expense (labeled “Income taxes on continuing operations” by P&G) is often a large expense item. We estimate tax expense by applying an estimated tax rate to pretax income. For FY2020, we use an effective tax rate of 17.5% as provided in PG’s guidance. In the absence of company guidance, we can use disclosures in the income tax footnote to get a tax rate estimate. Following is the effective tax rate disclosure in P&G’s FY2019 10-K.

Years Ended June 30 (\$ millions)	2019	2018	2017
U.S. federal statutory income tax rate	21.0%	28.1%	35.0%
Country mix impacts of foreign operations	(0.5)%	(4.7)%	(6.8)%
Changes in uncertain tax positions	(0.3)%	(0.3)%	(2.0)%
Excess tax benefits from the exercise of stock options	(3.8)%	(0.4)%	(1.3)%
Goodwill impairment	22.8%	—%	—%
Net transitional impact U.S. Tax Act	—%	4.5%	—%
Other	(4.5)%	(1.2)%	(1.8)%
Effective income tax rate	<u>34.7%</u>	<u>26.0%</u>	<u>23.1%</u>

The aim of reviewing the tax table in the footnotes is to determine the tax rate to use for our forecasts. We look for any transitory items that affect the company’s tax rate and we exclude such items in our forecast. In FY2019, for example, P&G’s effective tax rate increased by 22.8 percentage points due to the Goodwill impairment that reduced pre-tax profit without a consequent reduction of income tax expense (Goodwill write-offs are generally not a tax-deductible expense). Given that the Goodwill impairment is a one-time occurrence, we would forecast a tax rate of 11.9% (34.7% effective tax rate less 22.8%). In addition, the line item labeled as “Other” increased by 2 to 3 percentage points over the previous two years. Adding that amount, then, results in an estimate of the effective tax rate that is close to the 17.5% rate in P&G’s guidance.

Impact of Acquisitions When one company acquires another, the revenues and expenses of the acquired company are consolidated, but only from the date of acquisition onward (we discuss the consolidation process in an earlier module). Acquisitions can greatly impact the acquirer’s income statement, especially if the acquisition occurs toward the beginning of the acquirer’s fiscal year. In FY2019 P&G did not have any material acquisitions. Therefore, we use P&G’s acquisition of **Gillette** in October 2005 as an example. In its June 30, 2006, fiscal year-end income statement (ending eight months following the acquisition), P&G reported the following for sales.

Years Ended June 30 (\$ millions)	2006	2005	2004
Net sales	\$68,222	\$56,741	\$51,407

These net sales amounts include Gillette product sales from October 2005 onward (for fiscal 2006), and none of Gillette’s sales is reported in fiscal 2005 or fiscal 2004. P&G’s 2006 sales growth of 20.2% $([\$68,222 \text{ million}/\$56,741 \text{ million}] - 1)$ was, therefore, not P&G’s organic growth, and we would have been remiss in forecasting a 20.2% increase for fiscal 2007.

Importantly, until all three annual income statements in the 10-K include the acquired company, the acquirer is required to disclose what revenue and net income would have been had the acquired company been consolidated for all three years reported in the current annual report. This “what if” disclosure is called *pro forma* disclosure. Procter & Gamble’s pro forma disclosure in the footnotes to its 2006 10-K includes the following discussion and table.

Exhibit 12.3 ■ Forecast of P&G's FY2020 Balance Sheet

\$ millions, except per share amounts	2019 Actual	% of Sales	Computations	2020 Est.	% of Sales	Explanation
Current assets						
Cash and cash equivalents	\$ 4,239	6.3%	Plug	\$ (1,550)	0.1%	Plug to balance the balance sheet.*
Available-for-sale investment securities	6,048	8.9%	no change	6,048	8.6%	Assume no change.
Accounts receivable	4,951	7.3%	$\$70,053 \times 7.3\%$	5,114	7.3%	Forecast working capital accounts as a % of sales using prior year's % unless information suggests otherwise.**
Inventories	5,017	7.4%	$\$70,053 \times 7.4\%$	5,184	7.4%	
Prepaid expenses and other current assets	2,218	3.3%	$\$70,053 \times 3.3\%$	2,312	3.3%	
Total current assets	22,473	33.2%	subtotal	17,108	26.7%	
Property, plant, and equipment, net	21,271	31.4%	$\$3,328 - \$2,604$	21,995	31.4%	CAPEX estimates are from P&G guidance, and depreciation expense is computed as a % of prior year PPE, gross.
Goodwill	40,273	59.5%	no change	40,273	57.5%	Assume no changes because goodwill is not amortized.
Trademarks and other intangible assets, net	24,215	35.8%	(\$359)	23,856	34.1%	Apply estimated amortization expense from footnotes of P&G.
Other noncurrent assets	6,863	10.1%	no change	6,863	9.8%	Assume no change.
Total assets	\$115,095	170.0%	subtotal	\$110,095	159.5%	
Current liabilities						
Accounts payable	\$ 11,260	16.6%	$\$70,053 \times 16.6\%$	\$ 11,629	16.6%	Forecast working capital accounts as % of sales unless information suggests otherwise.
Accrued and other liabilities	9,054	13.4%	$\$70,053 \times 13.4\%$	9,387	13.4%	
Debt due within one year	9,697	14.3%	$(\$3,388) + \$2,009$	8,318	16.1%	Use footnotes to get current maturities of long-term debt. Assume other debt remains unchanged.
Total current liabilities	30,011	44.3%	subtotal	29,334	46.1%	
Long-term debt	20,395	30.1%	(\$2,009)	18,386	24.3%	Use footnotes to get current maturities of long-term debt to be repaid.
Deferred income taxes	6,899	10.2%	$\$70,053 \times 10.2\%$	7,145	10.2%	Assume no change as a % of sales.
Other noncurrent liabilities	10,211	15.1%	$\$70,053 \times 15.1\%$	10,578	15.1%	Assume no change as a % of sales.
Total liabilities	67,516	99.8%	subtotal	65,443	95.7%	
Shareholders' equity						
Convertible Class A preferred stock	928	1.4%	no change	928	1.3%	Assume no change in paid-in capital accounts.
Nonvoting Class B preferred stock	0	0.0%	no change	0	0.0%	
Common stock, stated value \$1 per share	4,009	5.9%	no change	4,009	5.7%	
Additional paid-in capital	63,827	94.3%	no change	63,827	91.1%	Assume no change.
Reserve for ESOP debt retirement	(1,146)	(1.7)%	no change	(1,146)	(1.6)%	
Accumulated other comprehensive income (loss)	(14,936)	(22.1)%	no change	(14,936)	(21.3)%	Assume no change.
Treasury stock	(100,406)	(148.3)%	(\$7,000)	(107,406)	(153.3)%	Use P&G guidance.
Retained earnings	94,918	140.2%	$\$11,376 - \$7,500$	98,794	141.0%	Increased by forecasted net income less forecasted dividends.
Noncontrolling interest	385	0.6%	+ \$197	582	0.8%	Increased by net income allocated to noncontrolling interests.
Total shareholders' equity	47,579	70.3%	subtotal	44,652	63.7%	
Total liabilities and shareholders' equity	\$115,095	170.0%	subtotal	\$110,095	159.5%	

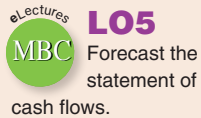
* $\$(1,561) = \$110,084 - \$6,048 - \$5,114 - \$5,184 - \$2,312 - \$21,995 - \$40,273 - \$23,856 - \$6,863$.

** To simplify, we forecast accounts as a percent of sales, including inventories and accounts payable. Analysts sometimes use a percent of COGS for inventory and for accounts payable estimates because both are expressed in input (not output) costs. Either approach is reasonable if used consistently. One could also forecast working capital accounts using turnover rates or days as follows:

Forecasted account balance = Forecasted revenues (or COGS)/Turnover rate, or = Forecasted days outstanding \times [Forecasted revenues (or COGS)/365]

Depreciation Expense. Depreciation expense is usually reported in the statement of cash flows (or in the notes). (Note: If depreciation expense is combined with amortization expense, we can isolate the depreciation component by subtracting amortization expense, which is frequently reported separately in footnotes—or, if not separately reported, we may use the change in accumulated amortization.) It is common to estimate depreciation as:

Appendix 12A: Forecasting the Statement of Cash Flows



Forecasting the statement of cash flows is useful for a number of planning and control activities, including cash management, operating budgets, and capital budgeting decisions (CAPEX). To prepare the forecasted statement of cash flows, we use our forecasts of the income statement and balance sheet and then follow the preparation procedures explained in the statement of cash flow module. That process begins with net income, adds back or deducts any noncash expenses or revenues, and then recognizes the cash flow effect of changes in working capital followed by changes in the remaining asset, liability, and equity items. A common method is to compute changes in each of the line items on the forecasted balance sheet and then classify those changes to either the operating, investing, or financing sections of the forecasted statement of cash flows.

Exhibit 12A.1 shows the forecasted statement of cash flows for **Procter & Gamble**. It reveals operating cash flows of \$15,427 million, investing cash outflows of \$3,328 million, and a large financing cash outflow of \$17,888 million.

Exhibit 12A.1 ■ One-Year Forecast of P&G's Statement of Cash Flows

Statement of Cash Flows For Fiscal Year Ended 2020		
\$ millions	Computations	2020 Est.
Cash flow from operating activities		
Net income including noncontrolling interest		\$11,573
Add: Depreciation		2,604
Add: Amortization		359
Change in accounts receivable	\$4,951 – \$5,114	(163)
Change in inventories	\$5,017 – \$5,184	(167)
Change in prepaid expenses and other current	\$2,218 – \$2,312	(94)
Change in accounts payable	\$11,629 – \$11,260	369
Change in accrued other liabilities	\$9,387 – \$9,054	333
Change in deferred income taxes	\$7,145 – \$6,899	246
Change in other noncurrent liabilities	\$10,578 – \$10,211	367
Net cash from operating activities		15,427
Capital expenditures	\$70,053 × 4.75%	(3,328)
Change in available-for-sale securities	no change	0
Net cash from investing activities		(3,328)
Dividends		(7,500)
Decrease in short-term debt		(1,379)
Decrease in long-term debt		(2,009)
Purchase of treasury shares		(7,000)
Net cash from financing activities		(17,888)
Net change in cash		(5,789)
Beginning cash		4,239
Ending cash		\$ (1,550)

The forecasted statement of cash flows highlights financing cash outflows as the main cause for the forecasted decline in cash. While operating cash flows continue to be strong, P&G's guidance includes plans to continue to repurchase common stock (approximately \$7,000 million), pay dividends (approximately \$7,500 million), and purchase CAPEX (approximately \$3,328 million). In this first forecasting iteration, we forecast a decrease in cash of \$(5,789) million, which reduces P&G's cash balance from \$4,239 million to \$(1,550) million. The drop in cash arises due to the planned outflows for CAPEX, the payment of dividends, and the repurchase of stock with no borrowings forecasted at this point. Such a low cash balance is not plausible. In Appendix 12B, we discuss how to modify the forecasts to derive an appropriate cash balance.

FY2019 net sales	\$30,557
Forecasted FY2020 net income including noncontrolling interest	\$4,927 million
Forecasted FY2020 net sales	\$33,002 million
Accounts receivable, less allowance	20.4% of net sales
Inventories, net	12.3% of net sales
Other current assets	7% of net sales
Goodwill	No change
Tax assets	5% of net sales
Other assets	3.3% of net sales
Accounts payable	6.4% of net sales
Accrued compensation (current liability)	7.2% of net sales
Accrued compensation and retirement benefits (noncurrent liability)	No change
Accrued income taxes (current liability)	1.9% of net sales
Other accrued expenses	9.6% of net sales
Accrued income taxes (noncurrent liability)	9.3% of net sales
Deferred tax liabilities	4.2% of net sales
Other liabilities	2.5% of net sales
Ordinary shares	No change
Accumulated other comprehensive loss	No change
Net income attributable to noncontrolling interest	\$19 million
Dividends in FY2020	\$2,853 million
CAPEX in FY2019 (to be forecast as % of net sales)	\$1,134 million
Depreciation expense in FY2020	\$950 million
Amortization expense in FY2020	\$1,914 million
Debt due in FY2020	\$838 million
Debt due in FY2021	\$2,058 million
Investments	No Change

L02 M12-17. Adjust the Income Statement

Honeywell
International Inc.
(HON)

Following is information from the tax footnote from the 2018 10-K for [Honeywell International](#).

Years Ended December 31	2018	2017	2016
The U.S. federal statutory income tax rate is reconciled to our effective income tax rate as follows:			
U.S. federal statutory income tax rate	21.0%	35.0%	35.0%
Taxes on non-U.S. earnings	0.2	(12.8)	(8.0)
U.S. state income taxes	1.6	1.4	1.1
Reserves for tax contingencies	0.3	1.6	1.2
Employee share-based payments	(0.7)	(2.9)	(2.0)
U.S. tax reform	(5.8)	56.0	—
Reduction on taxes on unremitted earnings	(14.2)	—	—
Separation tax costs	5.5	—	—
All other items—net	0.9	(1.1)	(2.5)
	<u>8.8%</u>	<u>77.2%</u>	<u>24.8%</u>

The **effective tax rate for 2018** was lower than the U.S. federal statutory rate of 21% primarily attributable to internal restructuring initiatives that resulted in a reduction of accrued withholding taxes of approximately \$1.1 billion related to unremitted foreign earnings. In addition, we recorded a tax benefit of approximately \$440 million as a reduction to our 2017 provisional estimate of impacts from what is commonly referred to as the U.S. Tax Cuts and Jobs Act.

The effective tax rate for 2017 was higher than the U.S. federal statutory rate of 35% primarily from the estimated impacts of U.S. Tax Reform of approximately \$3.8 billion, partially offset by lower tax rates on non-U.S. earnings.

- What adjustments, if any, should we consider before forecasting Honeywell's 2020 income?
- Adjust Honeywell's effective tax rate for each of the three years to reflect persistent factors.

E13-17. Estimating Share Value Using the ROPI Model

Refer to the information for **Illinois Tool Works Inc.** in E13-16 to answer the following requirements.

- Estimate the value of a share of Illinois Tool Works Inc. common stock using the residual operating income (ROPI) model as of December 31, 2018.
- Illinois Tool Works stock** closed at \$144.21 on February 15, 2019, the date the 10-K was filed with the SEC. How does your valuation estimate compare with this closing price? What do you believe are some reasons for the difference?

L03Illinois Tool Works
Inc. (ITW)**E13-18. Estimating Share Value Using the DCF Model**

Following are forecasts of sales, net operating profit after tax (NOPAT), and net operating assets (NOA) as of December 31, 2018, for **Humana**.

L01, 2

Humana (HUM)



\$ millions	Reported	Forecast Horizon Period				Terminal Period
	2018	2019	2020	2021	2022	
Sales	\$56,912	\$57,766	\$58,632	\$59,512	\$60,404	\$61,008
NOPAT	2,492	2,542	2,580	2,619	2,658	2,684
NOA	4,032	4,097	4,158	4,221	4,284	4,327

Answer the following requirements assuming a discount rate (WACC) of 7.8%, a terminal period growth rate of 1%, common shares outstanding of 135.6 million, net nonoperating obligations (NNO) of \$(6,129) million, which is negative because Humana's nonoperating assets exceed its nonoperating liabilities, and no noncontrolling interest (NCI) on the balance sheet.

- Estimate the value of a share of Humana's common stock using the discounted cash flow (DCF) model as of December 31, 2018.
- Humana (HUM) stock closed at \$307.56 on February 21, 2019, the date the 10-K was filed with the SEC. How does your valuation estimate compare with this closing price? What do you believe are some reasons for the difference?

E13-19. Estimating Share Value Using the ROPI Model

Refer to the information for **Humana** in E13-18 to answer the following requirements.

L03

Humana (HUM)



- Estimate the value of a share of common stock using the residual operating income (ROPI) model as of December 31, 2018.
- Humana (HUM) stock closed at \$307.56 on February 21, 2019, the date the 10-K was filed with the SEC. How does your valuation estimate compare with this closing price? What do you believe are some reasons for the difference?

E13-20. Identifying and Computing Net Operating Assets (NOA) and Net Nonoperating Obligations (NNO)

Following are the balance sheets and statement of earnings for **Home Depot Inc.** for fiscal year ended February 3, 2019, which the company labels fiscal year 2018.

L01, 2

Home Depot Inc. (HD)



THE HOME DEPOT INC. Consolidated Balance Sheets		
\$ millions, except par value	February 3, 2019	January 28, 2018
Assets		
Current assets		
Cash and cash equivalents	\$ 1,778	\$ 3,595
Receivables, net	1,936	1,952
Merchandise inventories	13,925	12,748
Other current assets	890	638
Total current assets	18,529	18,933
Net property and equipment	22,375	22,075
Goodwill	2,252	2,275
Other assets	847	1,246
Total assets	\$44,003	\$44,529

continued

**L02 E15-16. Automatic versus Manual Processing**

Bartell's, a Seattle area drug store, operates an in-store printing service for customers with digital cameras. The current service, which requires employees to download photos from customer cameras, has monthly operating costs of \$5,500 plus \$0.15 per photo printed. Management is evaluating the desirability of acquiring a machine that will allow customers to download and make prints without employee assistance. If the machine is acquired, the monthly fixed costs will increase to \$7,000 and the variable costs of printing a photo will decline to \$0.05 per photo.

Required

- Determine the total costs of printing 10,000 and 25,000 photos per month:
 - With the current employee-assisted process.
 - With the proposed customer self-service process.
- Determine the monthly volume at which the proposed process becomes preferable to (costs less than) the current process.

**L02 E15-17. Automatic versus Manual Processing**

Assume **Office Depot** processes 2,500,000 photocopies per month at its service center. Approximately 50% of the photocopies require collating. Collating is currently performed by high school and college students who are paid \$10 per hour. Each student collates an average of 5,000 copies per hour. Management is contemplating the lease of an automatic collating machine that has a monthly capacity of 6,000,000 photocopies, with lease and operating costs totaling \$3,000, plus \$0.05 per 1,000 units collated.

Required

- Determine the total costs of collating 1,000,000 and 2,000,000 per month:
 - With student help.
 - With the collating machine.
- Determine the monthly volume at which the automatic process becomes preferable to (costs less than) the manual process.

**L03 E15-18. High-Low Cost Estimation**

Assume the local **YRC Worldwide** delivery service hub has the following information available about fleet miles and operating costs:

Year	Miles	Operating Costs
Year 1	695,000	\$219,500
Year 2	855,000	267,500

Required

Use the high-low method to develop a cost-estimating equation for total annual operating costs.

**E15-19. Scatter Diagrams and High-Low Cost Estimation**

Assume the local **Pearle Vision** has the following information on the number of sales orders received and order-processing costs.

Month	Sales Orders	Order-Processing Costs
1	3,300	\$ 90,970
2	1,650	55,412
3	4,840	132,770
4	3,080	90,090
5	2,530	76,752
6	1,320	47,410
7	2,200	68,750

Required

- Use information from the high- and low-volume months to develop a cost-estimating equation for monthly order-processing costs.
- Plot the data on a scatter diagram. Using the information from representative high- and low-volume months, develop a cost-estimating equation for monthly **order-processing costs**.
- What factors might have caused the difference in the equations developed for requirements (a) and (b)?

L03, 5Willamette Valley Fruit
Company**E16-22. Contribution Income Statement and Operating Leverage**

Willamette Valley Fruit Company started as a small cannery-style operation in 1999. The company now processes, on average, 20 million pounds of berries each year. Flash-frozen berries are sold in 30 pound packs to retailers. Assume 650,000 packs were sold for \$75 each last year. Variable costs were \$42 per pack and fixed costs totaled \$14,250,000.

Required

- Prepare a contribution income statement for last year.
- Determine last year's operating leverage.
- Calculate the percentage change in profits if sales decrease by 10%.
- Management is considering the purchase of several new pieces of packaging equipment. This will increase annual fixed costs to \$15,500,000 and reduce variable costs to \$40 per crate. Calculate the effect of this acquisition on operating leverage and explain any change.

L04TPG Tax &
Accounting**E16-23. Multiple Product Break-Even Analysis**

TPG Tax & Accounting is a full-service CPA firm located in Apache Junction, Arizona. Assume that tax return services are classified into one of three categories: standard, complex, and full-service (includes end-of-year bookkeeping with tax return preparation). Assume that TPG's fixed costs (rent, utilities, wages, and so forth) totaled \$180,000 last year. Additional information from the prior year follows.

	Standard	Complex	Full-Service
Billing rate	\$125.00	\$250.00	\$150.00
Average variable costs	(45.00)	(65.00)	(50.00)
Average contribution margin	\$ 80.00	\$185.00	\$100.00
Number of returns prepared	1,000	200	800

Required

- Using sales dollar analysis, determine TPG's break-even dollar sales volume.
- Determine TPG's margin of safety in sales dollars. *Hint:* Use the weighted average billing rate.
- Prepare a profit-volume graph for Joe's Tax Service.

L03**E16-24. Cost-Volume-Profit Relations: Missing Data**

Following are data from four separate companies.

	Case A	Case B	Case C	Case D
Unit sales	2,500	1,600	?	?
Sales revenue	\$80,000	?	?	\$240,000
Variable cost per unit	\$20	\$2	\$24	?
Contribution margin	?	\$1,600	?	?
Fixed costs	\$14,000	?	\$164,000	?
Net income	?	\$900	?	?
Unit contribution margin	?	?	?	\$30
Break-even point (units)	?	?	8,000	4,000
Margin of safety (units)	?	?	600	2,000

Required

Supply the missing data in each independent case.

L03**E16-25. Cost-Volume-Profit Relations: Missing Data**

Following are data from four separate companies.

	Case 1	Case 2	Case 3	Case 4
Sales revenue	\$90,000	\$150,000	?	?
Contribution margin	\$45,000	?	\$40,000	?
Fixed costs	\$30,000	?	?	?
Net income	?	\$15,000	\$24,000	?
Variable cost ratio	?	0.40	?	0.60
Contribution margin ratio	?	?	0.25	?
Break-even point (dollars)	?	?	?	\$150,000
Margin of safety (dollars)	?	?	?	\$125,000

Required

Supply the missing data in each independent case.

Cash budget

The cash budget summarizes all cash receipts and disbursements expected to occur during the budget period.

Exhibit 22.8 Cash Budget

REI Cash Budget For the Second Quarter Ending June 30				
	April	May	June	Quarter Total
Budgeted sales (Exhibit 22.4)	\$190,000	\$228,000	\$250,000	\$668,000
Cash balance, beginning	\$ 15,000	\$ 15,770	\$ 44,850	\$ 15,000
Collections on sales				
Cash sales (50% sales)	95,000	114,000	125,000	
Credit sales				
Current month (25% credit sales)	23,750	28,500	31,250	
Prior month (74% credit sales)	59,200*	70,300	84,360	
Total	177,950	212,800	240,610	631,360
Cash available for operations	192,950	228,570	285,460	646,360
Disbursements				
Purchases (Exhibit 22.5)				
Current month (20% purchases)	25,080	28,680	33,540	
Prior month (80% purchases)	84,000**	100,320	114,720	
Total	109,080	129,000	148,260	386,340
Selling expenses (Exhibit 22.6)	12,100	13,620	14,500	40,220
General & Administrative Expenses (Exhibit 22.7, excluding depreciation)	31,000	31,000	31,000	93,000
Taxes (Exhibit 22.3)	35,000			35,000
Total	(187,180)	(173,620)	(193,760)	(554,560)
Excess (deficiency) cash available over disbursements	5,770	54,950	91,700	91,800
Short-term financing***				
New loans	10,000			10,000
Repayments		(10,000)		(10,000)
Interest	—	(100)	—	(100)
Net cash from financing	10,000	(10,100)	—	(100)
Cash balance, ending	\$ 15,770	\$ 44,850	\$ 91,700	\$ 91,700

*April 1 accounts receivable.

**April 1 accounts payable.

***Loans are obtained in \$1,000 increments at the start of the month to maintain a minimum balance of \$15,000 at all times.

Repayments are made ~~at the end of the month~~, as soon as adequate cash is available. Assume interest of 12% per year (1% per month) is paid when the loan is repaid.

- The budget assumes REI has a line of credit with a bank, with any interest on borrowed funds computed at the simple interest rate of 12.0% per year, or 1.0% per month. All necessary borrowing is assumed to occur at the start of each month in increments of \$1,000. Repayments including interest are assumed to occur as soon as adequate cash is available.
- The cash budget indicates REI needs to borrow \$10,000 in April. The \$10,000 plus interest is repaid in May.

If REI had any cash disbursements for dividends or capital expenditures, they would be included in the cash budget. These items, along with information on income taxes, would be shown in special budgets.

Budgeted Financial Statements

The preparation of the master budget culminates in the preparation of budgeted financial statements. **Budgeted financial statements** are pro forma statements that reflect the “as-if” effects of the budgeted activities on the actual financial position of the organization. That is, the statements reflect the results of operations assuming all budget predictions are correct. Spreadsheets that permit the

continued from previous page

DEWALT Manufacturing Cost Budget For First Quarter			
	Drills	Saws	Total
Variable manufacturing overhead			
Direct labor hours	130,000	126,000	
Variable manufacturing overhead rate	<u>× \$1.50</u>	<u>× \$1.50</u>	
Total variable overhead	<u>\$ 195,000</u>	<u>\$ 189,000</u>	384,000
Fixed manufacturing overhead			214,000
Total			<u>\$9,918,000</u>

e.

DEWALT Cash Budget For First Quarter			
Cash balance, beginning			\$ 1,800,000
Collections on sales			
Current quarter's sales (\$11,000,000 × 0.50)	\$5,500,000		
Previous quarter's sales (\$8,400,000 × 0.50)	<u>4,200,000</u>		9,700,000
Cash available from operations			11,500,000
Less budgeted disbursements			
Materials (purchases budget)	5,794,000		
Labor (manufacturing cost budget)	<u>3,576,000</u>		
Manufacturing overhead (manufacturing cost budget)			
([384,000 + 214,000] – 156,000 noncash)		442,000	
Selling and administrative (\$340,000 – \$90,000 depreciation)		<u>250,000</u>	(10,062,000)
Cash balance, ending			<u>\$ 1,438,000</u>

f.

DEWALT Contribution Income Statement For First Quarter			
Sales (sales budget)			\$11,000,000
Less variable costs of goods sold			
Drills (60,000 × \$85.00)	\$5,100,000		
Saws (40,000 × \$99.50)	<u>3,980,000</u>		(9,080,000)
Contribution Margin			1,920,000
Less fixed costs			
Manufacturing overhead	214,000		
Selling and administrative expenses	<u>340,000</u>		(554,000)
Net income			<u>\$ 1,366,000</u>

Review 22-5—Solution

- 2 a. The marketing department is asked to provide an estimate as to how much it will spend on print ads during the next fiscal year.
- 1 b. The marketing department provides a budget amount for print ads for the next fiscal year that includes the expected expenditures plus 10% to account for uncertainty.
- 4 c. Tristan Renken owns and operates a food truck that sells Mexican food along the beaches in Chicago. Tristan only operates the food truck during the summer and developed a budget to estimate how much he will make during the upcoming summer season.
- 3 d. Top management hosts semi-annual meetings to discuss the budget and current performance vs. the budget. Management provides employees with tools to help gauge their own performance against the budgeted expectations.

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INSTANT COMPUTING			
Budgeted Contribution Income Statement			
For Month of October			
Less fixed costs			
Manufacturing overhead	160,000		
Administrative	125,000		
Selling and Distribution	75,000		
Net income			\$110,000

INSTANT COMPUTING			
Actual Contribution Income Statement			
For Month of October			
Sales (2,250 × \$385)			\$866,250
Less variable costs			
Cost of goods sold			
Direct materials	\$139,500		
Direct labor	85,500		
Manufacturing overhead	43,875	\$268,875	
Selling and Distribution		105,750	(374,625)
Contribution margin			491,625
Less fixed costs			
Manufacturing overhead	168,000		
Administrative	135,000		
Selling and Distribution	74,600		(377,600)
Net income (loss)			\$114,025

Required

- Prepare a performance report for Production that compares actual and allowed costs.
- Prepare a performance report for Selling and Distribution that compares actual and allowed costs.
- Determine the sales price and the net sales volume variances.
- Prepare a report that summarizes the performance of Selling and Distribution.
- Determine the amount by which Administration was over or under budget.
- Prepare a report reconciling budgeted and actual net income. Your report should focus on the performance of each responsibility center.

Management Applications

L01 MA23-42. Discretionary Cost Center Performance Reports

TruckMax had been extremely profitable, but the company has been hurt in recent years by competition and a failure to introduce new consumer products. Three years ago, Tom Lopez became head of Consumer Products Research (CPR) and began a number of product development projects. Under his leadership the group had good ideas that led to the introduction of several promising products. Nevertheless, when financial results for Lopez's second year were reviewed, CPR's report revealed large unfavorable variances leading management to criticize Lopez for poor cost control. Management was quite concerned about cost control because profits were low, and the company's cash budget indicated that additional borrowing would be required to cover out-of-pocket costs. Because of his inability to exert proper cost control, Lopez was relieved of his responsibilities last year, and Gabriella Garcia became head of Consumer Products Research. Garcia vowed to improve the performance of CPR and scaled back CPR's development activities to obtain favorable financial performance reports.

By the end of this year, the company had improved its market position, profitability, and cash position. At this time, the board of directors promoted Garcia to president, congratulating her for the contribution CPR made to the revitalization of the company, as well as her success in improving the financial performance of CPR. Garcia assured the board that the company's financial performance

in individual players' skills and scores, it could be necessary for management to interpret variances based on the circumstances that produced the variances. Accordingly, in one case, a given unfavorable variance could represent poor performance; in another case, it could represent good performance. The managers are just going to have to recognize these subtleties in standard cost systems and depend on upper management to be fair.

Human Resources Director—The key to employee productivity is employee satisfaction and a sense of accomplishment. A set of standards that can never be met denies managers of this vital motivator. The current standards would be appropriate in a laboratory with a controlled environment but not in the factory with its many variables. If we are to recapture our old "team spirit," we must give the managers a goal that they can achieve through hard work.

Required

Discuss the behavioral issues involved in Merit Inc.'s standard cost dilemma. Evaluate each of the three responses (pros and cons) and recommend a course of action.

LO8 MA23-45. Evaluating a Companywide Performance Report

Mr. Chandler, the production supervisor, bursts into your office, carrying the company's prior year performance report and thundering, "There is villainy here, sir! And I shall get to the bottom of it. I will not stop searching until I have found the answer! Why is Mr. Richards so down on my department? I thought we did a good job last year. But Richards claims my production people and I cost the company **\$11,700!** I plead with you, sir, explain this performance report to me." Trying to calm Chandler, you take the report from him and ask to be left alone for 15 minutes. The report is as follows:

DICKENS COMPANY, LIMITED Performance Report For the Prior Year			
	Actual	Budget	Variance
Unit sales	9,000	7,500	
Sales	\$526,500	\$450,000	\$ 76,500 F
Less manufacturing costs			
Direct materials	42,750	37,500	5,250 U
Direct labor	19,350	15,000	4,350 U
Manufacturing overhead	192,100	190,000*	2,100 U
Total	(254,200)	(242,500)	(11,700) U
Gross profit	272,300	207,500	64,800 F
Less selling and administrative expenses			
Selling (all fixed)	52,750	50,000	2,750 U
Administrative (all fixed)	54,785	50,000	4,785 U
Total	(107,535)	(100,000)	(7,535) U
Net income	\$164,765	\$107,500	\$ 57,265 F
Performance summary			
Budgeted net income			\$107,500
Sales department variances			
Sales revenue	\$ 76,500 F		
Selling expenses	2,750 U	\$ 73,750 F	
Administration department variances		4,785 U	
Production department variances		11,700 U	57,265 F
Actual net income			\$164,765

*Includes fixed manufacturing overhead of \$160,000.

Required

- Evaluate the performance report. Is Mr. Richards correct, or is there "villainy here"?
- Assume that the sales department is a profit center and that the production and administration departments are cost centers. Determine the responsibility of each for cost, revenue, and income variances, and prepare a report reconciling budgeted and actual net income. Your report should focus on the performance of each responsibility center.

Problems

L01 P24-31. Multiple Segment Reports

Worldwide Communications, Incorporated, sells telecommunication products throughout the world in three sales territories: Europe, Asia, and the Americas. For July, all \$1,045,000 of administrative expense is traceable to the territories, except \$200,000, which is common to all units and cannot be traced or allocated to the sales territories. The percentage of product line sales made in each of the sales territories and the assignment of traceable fixed expenses follow:

	Sales Territory			
	Europe	Asia	The Americas	Company
Handset sales	40%	35%	25%	100%
Switchboard sales	35%	35%	30%	100%
Automated switches sales	10%	15%	75%	100%
Fixed administrative expense	\$350,000	\$275,000	\$220,000	\$845,000
Fixed selling expense	\$155,000	\$175,000	\$550,000	\$880,000

The manufacturing takes place in one large facility with three distinct manufacturing operations. Selected product-line cost data follow.

	Handset	Switchboard	Automated Switches	Company
Variable costs	\$ 15	\$ 850	\$ 1,950	
Depreciation and supervision	60,000	175,000	275,000	\$ 585,000*
Other mfg. overhead (common)				650,000
Fixed administrative expense (common)				1,045,000
Fixed selling expense (common)				880,000

*Includes common costs of \$75,000

The unit sales and selling prices for each product follow.

	Unit Sales	Selling Price
Handset	6,500	\$ 25
Switchboard	1,500	1,900
Automated	2,500	3,500

Required

- Prepare an income statement for July segmented by product line. Include a column for the entire firm.
- Prepare an income statement for July segmented by sales territory. Include a column for the entire firm.
- Prepare an income statement for July by product line for The Americas sales territory. Include a column for the territory as a whole. Products are manufactured in a single facility. Although depreciation and supervision are allocated by product line, those costs are not allocated by territory.
- Discuss the value of multilevel segment reporting as a managerial tool. Compare and contrast the benefits of the reports generated in parts *a*, *b*, and *c*.

L01 P24-32. Segment Reporting and Analysis

The Essential Baking Company

The Essential Baking Company bakes artisan loaves, baguettes, and rolls and sells them in cities throughout the Northwest. Assume the following March income statement was prepared for the stores located in Seattle and Portland:

	Professional Division		
	Accounting Books Segment	Executive Books Segment	Management Books Segment
Sales.	\$105,000	\$105,000	\$97,500
Variable manufacturing expenses			
as a percentage of sales.	60%	40%	50%
Other variable expenses			
as a percentage of sales.	5%	5%	5%
Direct fixed expenses.	\$37,500	\$55,100	\$37,500
Allocated common fixed expenses.	\$ 3,000	\$ 1,500	\$ 4,500

The professional accounting books are sold to auditors and controllers. The current information on these markets is as follows:

	Accounting Books Segment		
	Auditors Market	Controllers Market	Total
Sales.	\$22,500	\$82,500	\$105,000
Variable manufacturing expenses			
as a percentage of sales.	60%	60%	—
Other variable expenses			
as a percentage of sales.	5%	5%	—
Direct fixed expenses.	\$11,250	\$22,500	\$33,750
Allocated common fixed expenses.	\$ 1,125	\$ 1,500	\$ 2,625

Required

- Prepare an income statement segmented by product for the Professional Division. Include a column for the division as a whole.
- Prepare an income statement segmented by market for the Accounting Books Segment of the Professional Division.
- Evaluate which Accounting Books Segment the Professional Division should keep or discontinue in the short run.
- What is the correct long-run decision? Explain fully, including any possible risks associated with your recommendation.

LO1 P24-34. Segment Reports and Cost Allocations

All Things Greek Inc. has three sales divisions. One of the key evaluation inputs for each division manager is the performance of his or her division based on division income. The division statements for August are as follows:

	Alpha	Beta	Gamma	Total
Sales.	\$250,000	\$300,000	\$275,000	\$825,000
Cost of sales.	139,500	165,000	158,250	462,750
Division overhead.	39,000	45,000	41,250	125,250
Division expenses.	(178,500)	(210,000)	(199,500)	(588,000)
Division contribution.	71,500	90,000	75,500	237,000
Corporate overhead.	(41,000)	(49,000)	(45,000)	(135,000)
Division income.	\$ 30,500	\$ 41,000	\$ 30,500	\$102,000

The Gamma manager is unhappy that his profitability is the same as that of the Alpha Division and 74% that of the Beta Division when his sales are halfway between these two divisions. The manager knows that his division must carry more product lines because of customer demands, and many of these additional product lines are not very profitable. He has not dropped these marginal product lines because of idle capacity; all of the products cover their own variable costs. After analyzing the product lines with the lowest profit margins, the divisional controller for Gamma provided the following to the manager:

Currently, the division is making \$250,000 on 200,000 posters (\$1,600,000 – \$1,350,000 fixed costs); but under the proposal, with a \$250,000 negative contribution, it would revert to a break-even situation:

Current contribution margin		\$1,600,000
Fixed costs	\$1,350,000	
Loss on special order	<u>250,000</u>	<u>(1,600,000)</u>
Net income		<u>\$ 0</u>

As a general rule, a project should never be undertaken if the contribution margin is negative.

- b. What the Retail Division does with the posters after receiving them is of no concern to the Production Division. Hence, the Production Division would still object to a transfer price of \$13.50. However, for the company, the proposal does have a contribution of \$18 per unit (\$44 – \$16 – \$10). Consequently, the order is desirable from the viewpoint of the company.
- c. If the company believes in autonomous divisions, it should not require the Production Division to sell, nor should it dictate a higher transfer price. On the other hand, the company may want to create incentives to encourage (but not require) the two division managers to reach some compromise transfer price that would increase the contribution and profits of both divisions.

Review 24-3—Solution

a.

$$\text{Return on investment} = \frac{\text{Investment center income}}{\text{Investment center asset base}}$$

$$\begin{aligned}\text{Engineering Division} &= \$30,000 \div \$200,000 \\ &= 0.15 \text{ or } 15\%\end{aligned}$$

$$\begin{aligned}\text{Construction Division} &= \$50,000 \div \$250,000 \\ &= 0.20 \text{ or } 20\%\end{aligned}$$

$$\begin{aligned}\text{Military Division} &= \$22,000 \div \$100,000 \\ &= 0.22 \text{ or } 22\%\end{aligned}$$

- b. **Residual income = Investment center income – (Investment center asset base × Minimum return)**

$$\begin{aligned}\text{Engineering Division} &= \$30,000 - (0.15 \times \$200,000) \\ &= \$0.00\end{aligned}$$

$$\begin{aligned}\text{Construction Division} &= \$50,000 - (0.15 \times \$250,000) \\ &= \$12,500\end{aligned}$$

$$\begin{aligned}\text{Military Division} &= \$22,000 - (0.15 \times \$100,000) \\ &= \$7,000\end{aligned}$$

- c. ROI ranks the Military Division first, the Construction Division second, and the Engineering Division third. Residual income ranks the Construction Division first, the Military Division second, and the Engineering Division third. Because the investments for each division are different, it is somewhat misleading to rank the divisions according to residual income. The Construction Division had the highest residual income, but it also had the largest investment. The Military Division's residual income was 56% of the Construction Division's income but only 40% of the investment of the Construction Division. This fact, along with the best ROI ranking, probably justifies the Military Division being evaluated as the best division of KBR.
- d. Return on investment:

$$\begin{aligned}\text{Investment} &= \$9,000 \div \$50,000 \\ &= 0.18 \text{ or } 18\%\end{aligned}$$

$$\begin{aligned}\text{Engineering Division} &= (\$30,000 + \$9,000) \div (\$200,000 + \$50,000) \\ &= 0.156 \text{ or } 15.6\%\end{aligned}$$

$$\begin{aligned}\text{Construction Division} &= (\$50,000 + \$9,000) \div (\$250,000 + \$50,000) \\ &= 0.1967 \text{ or } 19.67\%\end{aligned}$$

$$\begin{aligned}\text{Military Division} &= (\$22,000 + \$9,000) \div (\$100,000 + \$50,000) \\ &= 0.2067 \text{ or } 20.67\%\end{aligned}$$

ROI will increase for the Engineering Division but decrease for the Construction and Military Divisions, even though the project's ROI of 18% exceeds the company's minimum return of 15%.

opposed to straight-line depreciation. Assume an income tax rate of 21% and a discount rate of 20%. Also assume that there will be a switch from double-declining balance to straight-line depreciation in the fourth year.

P25-31. Payback Period and NPV: Taxes and Straight-Line Depreciation

Assume that **United Technologies Corporation** is evaluating a proposal to change the company's manual design system to a computer-aided design (CAD) system. The proposed system is expected to save 12,000 design hours per year; an operating cost savings of \$65 per hour. The annual cash expenditures of operating the CAD system are estimated to be \$600,000. The CAD system requires an initial investment of \$200,000. The estimated life of this system is five years with no salvage value. The tax rate is 21%, and United Technologies uses straight-line depreciation for tax purposes. United Technologies has a cost of capital of 14%.

Required

- Compute the annual after-tax cash flows related to the CAD project.
- Compute each of the following for the project:
 - Payback period.
 - Net present value.

P25-32. NPV: Taxes and Accelerated Depreciation

Assume the same facts as given in P25-31, except that management intends to use double-declining balance depreciation with a switch to straight-line depreciation (applied to any undepreciated balance) starting in Year 4.

Required

Determine the project's net present value.

P25-33. NPV Total and Differential Analysis of Replacement Decision

Assume **Mitsubishi Chemical** is evaluating a proposal to purchase a new compressor that would cost \$200,000 and have a salvage value of \$20,000 in five years. Mitsubishi's cost of capital is 16%. It would provide annual operating cash savings of \$22,500, as follows:

	Old Compressor	New Compressor
Salaries	\$60,000	\$75,000
Supplies	12,000	7,500
Utilities	23,000	15,000
Cleaning and maintenance	35,000	10,000
Total cash expenditures	<u>\$130,000</u>	<u>\$107,500</u>

If the new compressor is purchased, Mitsubishi will sell the old compressor for its current salvage value of \$60,000. If the new compressor is not purchased, the old compressor will be disposed of in five years at a predicted scrap value of \$6,000. The old compressor's present book value is \$85,000. If kept, the old compressor will require repairs one year from now predicted to cost \$75,000.

Required

- Use the total cost approach to evaluate the alternatives of keeping the old compressor and purchasing the new compressor. Indicate which alternative is preferred.
- Use the differential cost approach to evaluate the desirability of purchasing the new compressor.

P25-34. NPV Total and Differential Analysis of Replacement Decision

Assume **Pinstripes Cleaning and Restoration**, near Dallas, Texas, must either have a complete overhaul of its current dry-cleaning system or purchase a new one. Its cost of capital is 16%. The following cost projections have been developed:

	Old System	New System
Purchase cost (new)	\$85,000	\$90,000
Remaining book value	17,000	
Overhaul needed	25,000	
Annual cash operating costs	60,850	40,200
Current salvage value	<u>12,000</u>	
Salvage value in 5 years	4,500	10,000

L02, 3, 6

United Technologies Corporation (UTX)



L06



L02

Mitsubishi Chemical Holdings Corporation (MTLHY)

L02

Pinstripes Cleaning and Restoration