REVIEW PROBLEM 3.6

The Buchanan Company reported the following income statement (in thousands).

Revenue	$2,350
Cost of goods sold	1,200
Gross margin	1,150
Operating expenses	430
Income before taxes	720
Income tax expense	140
Net income	$ 580

The Buchanan Company also reported the following items in its financial statements:

Increase in accounts receivable	$250
Increase in inventory	125
Increase in accounts payable	75
Increase in depreciation	110
Increase in taxes payable	20

Required

Using the above information construct the Buchanan Company cash flow from operations using the direct method.

The solution is on page 128.

QUESTIONS

Q3.1 **Building Shareholder Value.** Describe at least three ways that corporate managers can build shareholder value (increase their firm's share price). Rank-order the various managerial actions you identified according to their effectiveness in building shareholder value. Be prepared to justify your rank-ordering.

Q3.2 **Litigation Disclosure.** Mylan NV, the maker of EpiPens (an allergy treatment), was the subject of a probe in 2017 by the Department of Justice because they classified EpiPens as generic. By using the generic classification, it was alleged that Mylan was able to overcharge Medicaid by over $1 billion. Later, the SEC filed a lawsuit against Mylan for not informing investors about the probe from the Department of Justice. How should Mylan have disclosed the EpiPen-related lawsuits in its 2017 annual report?

Q3.3 **Basic Versus Diluted Earnings per Share.** In its 2019 annual report, **Apple, Inc.**, reported that its basic earnings per share were $11.97 per share while its diluted earnings per share were $11.89 per share. Discuss the factors that might cause the number of shares used in the calculation of earnings per share to increase, and thus, cause diluted earnings per share (EPS) to be less than basic earnings per share. Which measure do you feel is more important to shareholders—basic EPS or diluted EPS? Why?

Q3.4 **Assessing the Quality of Reported Earnings Using Cash Flow Data.** Below, you will find a graph of Enron's operating cash flows versus its net income in the years leading up to the company's downfall. You will notice that Enron's income differs quite a bit from its operating cash flows for every year in the chart. What could account for the differences? Some users of financial statements use differences between net income and cash flows (particularly operating cash flows) as a rough indicator of how reliable net income is. What is your opinion of the reliability of Enron's income based on the chart below?

HOFFMAN, INC. Statement of Cash Flow For the Year Ended Year 2 (amounts in millions)	Year 2
Operations	
Net income	$ 5
Depreciation expense	8
Accounts receivable (net)	(11)
Inventory	(61)
Accounts payable	30
Cash flow from operations	(29)
Investing activities	
Purchase of property & equipment	(80)
Cash flow from investing	(80)
Financing activities	
Short-term borrowing	19
Long-term borrowing	82
Stock sales	12
Dividend payment	(2)
Cash flow from financing	111
Change in cash	2
Beg. cash	10
End. cash	$ 12

Required

Using the following set of assumptions, prepare pro forma financial statements for Hoffman, Inc. for Year 3:

- Sales are projected to grow by 40 percent.
- Cash is expected to increase at the same rate as sales.
- Assume the following ratios to forecast the identified accounts:

Account	Financial Ratio		
Accounts receivable	Receivable turnover	=	25.9x
Inventory	Inventory turnover	=	3.39x
Property & equipment	Fixed asset turnover	=	3.52x
Cost of goods sold	Gross profit margin ratio	=	25.9%
Operating expenses	Operating expenses ÷ sales	=	22.1%
Accounts payable	Payable turnover	=	7.55x

- Depreciation expense is based on a 30-year expected life with no salvage value; any property and equipment acquired during the year is depreciated for only one-half year.
- Interest expense is based on a six percent short-term cost of debt and eight percent cost of debt; only one-half year of interest is charged on loans taken out during the year.
- Effective income tax rate is 20 percent beginning in Year 3.
- Assume that $3 million in dividends will be paid in Year 3.
- The mix of short-term loans payable, long-term debt and contributed capital is set to satisfy an existing debt covenant that requires the company to maintain a current ratio of 2.0 (or greater) and a total debt-to-total assets ratio of 80 percent (or less). Hoffman borrows the maximum allowed.

Discuss the expected profitability and operating cash flow of Hoffman, Inc. in Year 3.

P4.32 Benchmarking Firm Performance. Presented below are profitability ratios for three competitors: **Bristol-Myers Squibb** (BMY), **Pfizer, Inc.** (PFE), and **Johnson & Johnson** (JNJ): TA 2

2018	BMY	PFE	JNJ
Return on equity (ROE)	34.8%	17.5%	25.6%
Return on assets (ROA)	14.1%	7.0%	10.0%
Return on sales (ROS)	21.8%	20.8%	18.8%
Asset turnover	0.64	0.34	0.53

2. The profitability of The Dana Point Company is up dramatically from Year 1 to Year 2, as revealed by the trend in the return on equity and return on sales ratios. The gross profit margin ratio increase suggests that the company was able to realize some economies of scale over this same period. Overall, the company's asset management was up from Year 1 to Year 2, as revealed by the trend in the total asset turnover ratio, despite a small increase in the receivable collection period and a larger increase in the inventory-on-hand period. The cash collection cycle grew dramatically, however, from minus 10.7 days in Year 1 to over 27 days in Year 2 (a swing of over 37 days). The financial riskiness of the company improved from Year 1 to Year 2, as indicated by a decline in the use of financial leverage (see the financial leverage and the long-term debt to shareholders' equity ratios). This improvement is also reflected in an improving interest coverage ratio and current ratio.

Solution 4.3

1.

	Year 5	Year 4	Year 3	Year 2
ROS (NI/Revenue)	6.6%	6.3%	6.7%	5.8%
AT (Revenue/Total assets)	1.33	1.33	1.37	1.32
LEV (Total assets/SE)	1.54	1.55	1.52	1.62
ROE	13.5%	13.1%	13.9%	12.4%

2.

Sales growth	5.0%	5.2%	6.7%	3.4%
ROE	13.5%	13.1%	13.9%	12.4%
DRR	40.0%	40.0%	40.0%	40.0%
SGR	5.4%	5.2%	5.6%	5.0%

Overall, the Ventura Company's sustainable growth rate equaled or exceeded its growth in revenues in all years except Year 3, indicating that it is doing a solid job of managing its growth.

Solution 4.4

1. Return on assets = ($220 + ($20 × (1 − 0.20)))/$2,500 = 9.4%
2. Return on sales = ($220 + ($20 × (1 − 0.2)))/$600 = 39.3%

Solution 4.5

1.5% + (1.2 × 6.5%) = 9.3%

E5.20 **Revenue Recognition: Software Service Contracts.** CA Technologies is a software company that designs, develops, installs, and services business software for manufacturing companies. Typically, CA Technologies provides its services over a multi-year period. Should the revenue from selling, installing, and supporting the software be recognized all together or separately? Also, should the revenues be recognized all at once or over time? TA 2

PROBLEMS

P5.21 **Installment Basis versus Point-of-Sale Revenue Recognition.** The Hilliard Company is a catalogue-based retailer. The following describes Hilliard's operations in its first two years of business: TA 2 CHECK FIGURE

	Year 2	Year 1
Sales (all on account)	$620,000	$425,000
Cash collections from customers		
On Year 1 sales	220,000	180,000
On Year 2 sales	240,000	—
Cash purchases of merchandise inventory	500,000	385,000
Merchandise inventory-on-hand (year-end)	228,000	120,000
Operating expenses (other than inventory)	88,000	64,000

Required

1. Prepare an income statement for each year assuming that Hilliard recognizes revenue using the point-of-sale method and assuming that all operating expenses are paid in cash.
2. Prepare an income statement for each year assuming that Hilliard recognizes revenue using the installment method and assuming that all operating expenses are paid in cash.

P5.22 **Revenue Recognition.** At the beginning of 2020, John Cornell decided to quit his job as a construction company supervisor and formed his own residential housing construction company. When he resigned, he had a contract to build a custom home at a price of $450,000. The full price was payable in cash when the house was completed. TA 2, 3

By year-end 2020, Cornell's new company Columbia Homes, Inc. had spent $50,000 for labor, $110,340 for materials, and $3,800 in miscellaneous expenses in connection with the construction of the new home. Cornell estimated that the project was 70 percent complete at year-end. Only $107,740 of construction materials were used on the new home in 2020, leaving $2,600 on-hand.

During the year, Columbia Homes, Inc., had also purchased a small house for $95,000, spent $32,000 fixing it up, and then sold it on November 1, 2020, for $175,000. The buyer paid $25,000 down and signed a note for the remainder of the balance due. The note called for interest at a rate of 12 percent per year, with a lump-sum payment for the outstanding balance payable at the end of 2022. (John spent $4,000 of the $25,000 to pay a portion of Columbia Homes' accounts payable balance, prior to year-end.) John's wife, Karen, kept the accounting records for Columbia Homes, Inc., and on December 31, she prepared the following statement:

COLUMBIA HOMES, INC.
Where We Stand at Year-End

Assets		Debts and Owners' Capital	
Cash	$ 21,000	Accounts payable	$ 44,600
Materials	2,600	Owners' investment	242,540
Renovation contract receivable	150,000	Sale of renovated house	175,000
Construction in progress	161,540		
Cost of renovated house	127,000		
Total assets	$462,140	Total debts & owners' capital	$462,140

After reviewing the statement, John and Karen got into a discussion concerning the level of revenue the company had earned during the year. John argued that all of the revenue from the sale of the renovated home, along with 70 percent of the expected revenue from the new construction contract, had been earned. Karen, on the other hand, maintained that the revenue on the renovation project should be recognized only to the extent of the cash actually collected and that no revenue should be recognized on the new home construction until it was completed and available for occupancy. John and Karen agreed that there were four possible alternative approaches to measuring the company's revenue:

1. Report the entire amount of renovation revenue and a proportionate amount of the new construction contract revenue.

a perpetual inventory system and shows an ending inventory balance of $2,550 as of December 31. A physical count of the inventory on December 31, however, reveals that the actual inventory on hand is only $2,325, perhaps due to inventory breakage or theft. To recognize the inventory loss, it is necessary to enter a charge of $225 to cost of goods sold and a reduction of $225 to inventory (see the company's spreadsheet below). Note that this adjustment affects not only income in the current year—a reduction of $225—but will also affect earnings and inventory in the following year. This results because the ending inventory of $2,325 in the current year becomes the beginning inventory in the following year.

Watermark Company Spreadsheet	Balance Before Count	Inventory Count Adjustment	Ending Balance
Assets			
Inventory	2,550	(225)	2,325
Shareholders' Equity			
Retained earnings:			
Cost of goods sold		(225)	(225)

The adjustments to cost of goods sold and inventory can be best understood by considering the following basic computation of cost of goods sold. This representation describing the relation between ending inventory, purchases, and cost of goods sold, is also useful when analyzing the balances in inventory accounts. The partition of inventory expenditures between the inventory account and the cost of goods sold is as follows:

Computation of Cost of Goods Sold
Beginning inventory
+ Purchases
= Goods available for sale
− Ending inventory
= Cost of goods sold

As can be seen from this basic formula, "goods available for sale" are partitioned into either ending inventory, an asset on the balance sheet, or cost of goods sold, an expense on the income statement. If the ending inventory balance is erroneously too high (low), then cost of goods sold will be erroneously too low (high). Further, ending inventory in one year becomes the beginning inventory for the next year. Since goods available for sale includes beginning inventory, any error in the previous year would be carried forward and would result in an error in cost of goods sold of equal magnitude, but opposite direction, the following year. For these reasons, physical counts of inventory are an essential part of the financial accounting process.

REVIEW PROBLEM 6.1

Fill in the missing numbers for the Kristen Company.

	Year 1	Year 2	Year 3
Beginning inventory	$ 0	?	$ 550
Purchases	?	1,800	1,950
Goods available for sale	1,250	?	?
Cost of goods sold	?	1,500	800
Ending inventory	$ 250	$ 550	?

The solution is on page 260.

2. Compare the tax consequences of using LIFO versus FIFO in Year 2, and for all prior years. (Assume an effective tax rate of 20 percent.)
3. Which method—FIFO or LIFO—should Hawk Enterprises use for reporting its financial results to shareholders? Why?

TA 5 CHECK FIGURE

P6.27 Restating Inventory Values Using the LIFO Inventory Reserve. PowerChem, Inc. is a manufacturer of chemical and derivative products. Presented below is select information from PowerChem's recent annual report.

POWERCHEM, INC.
Condensed Balance Sheet

($ millions) Assets	2019	2018	Liabilities & Shareholders' Equity	2019	2018
Inventory	$ 7,800	$ 7,440	Liabilities	$30,324	$29,424
Other current assets	16,272	16,680	Capital stock	8,952	8,616
Noncurrent assets	24,360	22,680	Retained earnings	9,156	8,760
Total	$48,432	$46,800	Total	$48,432	$46,800

POWERCHEM, INC.
Condensed Statement of Earnings

($ millions)	2019	2018
Revenues	$48,684	$50,280
Cost of goods sold	33,180	33,888
Gross profit	15,504	16,392
Other expenses	14,112	14,910
Income taxes	360	744
Net earnings	$ 1,032	$ 738

The footnotes to the company's financial statements revealed that PowerChem, Inc. values most of its inventory using LIFO. The LIFO reserve was approximately $720 million and $360 million, respectively, at year-end 2019 and 2018. Assume an effective tax rate of 20%.

Required

1. If PowerChem, Inc. had used FIFO instead of LIFO to value its inventory, what value would have been reported for 2019 for the following accounts?
   a. Ending inventory
   b. Cost of goods sold
   c. Net income before tax
   d. Retained earnings
2. How much additional income tax would the company have paid if it had used FIFO instead of LIFO to value its inventory?

TA 2, 5

P6.28 Inventory Valuation and Earnings. Down Under Wines Inc. began operations to import fine wines from Australia to the United States. Sales and purchase information is provided below.

	Year 1	Year 2	Year 3
Sales	170 units	225 units	300 units
Purchases	250 units @ $10 each	200 units @ $8 each	? units @ $15 each
LIFO ending inventory	80 units @ $10	55 units @ $10	

Assume that Down Under Wines uses the LIFO method of inventory valuation. The purchase amount for Year 3 has been left blank because Down Under Wines has not yet decided the total number of units to purchase during the year. (Assume that all sales occur on the last day of the year, after all purchases for the year have been made. The company's year-end is December 31.)

Required

1. How many units should be purchased in Year 3 if the firm's objective is to maximize reported income for the year?
2. Compute the cost of goods sold for Year 3 assuming the number of units computed in (1) is purchased.
3. How many units should be purchased in Year 3 if the firm's objective is to minimize income taxes for the year?

Company Name	Industry	Impact on Trade Balance (%)
Petrobras	Oil	16.43%
Samsung Electronica da Amazônia	Information technology, telecommunications, appliances	1.72%
Braskem SA	Chemical	1.18%
Cisa Trading	Automotive, aeronautic, cosmetic, pharma, tech	1.11%
Toyota do Brasil	Automotive	1.09%
Embraer SA	Aeronautic	1.02%
LG Electronics of Brazil	Electronics	1.00%
Ford Motor Company Brasil Ltda.	Automotive	0.87%
Flextronics International Tecnologia Ltda.	Electronics	0.85%
Yara Brasil Fertilizantes SA	Chemical, fertilizer	0.67%
Volkswagen do Brasil	Automobile	0.62%
Syngenta Proteção de Cultivos Ltda.	Agribusiness	0.58%
GE Celma Ltda.	Aeronautic	0.57%
General Motors do Brasil Ltda.	Automotive	0.55%
BASF SA.	Chemical	0.53%
Bayer SA	Chemical, pharma, agribusiness	0.47%
Renault do Brasil SA	Automotive	0.46%
Mercedes-Benz do Brasil Ltda.	Automotive	0.45%
Fertilizantes Heringer Ltda.	Agribusiness, chemicals	0.41%

Data source: Author adaptation of Marcelo Possato, "Top 20 Importing Companies in Brazil," *Brazil Business*, February 26, 2015.

In addition to the CET, member countries agreed to policies regarding currency exchange, investment, taxes, and educational exchanges in order to ease commerce between bloc members. In 2002, a free residence area was also established, permitting citizens of participating countries to obtain residence and the right to work in the participating countries without a visa. Furthermore, Mercosur had several free-trade agreements with other countries, including Chile, Columbia, Peru, Israel, and the Palestinian Authority.

SOLUTIONS TO REVIEW PROBLEMS

Solution 6.1

	Year 1	Year 2	Year 3
Beginning inventory	$ 0	$ 250	$ 550
Purchases	1,250	1,800	1,950
Goods available for sale	1,250	2,050	2,500
Ending inventory	250	550	1,700
Cost of goods sold	$1,000	$1,500	$ 800

Solution 6.2

1. Cost of goods sold:

				Cost of Goods Sold
FIFO				
January	6,000 units	@	$2.00	$ 12,000
	10,300 units	@	2.00	20,600
	22,100 units	@	2.10	46,410
				$ 79,010
February	7,200 units	@	$2.10	15,120
	28,200 units	@	2.20	62,040
	5,300 units	@	2.60	13,780
Total				$169,950

continued

Solution 6.4

Ending inventory

$75,000 + $11,000 = $86,000

Cost of goods sold

$550,000 – $2,000 = $548,000

Solution 6.5

1.

Net earnings before tax as reported	$4,527
Add: Change in LIFO reserve	200
Net earnings before tax if the company had only used FIFO	$4,727

2.

Inventory reported on balance sheet	$ 9,333
Add: LIFO reserve	3,200
Inventory if the company had only used FIFO	$12,533

3.

Average effective tax rate (588/4,527)	12.99%
Change in LIFO reserve	200
Estimated tax savings from use of LIFO (12.99% × 200)	$26.0 million

4.

$$\text{LIFO inventory-on-hand period} = \frac{365}{(\text{Cost of sales/Inventory})}$$

$$\text{2019: } \frac{365}{(106{,}790/9{,}333)} = 31.90 \text{ days}$$

$$\text{2018: } \frac{365}{(100{,}745/9{,}565)} = 34.65 \text{ days}$$

5.

$$\text{FIFO inventory-on-hand period for 2019} = \frac{365}{[(106{,}790 - 200)/(9{,}333 + 3{,}200)]} = 42.92 \text{ days}$$

6.

$$\text{Days payable period} = \frac{365}{(\text{Cost of sales/Accounts payable})}$$

$$\text{2019: } \frac{365}{(106{,}790/14{,}341)} = 49.02 \text{ days}$$

$$\text{2018: } \frac{365}{(100{,}745/13{,}566)} = 49.15 \text{ days}$$

Required

a. Determine the capitalized cost of the new machine.

b. Compute annual depreciation, accumulated depreciation, and the machine's book value for the first three years assuming
   i. Straight-line depreciation
   ii. Double-declining-balance method

c. Assume the machine is sold for $9,000 at the end of the third year after depreciation has been calculated. Determine the gain or loss assuming
   i. Straight-line depreciation
   ii. Double-declining-balance method

d. Given your answer in part *c*, if Reddic was able to perfectly predict the future that the machine would be sold for $9,000 at the end of the third year, which depreciation method should Reddic choose? Ignore taxes.

CORPORATE ANALYSIS

TA 2, 4 **CA7.35 The Procter & Gamble Company.** The 2019 annual report of **The Procter & Gamble Company** (P&G) is available at www.pginvestor.com. After reviewing P&G's annual report, respond to the following questions:

a. What percentage of P&G's total assets is represented by its net property, plant and equipment? What percentage of P&G's total assets is represented by its net goodwill and other intangible assets? Which category of noncurrent assets is larger? Calculate the capital intensity ratio. (Recall that in Chapter 4, the capital intensity ratio was defined as total assets divided by net sales.) Is P&G a capital-intensive company?

b. Calculate the fixed asset turnover ratio and the intangible asset turnover ratio. What do these ratios tell you about P&G's operations?

c. How much depreciation expense and amortization expense was taken in 2018 and 2019? What depreciation method does P&G use? What is the relative age of P&G's fixed assets (what percentage of the assets has been used up and what percentage remains available)?

TA 1, 2, 4 **CA7.36 Internet-based Analysis.** Consider a publicly-held company whose products you are familiar with. Some examples might include:

Company	Product	Corporate Website
• **Johnson & Johnson**	• Band-Aids	• www.jnj.com
• **Microsoft Corporation**	• Windows software	• www.microsoft.com
• **Apple Inc.**	• Cellular phones	• www.apple.com
• **Intel Corporation**	• Pentium processors	• www.intel.com
• **Kimberly-Clark Corporation**	• Kleenex	• www.kimberly-clark.com

Access the company's public website and search for its most recent annual report. (Note: Some companies provide access to their financial data through an "investor relations" link, while others provide a direct link to their "annual reports.") After locating your company's most recent annual report, open the file and review its contents. After reviewing the annual report for your selected company, prepare answers to the following questions:

a. How does the company depreciate its property, plant and equipment (PP&E)? Calculate the ratio of the accumulated depreciation divided by gross PP&E for the past two years. How old are the company's PP&E assets? What percentage of their useful life remains?

b. Does the company have any intangible assets? If so, what are they? What percentage of total assets do they represent?

c. Did the company invest in new PP&E or new intangible assets during the past two years? If so, in what amount?

d. Calculate the total asset turnover, the PP&E turnover, and the intangible asset turnover for each of the past two years. Are these turnover ratios increasing or decreasing? What might explain these trends?

TA 4, 7 **CA7.37 IFRS Financial Statements.** The 2018 financial statements of **LVMH Moet Hennessey-Louis Vuitton** are presented in Appendix C of this book. LVMH is a Paris-based holding company and one of the world's largest and best-known luxury goods companies. As a member-nation, French companies are required to prepare their consolidated (group) financial statements using International Financial Reporting Standards (IFRS). In LVMH's

EXHIBIT 3 Tom Drucker and Bayou Cargo

Budgeted Income Statement	Bonus-Plan Calculations[1] Year 1 (SL)	Year 1 (DDB)
Revenues	$2,238,500	$2,238,500
Selling, general, and administrative expenses	$ 552,250	$ 552,250
Earnings before interest, taxes, depreciation, and other income	$1,686,250	$1,686,250
Depreciation		
Earnings before interest, taxes, and other		
Loss on sale of assets		
Interest expense	$38,000	$38,000
Earnings before taxes		
Taxes (35%)		
Net income		
	SL	DDB
Earnings before interest and taxes		
20% allocated to bonus pool		

[1] Assumes efficiencies from crane acquisition. Bonus is calculated as 20% of earnings before taxes.

SOLUTIONS TO REVIEW PROBLEMS

Solution 7.1

Purchased new machinery with a sales price of	$35,000
Paid sales tax of the new machinery purchase	2,625
Paid shipping on the new equipment	850
Replaced a motor on a piece of equipment extending its life	2,750
Total	$41,225

Solution 7.2

	Straight-Line Method	Double-Declining-Balance Method	Units-of-Production Method
Year 1	$ 5,000,000	$10,666,667	$ 3,750,000
Year 2	5,000,000	7,111,111	4,500,000
Year 3	5,000,000	4,740,741	4,875,000
Year 4	5,000,000	3,160,494	5,625,000
Year 5	5,000,000	2,160,494	6,750,000
Year 6	5,000,000	2,160,493	4,500,000
Total	$30,000,000	$30,000,000	$30,000,000
Book value	$ 2,000,000	$ 2,000,000	$ 2,000,000

Solution 7.3

Original cost	$250,000
Less: Accumulated depreciation	175,000
Book value	75,000
Less: Proceeds on sale	50,000
Loss on sale of machine	$ 25,000

TA 2, 3 CHECK FIGURE

E9.15 Calculating Bond Issuance Prices. Presented below are annual coupon rates, yield rates, and expected duration for a series of debentures. Calculate the issuance price for each debenture assuming that the face value of each bond is $1,000 and that interest is paid semiannually.

Bond	Coupon Rate	Yield Rate	Duration
A	5.5%	5.0%	5 years
B	3.5	4.0	6 years
C	4.5	5.0	10 years
D	0.0	6.0	15 years
E	6.0	6.0	10 years

TA 3

E9.16 Bond Discounts and Effective Interest Rates. On January 1, 2020, the Hoffman Corporation issued $400 million of zero-coupon debentures, due December 31, 2029. The proceeds of the bond sale totaled approximately $182.556 million. Assuming semi-annual compounding, estimate the effective interest rate on the zero-coupon debentures. Calculate the interest expense incurred by the Hoffman Corporation during the first six months that the debt was outstanding.

TA 2 CHECK FIGURE

E9.17 Calculating the Fair Value of Debt. The Collins Corporation issued $45 million maturity value in notes, carrying a coupon rate of six percent, with interest paid semiannually. At the time of the note issue, equivalent risk-rated debt instruments carried yield rates of eight percent. The notes matured in four years.

Calculate the proceeds that Collins Corporation will receive from the sale of the notes. How will the notes be disclosed on Collins' balance sheet immediately following the sale? Calculate the interest expense for Collins Corporation for the first year that the notes are outstanding. Calculate the balance sheet value of the notes at the end of the first year.

TA 2

E9.18 Building a Note Amortization Table. Patterson, Inc. issued $120 million maturity value of three-year notes, which carried a coupon rate of four percent and which paid interest semiannually. At the time of the note sale, equivalent risk-rated debt instruments carried a yield rate of five percent. Develop a note amortization table for Patterson's four percent, three-year notes.

TA 2

E9.19 Accounting for Bonds Sold at a Discount. The Salina National Bank raised capital through the sale of $180 million face value of 4.5 percent coupon rate, ten-year bonds. The bonds paid interest semiannually and were sold at a time when equivalent risk-rated bonds carried a yield rate of six percent.

Calculate the proceeds that The Salina National Bank received from the sale of the 4.5 percent bonds. How will the bonds be disclosed on Salina's balance sheet immediately following the sale? Calculate the interest expense on the bonds for the first year that the bonds are outstanding. Calculate the book value of the bonds at the end of the first year.

TA 2

E9.20 Market Yield Rates and Bond Values. Field & Company issued $100 million maturity value of eight-year bonds, which carried a coupon rate of five percent, with interest paid semiannually. At the time of the debt offering, equivalent risk-rated bonds were yielding six percent. One year after the eight-year bond offering, yield rates had fallen to four percent; but, by the second anniversary of the bond sale, the yield rate on similarly risk-rated debt instruments had risen to eight percent.

Calculate the proceeds from the sale of the five percent, eight-year bonds. Calculate the book value of the bonds after one year and after two years. Calculate the market value of the bonds after one year and after two years. What is the relationship between market yield rates and bond values?

TA 2 CHECK FIGURE

E9.21 Accounting for Notes Issued at a Premium. The Barton Corporation issued $50 million maturity value of five percent coupon rate notes, with interest paid semiannually. At the time of the note issuance, equivalent risk-rated debt instruments carried a yield rate of four percent. The notes matured in five years.

Calculate the proceeds that the Barton Corporation would receive from the sale of the notes. How will the notes be reported on Barton's balance sheet immediately following the sale? Calculate the interest expense on the notes for the first year. Calculate the book value of the notes at the end of the first year.

TA 3

E9.22 Issuing Zero-Coupon Bonds. On July 28, 2020, Bolton Corporation, a biotechnology company located in Virginia, completed a private placement of zero-coupon convertible subordinated debentures. The zero-coupon debentures were issued at a price of $551.26 per $1,000 principal amount at maturity. Although the zero-coupon bonds paid no periodic interest payments, interest was assumed to be compounded semiannually. The bonds mature on July 28, 2040.

Estimate the yield rate on the zero-coupon bonds at the time of issuance. Why would Bolton Corporation issue non-interest-bearing bonds? Why would Bolton attach a conversion feature to the zero-coupon bonds? Calculate Bolton's implicit interest expense for the first 12 months.

TA 3

E9.23 Retiring Debt Early. Fong & Company issued $100 million maturity value of six-year bonds, which carried a coupon rate of seven percent and paid interest semiannually. At the time of the offering, the yield rate for equiva-

2. Moody's reports that the notes were rated **A3**.
   a. If the rating had been A1 instead, would the yield rate have been higher, lower, or the same?
   b. If the notes had been unsecured, would the yield rate have been higher, lower, or the same?
   c. The company reports that the fair market value of the company's long-term debt at December 31, 2020, was $2,996.70 million. If the company repurchased all of the outstanding long-term debt on December 31, 2020, how much gain (loss) would be recognized?
   d. Assume Moody's only used the long-term debt to equity ratio and the interest coverage ratio in making its rating decision. Assuming the 5.75% notes had not been issued and a 40% tax rate, calculate the long-term debt to equity ratios and the interest coverage ratios for 2019 and 2020. Compare the ratios between years.

TA 4 **P9.31** **Finance Lease.** On January 1, the president of KMF Inc. signed an eight-year lease agreement for retail space at a lease rate of $200,000 per year with a purchase option. During the negotiations, the president had learned that the lessor had built an implicit borrowing cost of eight percent per year into the lease contract. The agreement called for the lease payments to be made annually at the beginning of each year. Hence, the first payment of $200,000 was made immediately after the lease agreement was signed on January 1.

Required

1. Assume that the lease agreement is to be accounted for as a finance lease by KMF. How will the lease commitment be reflected on the company's financial statements when it is signed? At what value?
2. At the beginning of the second year of the lease, what financial effects will be recorded in the financial statements of KMF? At the beginning of the third year?
3. Why was the lease accounted for as a finance lease?
4. Are there any advantages to KMF to accounting for the lease as a finance lease?

TA 4 **P9.32** **Lease Accounting.** On January 1, Moran Inc. entered into a noncancelable ten-year lease for computer equipment with a fair value of $120 million and requiring annual $16.304 milion year-end lease payments. The company's year-end is December 31. The implicit interest rate is six percent.

CHECK FIGURE

Required

1. Assuming that the lease is accounted for as a finance lease, what financial effects will be recorded in the financial statements with regard to the lease on January 1?
2. Assuming that the lease is accounted for as a finance lease, what financial effects will be recorded with regard to the lease on December 31 (at the end of the first year)?
3. What are the total expenses associated with the lease in the second year if it is accounted for as an operating lease? As a finance lease?

TA 4 **P9.33** **Lease Accounting.** On January 1, Beyer Inc. entered into a noncancelable 15-year lease for computer equipment with a fair value of $150 million and requiring annual $16.469 million year-end lease payments. The company's year-end is December 31. The implicit interest rate is seven percent.

Required

1. Assuming that the lease is accounted for as a finance lease, what financial effects will be recorded in the financial statements with regard to the lease on January 1?
2. Assuming that the lease is accounted for as a finance lease, what financial effects will be recorded with regard to the lease on December 31 (at the end of the first year)?
3. What are the total expenses associated with the lease in the second year if it is accounted for as an operating lease? As a finance lease?

TA 4 **P9.34** **Impact of New Lease Rules.** On January 29, 2020, McDonald's Corporation (MCD) released its preliminary financial statements for 2019. These statements reflected McDonald's lease liabilities under the new standards (ASC 842). The company's lease footnote information was not currently available at the time this problem was written. However, it is clear from the size of the lease asset and liability that the impact on McDonald's financial statements was significant. McDonald's unaudited 2019 income statement and balance sheet are presented below:

TAX PERSPECTIVE

Net Operating Losses

The Internal Revenue Service regulations provide taxpayers the ability to receive a refund by carrying back a current net operating loss (NOL) and offsetting the NOL against previously reported taxable income, or to reduce future taxes by carrying forward any unused NOL. The treatment of an NOL for a company has recently undergone significant modifications under the Tax Cuts & Jobs Act of 2017 (TCJA) and the Coronavirus Aid, Relief, and Economic Security Act of 2020 (CARES). Prior tax law had provided for time limits for both carrybacks and carryforwards of two and twenty years, respectively. The TCJA eliminated carrybacks entirely and extended carryforwards indefinitely, subject to a maximum 80% of taxable income in each carryforward year. The CARES Act made changes to the treatment of NOLs that expire at the end of 2020 that eliminates the 80% provision and provides for a five-year carryback of any NOL against taxable income earned for tax years ending after 12-31-17 and before 1-1-21. NOL carryforwards and NOL carrybacks are found in the tax provisions of most countries; however, their lengths vary dramatically between countries.

The potential tax savings associated with NOL carryforwards are usually disclosed in the footnotes to the financial statements because of their importance in estimating future operating cash flows. Also recognize that NOL carryforwards will create a deferred tax asset for a company. That is because, under the matching concept, the GAAP net operating loss reported will require an accrued tax benefit on the income statement, but the realization of that benefit for IRS purposes will be deferred to a future year. The tax authorities therefore "owe" the taxpayer.

Unlike most long-term corporate debt, accounting rules require that deferred income tax liabilities are not discounted; instead, they are valued at their future expected settlement value and not their present value. It also would not be possible to use the present value approach to value these liabilities since the exact date of their payment is unknown (payment of a deferred income tax liability depends upon the future performance of the firm, which of course, is unknown).

GLOBAL PERSPECTIVE

The amount of deferred income tax reported on the balance sheets of multinational corporations varies dramatically from country to country. In the United States, the U.K., and Canada, where significant accounting/tax policy differentials exist, the deferred income tax obligation of large, mature companies can be substantial. However, in Germany and Japan, the amount of permitted accounting/tax policy differentials is constrained, and as a consequence, the deferred income tax obligation of companies from these countries is frequently immaterial in amount.

BUSINESS PERSPECTIVE

General Electric and Corporate Taxes

General Electric (GE) is not only one of the most successful U.S. companies of all time, it also happens to be very adept at minimizing the amount of corporate taxes it pays to the U.S. government. In early 2011 the financial press stoked a controversy when it was reported that GE earned worldwide profit of $14.2 billion—but paid no taxes. In fact, the company claimed a tax benefit of $3.2 billion! While this made for some bad press for the company, minimizing the tax bill was nothing new for GE. The company had long mixed a combination of skilled tax accountants, aggressive tax strategies, and rigorous lobbying to gain a tax advantage and help boost bottom line profits. A historical analysis by one trade group concluded that GE paid an average tax rate of just 2.3 percent over the decade ending in 2011, a far cry from the required 35 percent tax rate expected for companies of GE's size and profitability during those time periods.* So how does the company pull this off? The reasons are many and complex, but most have concluded that GE's heavy push for favorable changes in the tax law, credits for such things as "green energy" initiatives undertaken by the company, and its vast overseas operations that are minimally taxed as long as the profits remain overseas, have all led to a tax burden much smaller proportionally than for other U.S. companies.

In the years since the 2011 publicity over its lack of paying U.S. corporate taxes, GE has continued to keep its tax rate well below the 35 percent statutory rate. However , the company has been unable to get its effective rate to zero. GE's effective tax rate for 2012 through 2016, the years it produced earnings before taxes that were positive, has averaged about 20 percent.

* *New York Times*, March 24, 2011

MIDLAND COMPANY Income Statement For the Year Ended December 31		2020
Sales		$2,711,000
Cost of goods sold		2,069,500
Gross profit		641,500
Operating expenses		
Salary expense	$145,000	
Interest expense	27,500	
Income tax expense	38,500	
Depreciation expense	185,000	396,000
Operating Income		245,500
Gain on sale of PP&E		10,000
Income before taxes		255,500
Tax expense		30,000
Net income		$ 225,500

Additional facts: PP&E originally costing $200,000 was sold in 2020 for $50,000. The accumulated depreciation on the PP&E that was sold was $160,000. Dividends of $117,000 were paid in 2020.

Required

Prepare a statement of cash flow for 2020 using the indirect method format. What does the company's statement of cash flows reveal about the company's financial health?

TA 3 **P12.29 Generating Cash Flow Information.** Presented below are recent statements for the Bryant Company.

BRYANT COMPANY Balance Sheet As of December 31	2019	2018
Assets		
Cash	$ 250	$ 130
Marketable securities	225	250
Accounts receivable	365	325
Inventory	445	410
Other current assets	85	90
Total current assets	1,370	1,205
Property, plant, and equipment	925	850
Long-term investments	210	175
Total assets	$2,505	$2,230
Liabilities		
Accounts payable	$ 390	$ 410
Accrued expenses	180	175
Debt due within one year	165	155
Total current liabilities	735	740
Long-term debt	410	415
Total liabilities	1,145	1,155
Stockholders' equity		
Common stock	125	120
Additional paid-in-capital	925	875
Treasury stock	(520)	(270)
Retained earnings	830	350
Total stockholders' equity	1,360	1,075
Total liabilities and stockholders' equity	$2,505	$2,230

Let's consider another present value example. Anna Amphlett recently learned that in ten years she would receive $1 million from a trust fund established by her uncle when Anna was born. Given that she could earn about eight percent per year, Anna wondered how much her trust fund was currently worth. Using the present value approach, Anna's trust fund would be currently worth $463,000, calculated as follows:

$$\begin{aligned} PV &= \$1{,}000{,}000 \times PV(10, 8\%) \\ &= \mathbf{\$463{,}193} \end{aligned}$$

In ten years, with an interest rate of eight percent per year, Anna's trust fund will grow to be worth $1 million, its future value.

Present Value of an Annuity

Investments often involve a series of cash flows rather than a single lump-sum cash payment at the end of the investment. For example, consider a $60,000 investment in an MBA degree that is expected to yield an increment to your salary of $5,000 a year for the next 25 years. Is this a good investment? Unlike the previous example, this education investment pays off each year. One way to compute the present value of the incremental cash flows would be to compute the present value of each of the $5,000 annual salary flows and then add the 25 amounts up as follows:

$$\begin{aligned} &\$\ 5{,}000 \times PV(1, 10\%) \\ &\$\ 5{,}000 \times PV(2, 10\%) \\ &\quad\vdots \\ &\$\ 5{,}000 \times PV(25, 10\%) \\ &\$45{,}385 \end{aligned}$$

Fortunately, a formula similar to the future value of an annuity has been derived that can shorten the computation of the present value of an annuity:

$$\textbf{Present value of an annuity} = \textbf{Payment} \times PV_a(n, r\%) = \textbf{Payment} \times \{1 - [1/(1 + r)^n]\}/r$$

The present value of the 25 years of extra salary, assuming an interest rate of ten percent, is computed as follows:

$$\text{Present value of an annuity} = \$5{,}000 \times \{1 - [1/(1 + 0.10)^{25}]\}/0.10 = \$45{,}385$$

But is this a good investment? Using the formula to calculate the net present value of an investment reveals that the NPV of receiving $5,000 per year for 25 years, with a prevailing interest rate of ten percent, is negative $14,615, calculated as follows:

$$\begin{aligned} NPV &= \$5{,}000 \times PV_a(12{,}10\%) - \$60{,}000 \\ &= \$45{,}385 - \$60{,}000 \\ &= \mathbf{-\$14{,}615 < 0} \end{aligned}$$

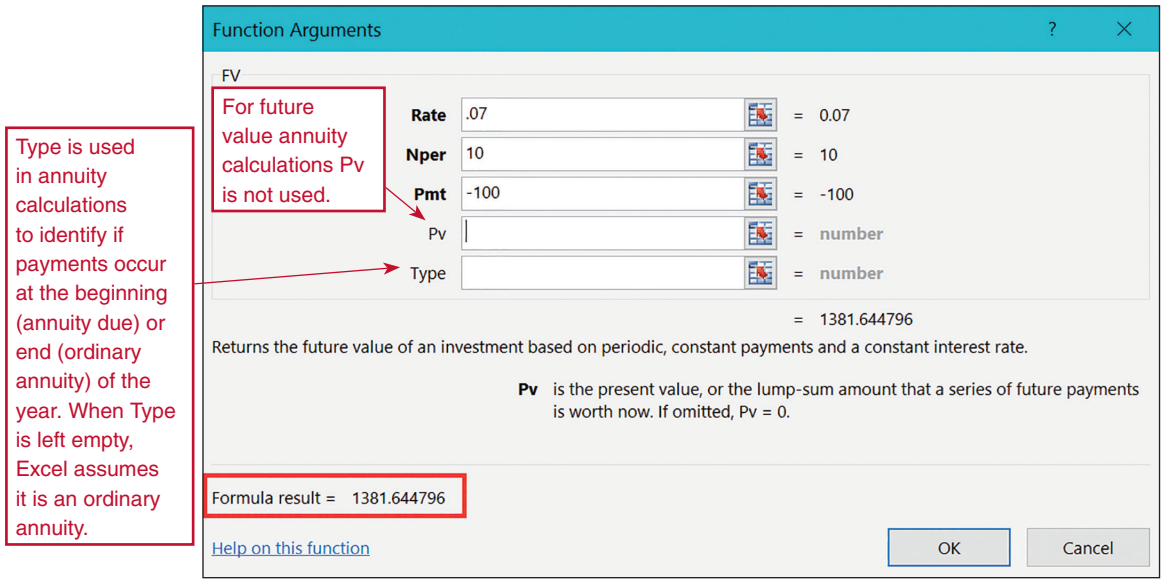
In this case, since the NPV of the investment is less than zero, the investment in the MBA degree is a bad one from a financial standpoint.

Consider a final example of an annuity. Josie Walsh recently won the lottery, which will pay her $500,000 every year for the next 20 years. Josie's friend, Paul, offered her $3.5 million now if she will give him the winning ticket. Josie figures that she could always put the money in U.S. government bonds earning twelve percent. Should Josie sell her winning ticket for $3.5 million? Calculating the net present value of 20 payments of $500,000 reveals that the NPV of keeping the ticket is $234,720, calculated as follows:

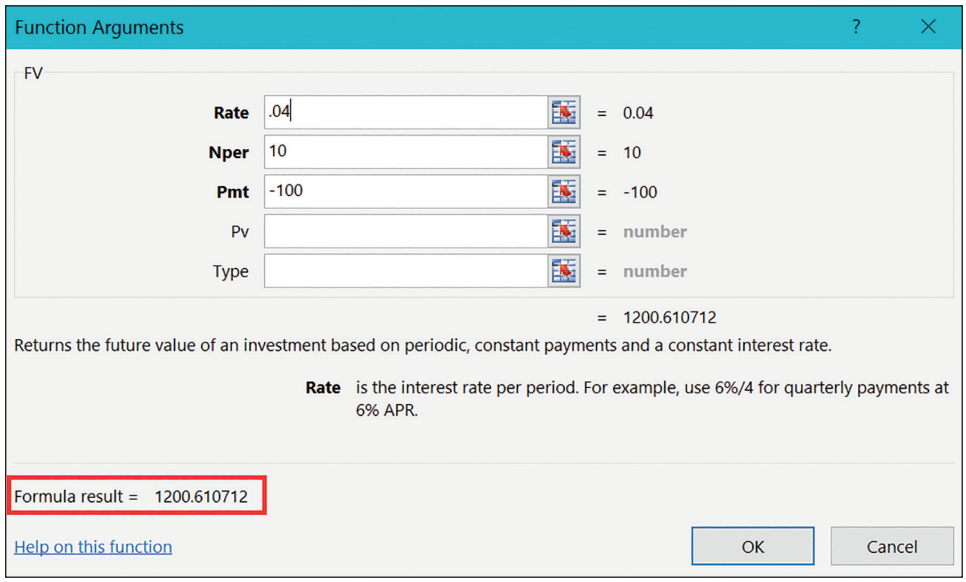
$$\begin{aligned} NPV &= \$500{,}000 \times PV_a(20, 12\%) - \$3{,}500{,}000 \\ &= \$3{,}734{,}720 - \$3{,}500{,}000 \\ &= \$234{,}720 > 0 \end{aligned}$$

Since the NPV of refusing the offer is $3,734,720, which is greater than zero, Josie should not accept Paul's offer to buy her winning lottery ticket.

We would use the same FV dialog box in Excel as we did with the prior future value problem; however our inputs now include the Pmt variable and exclude (leave as zero) the PV variable.



The future value problems so far have both involved annual compounding. If instead, we wish to know the future value of ten *semiannual* payments of $100 with an annual interest rate of eight percent, we will first need to convert the annual interest rate of eight percent to a semiannual rate of four percent (eight percent for the year divided by two six-month periods). We then input to the dialog box as follows to get a solution of $1,200.61.



Present Value of a Single Amount

Earlier in the appendix we used formulas to determine the present value of $1 million dollars received in ten years with annual compounding of eight percent was $436,193. We next solve this same problem with a financial calculator and an Excel spreadsheet.

On a financial calculator we now input values for N, I/Yr, and FV, then compute PV to solve the problem.

Calculator				
N	I/Yr	PV	PMT	FV
10	8	463,193	0	–1,000,000