

# 16

## FINANCIAL STATEMENT ANALYSIS

### DISCUSSION QUESTIONS

1. The two major types of financial statement analysis discussed in this chapter are common-size analysis and ratio analysis.
2. Horizontal analysis expresses line items of financial statements as a percentage of a prior-period amount. Vertical analysis expresses the line item as a percentage of some other line item for the same time period. Both should be done as each provides different insights into the financial strength of a company.
3. Horizontal analysis reveals trends—both favorable and unfavorable. Vertical analysis reveals the current strengths and weaknesses of key financial factors. In both cases, the information provided is useful for decision making. For example, vertical analysis helps managers determine the relationship of costs to sales. Horizontal analysis can show the upward or downward trend in sales and costs over time.
4. Liquidity ratios measure the ability of a firm to meet its short-term obligations. Leverage ratios measure the ability of a firm to meet both long- and short-term obligations. Profitability ratios measure the earning ability of a firm.
5. Two types of standards used in ratio analysis are historical and industrial standards. Historical standards allow one to assess trends over time. Industrial standards allow one to assess a company's performance relative to that of other firms.
6. The current ratio includes all current assets, from very liquid cash to less liquid inventories. The quick ratio excludes inventories and thus provides a better measure of liquidity (inventories are sometimes obsolete or may turn over slowly).
7. It may indicate a need to modify credit and collection policies to speed up the conversion of receivables to cash.
8. A high inventory turnover ratio does not necessarily provide evidence of stock outs and disgruntled customers. In a JIT environment, a high turnover ratio is desired and viewed as a positive signal of success. As long as the company is able to produce quickly to fill customer orders, a high inventory turnover ratio may be a good sign of success.
9. The debt ratio is computed as total liabilities divided by total assets. By restricting the debt ratio, the bank is trying to reduce the risk of default by ensuring that assets remain relatively high compared with liabilities.
10. The purchase alternative would increase the liabilities reported on the balance sheet. Increasing liabilities may cause the company to violate some existing debt covenants. The lease payment, however, had an immediate impact on the income statement rather than the balance sheet.
11. The debt ratio may provide a measure of the riskiness of the investment. The higher the ratio, the more likely the company will go bankrupt, causing the investors to lose much of their investment.

- 12. For someone retiring, an annual income would be needed. Accordingly, companies that have high yields and payout ratios would be preferred to those that have lower ratios.
- 13. The price-earnings ratio can be compared with an investor's expectation of future growth. If it is low (high) based on this expectation, then the price is too low (high) and the price will change based on the bidding that results.
- 14. The dilutive effect is of interest to stockholders because their share of earnings can drop if and when conversions are made.
- 15. The inventory turnover ratio can signal movement toward the goal of zero inventories.
- 16. Yes. As inventories are reduced to insignificant levels, the current ratio approaches the quick ratio.

**MULTIPLE-CHOICE EXERCISES**

- 16-1.     a**
- 16-2.     d**
- 16-3.     e**
- 16-4.     c**
- 16-5.     d**
- 16-6.     c**
- 16-7.     e**
- 16-8.     b**
- 16-9.     d**
- 16-10.    b**

## CORNERSTONE EXERCISES

## CE 16-11

Year 1 is the base year. Therefore, every dollar amount in Year 1 is 100 percent of itself.

$$\text{Percent for a line item} = \frac{\text{Dollar amount of line item}}{\text{Dollar amount of base year line item}} \times 100$$

$$\text{Percent Year 1 net sales} = \$1,000,000/\$1,000,000 \times 100 = 100\%$$

$$\text{Percent Year 2 net sales} = \$1,100,000/\$1,000,000 \times 100 = 110\%$$

$$\text{Percent Year 3 net sales} = \$1,300,000/\$1,000,000 \times 100 = 130\%$$

	Year 1		Year 2		Year 3	
	<u>Dollars</u>	<u>Percent</u>	<u>Dollars</u>	<u>Percent</u>	<u>Dollars</u>	<u>Percent</u>
Net sales	\$1,000,000	100%	\$1,100,000	110%	\$1,300,000	130%
Less: Cost of goods sold	(600,000)	100	(650,000)	108	(790,000)	132
Gross margin	\$ 400,000	100	\$ 450,000	113	\$ 510,000	128
Less:						
Operating expenses	(204,000)	100	(240,000)	118	(338,000)	166
Income taxes	(78,400)	100	(84,000)	107	(68,800)	88
Net income	<u>\$ 117,600</u>	100	<u>\$ 126,000</u>	107	<u>\$ 103,200</u>	88

## CE 16-12

Since the analysis is based on net sales, net sales in each year equals 100 percent of itself. Then, every line item on the income statement is expressed as a percent of that year's net sales.

$$\text{Percent for a line item} = \frac{\text{Dollar amount of line item}}{\text{Dollar amount of base year line item}} \times 100$$

$$\text{Percent Year 1 net sales} = \$1,000,000/\$1,000,000 \times 100 = 100\%$$

$$\text{Percent Year 2 net sales} = \$1,100,000/\$1,100,000 \times 100 = 100\%$$

$$\text{Percent Year 3 net sales} = \$1,300,000/\$1,300,000 \times 100 = 100\%$$

## CE 16-12 (Continued)

	Year 1		Year 2		Year 3	
	<u>Dollars</u>	<u>Percent</u>	<u>Dollars</u>	<u>Percent</u>	<u>Dollars</u>	<u>Percent</u>
Net sales	\$1,000,000	100%	\$1,100,000	100%	\$1,300,000	100%
Less: Cost of goods sold	(600,000)	60	(650,000)	59	(790,000)	61
Gross margin	\$ 400,000	40	\$ 450,000	41	\$ 510,000	39
Less:						
Operating expenses	(204,000)	20	(240,000)	22	(338,000)	26
Income taxes	(78,400)	8	(84,000)	8	(68,800)	5
Net income	<u>\$ 117,600</u>	<u>12</u>	<u>\$ 126,000</u>	<u>11</u>	<u>\$ 103,200</u>	<u>8</u>

## CE 16-13

$$\begin{aligned}
 \text{1. Current ratio} &= \frac{\text{Current assets}}{\text{Current liabilities}} \\
 &= \frac{\$3,500,000}{\$2,000,000} \\
 &= 1.75
 \end{aligned}$$

$$\text{2. Quick ratio} = \frac{\text{Cash} + \text{Marketable securities} + \text{Accounts receivable}}{\text{Current liabilities}}$$

You first need to calculate marketable securities by subtracting the specific known current assets from the given total current assets. Therefore, marketable securities = \$3,500,000 – \$1,000,000 cash – \$2,000,000 accounts receivable – \$400,000 inventories. Thus, marketable securities = \$100,000.

$$\begin{aligned}
 \text{Finally, Quick ratio} &= \frac{\text{Cash} + \text{Marketable securities} + \text{Accounts receivable}}{\text{Current liabilities}} \\
 &= \frac{\$1,000,000 + \$100,000 + \$2,000,000}{\$2,000,000} \\
 &= 1.55
 \end{aligned}$$

**CE 16-14**

1. Average accounts receivables  $= \frac{\text{Beginning receivables} + \text{Ending receivables}}{2}$   
 $= \frac{\$1,565,000 + \$1,775,000}{2}$   
 $= \$1,670,000$
2. Accounts receivable turnover ratio  $= \frac{\text{Net sales}}{\text{Average accounts receivables}}$   
 $= \frac{\$12,358,000}{\$1,670,000}$   
 $= 7.4 \text{ times}$
3. Accounts receivable turnover in days  $= \frac{\text{Days in a year}}{\text{Accounts receivable turnover ratio}}$   
 $= \frac{365 \text{ days}}{7.4 \text{ times}}$   
 $= 49.3 \text{ days}$

**CE 16-15**

1. Average inventory  $= \frac{\text{Beginning inventory} + \text{Ending inventory}}{2}$   
 $= \frac{\$550,000 + \$525,000}{2}$   
 $= \$537,500$
2. Inventory turnover ratio  $= \frac{\text{Cost of goods sold}}{\text{Average inventory}}$   
 $= \frac{\$7,847,500}{\$537,500}$   
 $= 14.6 \text{ times}$
3. Inventory turnover in days  $= \frac{\text{Days in a year}}{\text{Inventory turnover ratio}}$   
 $= \frac{365 \text{ days}}{14.6 \text{ times}}$   
 $= 25.0 \text{ days}$
4. Nikkola's inventory turnover ratio is 14.6 times, which indicates that, on average, the company converts finished goods inventory into sales a little under 15 times a year. Nikkola's inventory turnover in days is 25, which indicates that, on average, the company turns over finished goods inventory every 25 days, or slightly more than once a month. Without more detailed information on Nikkola and its industry, it is difficult to classify these results as outstanding, poor, or somewhere in-between. For example, if Nikkola manufactures relatively expensive items with very high prices (e.g., automobiles or extremely high-end home entertainment systems), then these turnover results would

**CE 16-15 (Continued)**

be more impressive than if Nikkola manufactures relatively inexpensive items with very low prices (e.g., lawnmowers, personal computers, furniture, etc.). In addition, ratio interpretation is improved by comparing the given company's ratio calculations to industry averages, (e.g., *Key Business Ratios*, Dun and Bradstreet, *Standard & Poor's Industry Survey*, Standard & Poor's).

**CE 16-16**

$$\begin{aligned}\text{Times-interest-earned ratio} &= \frac{\text{Income before taxes} + \text{Interest expense}}{\text{Interest expense}} \\ &= \frac{\$2,225,290 + \$465,010}{\$465,010} = 5.8 \text{ times}\end{aligned}$$

**CE 16-17**

$$\begin{aligned}1. \text{ Debt ratio} &= \frac{\text{Total liabilities}}{\text{Total assets}} \\ &= \frac{\$27,600,100}{\$39,955,100} \\ &= 0.69, \text{ or } 69\%\end{aligned}$$

$$\begin{aligned}2. \text{ Debt-to-equity ratio} &= \frac{\text{Total liabilities}}{\text{Total stockholders' equity}} \\ &= \frac{\$27,600,100}{\$12,355,000} \\ &= 2.23\end{aligned}$$

**CE 16-18**

$$\begin{aligned}\text{Return on sales} &= \frac{\text{Net income}}{\text{Sales}} \\ &= \frac{\$915,197}{\$8,281,989} = 0.1105, \text{ or } 11.1\%\end{aligned}$$

**CE 16-19**

$$\begin{aligned}1. \text{ Average total assets} &= \frac{\text{Beginning total assets} + \text{Ending total assets}}{2} \\ &= \frac{\$6,521,576 + \$8,121,576}{2} = \$7,321,576 \\ 2. \text{ Return on assets} &= \frac{\$915,197 + (\$50,000^* \times (1 - 0.40))}{\$7,321,576} \\ &= \frac{\$915,197 + \$30,000}{\$7,321,576} = \frac{\$945,197}{\$7,321,576} \\ &= 0.12910, \text{ or } 12.91\%\end{aligned}$$

\*Note: \$50,000 of interest expense = \$500,000 of Bonds Payable @ 10% rate as stated in Somerville's balance sheet.

**CE 16-20**

$$\begin{aligned}
 1. \text{ Average common stockholders' equity} &= \frac{\$4,316,655 + \$4,949,965}{2} \\
 &= \$4,633,310
 \end{aligned}$$

**Note:** Common stockholders' equity for each year is calculated by summing common stock, additional paid-in capital, and retained earnings. Therefore, common stockholders' equity for 2010 = \$337,500 + \$2,000,000 + \$2,612,465 = \$4,949,965.

$$\begin{aligned}
 2. \text{ Return on stockholders' equity} &= \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common stockholders' equity}} \\
 &= \frac{\$915,197 - \$80,000}{\$4,633,310} \\
 &= \frac{\$835,197}{\$4,633,310} \\
 &= 0.18026, \text{ or } 18.03\%
 \end{aligned}$$

**CE 16-21**

$$1. \text{ Preferred dividends} = \$1,000,000 \times 0.08 = \$80,000$$

(Recall that the preferred shares pay a dividend of 8 percent as shown in Somerville Company's balance sheet.)

$$2. \text{ Number of common shares} = \frac{\$337,500}{\$1.50} = 225,000 \text{ shares}$$

$$\begin{aligned}
 3. \text{ Earnings per share} &= \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common shares}} \\
 &= \frac{\$915,197 - \$80,000}{225,000 \text{ shares}} \\
 &= \frac{\$835,197}{225,000 \text{ shares}} \\
 &= \$3.711987, \text{ or } \$3.71 \text{ of earnings per share}
 \end{aligned}$$



**CE 16-22**

Before the price-earnings ratio can be computed, earnings per share must be calculated for use as the denominator in the price-earnings ratio. Earnings per share for Somerville equal \$3.71. Refer to Cornerstone Exercise 16-21 for specific guidance on how to calculate earnings per share.

$$\begin{aligned}
 \text{Price-earnings ratio} &= \frac{\text{Market price per share}}{\text{Earnings per share}} \\
 &= \frac{\$8.10}{\$3.71} \\
 &= 2.18329, \text{ or } 2.18
 \end{aligned}$$

**CE 16-23**

$$1. \text{ Dividends per share} = \frac{\$201,887}{225,000 \text{ shares}} = \$0.8973, \text{ or } \$0.90 \text{ per share.}$$

Note: Number of common shares = \$337,500/\$1.50 par value per common share = 225,000 common shares (see Cornerstone Exercise 16-21 for specific guidance on how to calculate the number of common shares).

$$\begin{aligned}
 2. \text{ Dividend yield} &= \frac{\text{Dividend per common share}}{\text{Market price per common share}} \\
 &= \frac{\$0.90}{\$8.10} \\
 &= 0.1111, \text{ or } 11.11\%
 \end{aligned}$$

$$\begin{aligned}
 3. \text{ Dividend payout ratio} &= \frac{\text{Common dividends}}{\text{Net income} - \text{Preferred dividends}} \\
 &= \frac{\$201,887}{\$915,197 - \$80,000} \\
 &= \frac{\$201,887}{\$835,197} \\
 &= 0.24172, \text{ or } 24.17\%
 \end{aligned}$$

## EXERCISES

## E 16-24

	Year 2 Amount	Percent of Year 1 Amount
Sales.....	\$ 1,800,000	90.0 %
Less: Cost of goods sold.....	(1,200,000)	85.7
Gross margin.....	\$ 600,000	100.0
Less operating expenses:		
Selling expenses.....	(300,000)	100.0
Administrative expenses.....	(110,000)	110.0
Operating income.....	\$ 190,000	95.0
Less: Interest expense.....	(40,000)	80.0
Income before taxes.....	\$ 150,000	100.0

## E 16-25

1.		Percent of Year 1 Sales
	Year 1	
Sales.....	\$ 2,000,000	100.0 %
Less: Cost of goods sold.....	(1,400,000)	70.0
Gross margin.....	\$ 600,000	30.0
Less operating expenses:		
Selling expenses.....	(300,000)	15.0
Administrative expenses.....	(100,000)	5.0
Operating income.....	\$ 200,000	10.0
Less: Interest expense.....	(50,000)	2.5
Income before taxes.....	\$ 150,000	7.5
2.		Percent of Year 2 Sales
	Year 2	
Sales.....	\$ 1,800,000	100.0 %
Less: Cost of goods sold.....	(1,200,000)	66.7
Gross margin.....	\$ 600,000	33.3
Less operating expenses:		
Selling expenses.....	(300,000)	16.7
Administrative expenses.....	(110,000)	6.1
Operating income.....	\$ 190,000	10.6
Less: Interest expense.....	(40,000)	2.2
Income before taxes.....	\$ 150,000	8.3

**E 16-26**

1.

	<u>Year 2</u>	<u>Percent of Year 1</u>
Sales.....	\$1,200,000	120.0 %
Less: Cost of goods sold.....	(700,000)	100.0
Gross margin.....	\$ 500,000	166.7
Less operating expenses:		
Selling expenses.....	(220,000)	146.7
Administrative expenses.....	(60,000)	120.0
Operating income.....	\$ 220,000	220.0
Less: Interest expense.....	(25,000)	100.0
Income before taxes.....	\$ 195,000	260.0

2.

	<u>Year 3</u>	<u>Percent of Year 1</u>
Sales.....	\$ 1,700,000	170.0 %
Less: Cost of goods sold.....	(1,000,000)	142.9
Gross margin.....	\$ 700,000	233.3
Less operating expenses:		
Selling expenses.....	(250,000)	166.7
Administrative expenses.....	(120,000)	240.0
Operating income.....	\$ 330,000	330.0
Less: Interest expense.....	(25,000)	100.0
Income before taxes.....	\$ 305,000	406.7

**E 16-27**

1.

	<u>Year 1</u>	<u>Percent of Sales in Year 1</u>
Sales.....	\$1,000,000	100.0 %
Less: Cost of goods sold.....	(700,000)	70.0
Gross margin.....	\$ 300,000	30.0
Less operating expenses:		
Selling expenses.....	(150,000)	15.0
Administrative expenses.....	(50,000)	5.0
Operating income.....	\$ 100,000	10.0
Less: Interest expense.....	(25,000)	2.5
Income before taxes.....	\$ 75,000	7.5

**E 16-27 (Continued)**

		<b>Percent of</b>
<b>2.</b>	<b>Year 2</b>	<b>Sales in Year 2</b>
Sales.....	\$1,200,000	100.0 %
Less: Cost of goods sold.....	(700,000)	58.3
Gross margin.....	\$ 500,000	41.7
Less operating expenses:		
Selling expenses.....	(220,000)	18.3
Administrative expenses.....	(60,000)	5.0
Operating income.....	\$ 220,000	18.3
Less: Interest expense.....	(25,000)	2.1
Income before taxes.....	\$ 195,000	16.3
<b>3.</b>	<b>Year 3</b>	<b>Percent of</b>
Sales.....	\$ 1,700,000	100.0 %
Less: Cost of goods sold.....	(1,000,000)	58.8
Gross margin.....	\$ 700,000	41.2
Less operating expenses:		
Selling expenses.....	(250,000)	14.7
Administrative expenses.....	(120,000)	7.1
Operating income.....	\$ 330,000	19.4
Less: Interest expense.....	(25,000)	1.5
Income before taxes.....	\$ 305,000	17.9

**E 16-28**

1. Current ratio =  $\frac{\text{Current assets}}{\text{Current liabilities}}$   
=  $\frac{\$5,400,000}{\$2,000,000}$   
= 2.7
2. Quick (acid-test) ratio =  $\frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}}$   
=  $\frac{\$5,400,000 - \$1,600,000}{\$2,000,000}$   
= 1.9

**E 16-29**

1. Current ratio = 
$$\frac{\text{Current assets}}{\text{Current liabilities}}$$
$$= \frac{\$250,000}{\$200,000}$$
$$= 1.25$$
2. Quick (acid-test) ratio = 
$$\frac{\text{Current assets} - \text{Inventories}}{\text{Current liabilities}}$$
$$= \frac{\$250,000 - \$60,000}{\$200,000}$$
$$= 0.95$$

**E 16-30**

1. Average accounts receivable  
= 
$$\frac{\text{Beginning accounts receivables} + \text{Ending accounts receivables}}{2}$$
$$= \frac{\$419,000 + \$398,100}{2}$$
$$= \$408,550$$
2. Accounts receivable turnover ratio = 
$$\frac{\text{Net sales}}{\text{Average receivables}}$$
$$= \frac{\$3,906,000}{\$408,550}$$
$$= 9.6 \text{ times}$$
3. Accounts receivable turnover in days = 
$$\frac{\text{Days in a year}}{\text{Accounts receivable turnover ratio}}$$
$$= \frac{365 \text{ days}}{9.6 \text{ times}}$$
$$= 38.0 \text{ days}$$

**E 16-31****1. Average accounts receivable**

$$\begin{aligned}
 &= \frac{\text{Beginning accounts receivable} + \text{Ending accounts receivable}}{2} \\
 &= \frac{\$1,100,400 + \$965,800}{2} \\
 &= \$1,033,100
 \end{aligned}$$

**2. Accounts receivable turnover ratio**

$$\begin{aligned}
 &= \frac{\text{Net sales}}{\text{Average receivables}} \\
 &= \frac{\$6,500,300}{\$1,033,100} \\
 &= 6.29 \text{ times}
 \end{aligned}$$

**3. Accounts receivable in days**

$$\begin{aligned}
 &= \frac{\text{Days in a year}}{\text{Accounts receivable turnover ratio}} \\
 &= \frac{365 \text{ days}}{6.29 \text{ times}} \\
 &= 58.03 \text{ days}
 \end{aligned}$$

**E 16-32**

$$\begin{aligned}
 \text{1. Average inventory} &= \frac{\text{Beginning inventory} + \text{Ending inventory}}{2} \\
 &= \frac{\$335,000,000 + \$350,000,000}{2} \\
 &= \$342,500,000
 \end{aligned}$$

**2. Inventory turnover ratio**

$$\begin{aligned}
 &= \frac{\text{Cost of goods sold}}{\text{Average inventory}} \\
 &= \frac{\$1,557,850,000}{\$342,500,000} \\
 &= 4.55 \text{ times}
 \end{aligned}$$

**3. Inventory turnover in days**

$$\begin{aligned}
 &= \frac{\text{Days in a year}}{\text{Inventory turnover ratio}} \\
 &= \frac{365 \text{ days}}{4.55 \text{ times}} \\
 &= 80.22 \text{ days}
 \end{aligned}$$

**E 16-33**

$$\begin{aligned}
 1. \text{ Average inventory} &= \frac{\text{Beginning inventory} + \text{Ending inventory}}{2} \\
 &= \frac{\$53,420 + \$62,640}{2} \\
 &= \$58,030
 \end{aligned}$$

$$2. \text{ Inventory turnover ratio} = \frac{\text{Cost of goods sold}}{\text{Average inventory}}$$

However, Cost of Goods Sold is not given. Instead, Sales and Gross Margin are given and from these two numbers Cost of Goods Sold can be computed. Specifically, Sales – Cost of goods sold = Gross margin.

Therefore, \$3,948,340 – Cost of goods sold = \$1,859,260;  
so Cost of goods sold = \$2,089,080

$$\begin{aligned}
 \text{Inventory turnover ratio} &= \frac{\$2,089,080}{\$58,030} \\
 &= 36 \text{ times}
 \end{aligned}$$

$$\begin{aligned}
 3. \text{ Inventory turnover in days} &= \frac{\text{Days in a year}}{\text{Inventory turnover ratio}} \\
 &= \frac{365 \text{ days}}{36 \text{ times}} \\
 &= 10.1 \text{ days}
 \end{aligned}$$

**E 16-34**

$$\begin{aligned}
 1. \quad \text{Current liabilities} &= \text{Total liabilities} - \text{Long-term liabilities} \\
 &= \$2,000,000 - \$1,500,000 \\
 &= \$500,000
 \end{aligned}$$

$$\begin{aligned}
 2. \quad \text{Current assets} &= \text{Current ratio} \times \text{Current liabilities} \\
 &= 2.5 \times \$500,000 \\
 &= \$1,250,000
 \end{aligned}$$

$$\begin{aligned}
 3. \text{ Average accounts receivable} &= \text{Net sales/Accounts receivable turnover} \\
 &= \$8,000,000/50 \\
 &= \$160,000
 \end{aligned}$$

$$\begin{aligned}
 4. \text{ Marketable securities} &= (\text{Quick ratio} \times \text{Current liabilities}) - \text{Cash} - \\
 &\quad \text{Receivables} \\
 &= (2.0 \times \$500,000) - \$600,000 - \$160,000 \text{ (from} \\
 &\quad \text{Requirement 3)} \\
 &= \$1,000,000 - \$760,000 \\
 &= \$240,000
 \end{aligned}$$

**E 16-34 (Continued)**

5. **Average inventory = Cost of goods sold/Inventory turnover\***  
**\* Inventory turnover = 365/Average inventory in days**  
**\* Inventory turnover = 365/3.65**  
**\* so Inventory turnover = 100**  
**Therefore, Average inventory = Cost of goods sold/Inventory turnover**  
**= (\$8,000,000 net sales – \$3,000,000**  
**gross margin)/100**  
**= \$50,000**

**E 16-35**

$$\begin{aligned}
 \text{Times-interest-earned ratio} &= \frac{\text{Income before taxes} + \text{Interest expense}}{\text{Interest expense}} \\
 &= \frac{\$450,000 + \$50,000}{50,000} \\
 &= 10.0 \text{ times}
 \end{aligned}$$

**E 16-36**

1. **Debt ratio =  $\frac{\text{Total liabilities}}{\text{Total assets}}$**   
**=  $\frac{\$510,900}{\$636,900}$**   
**= 0.80**
2. **Debt-to-equity ratio =  $\frac{\text{Total liabilities}}{\text{Total equity}}$**   
**=  $\frac{\$510,900}{\$126,000}$**   
**= 4.05**



**E 16-36 (Continued)**

3. The debt ratio and debt-to-equity ratio are commonly used measures of a company's financial riskiness. As calculated in Requirement 1, Busch's debt ratio is 0.80, which indicates that for every \$1.00 of assets, Busch's has taken on debt of \$0.80. Stated a bit differently, Busch's has chosen to finance 80% of its assets with debt. As calculated in Requirement 2, Busch's debt-to-equity ratio is 4.05, which indicates that for every \$1.00 of equity, Busch's has taken on \$4.05 of liabilities. Taken together, it appears as though Busch's has chosen to pursue a rather high risk financing strategy. As a side note, some investors view the retail industry as highly risky, which forces some retail organizations that need capital to take on more debt than perhaps they desire. Therefore, given what appears to be a relatively high risk financing strategy, Busch's should calculate and carefully manage its times-interest-earned ratio to ensure that its pre-tax earnings are sufficient to make any required interest payments on its large debt. Busch's top executives and Board of Director members also should continually assess whether the company's financing riskiness is in alignment with the company's overall appetite for risk. If the company is taking on more financial risk than its appetite calls for, it should strive to pay down part of its debt and perhaps work harder to raise additional equity capital.

**E 16-37**

1. Times-interest-earned ratio  $= \frac{\text{Income before taxes} + \text{Interest expense}}{\text{Interest expense}}$   
 $= \frac{\$3,500,000 + \$1,000,000}{1,000,000}$   
 $= 4.50$
2. Debt ratio  $= \frac{\text{Total liabilities}}{\text{Total assets}}$   
 $= \frac{\$10,250,000}{\$16,400,000}$   
 $= 0.63$
3. Debt-to-equity ratio  $= \frac{\text{Total liabilities}}{\text{Total equity}}$   
 $= \frac{\$10,250,000}{\$6,150,000}$   
 $= 1.67$

**E 16-38**

$$\begin{aligned} \text{Return on sales} &= \frac{\text{Net income}}{\text{Sales}} \\ &= \frac{\$2,100,000}{\$11,300,000} \\ &= 0.1858, \text{ or } 18.58\% \end{aligned}$$

**E 16-39**

1. Average total assets = 
$$\frac{\text{Beginning total assets} + \text{Ending total assets}}{2}$$
$$= \frac{\$17,350,000 + \$16,400,000}{2}$$
$$= \$16,875,000$$
2. Return on assets = 
$$\frac{\text{Net income} + [\text{Interest expense}(1 - \text{Tax rate})]}{\text{Average total assets}}$$
$$= \frac{\$2,100,000 + [\$1,000,000(1 - 0.40)]}{\$16,875,000}$$
$$= \frac{\$2,100,000 + \$600,000}{\$16,875,000}$$
$$= 0.16, \text{ or } 16.00\%$$

**E 16-40**

1. Average common stockholders' equity = 
$$\frac{\text{Beginning common stockholders' equity} + \text{Ending common stockholders' equity}}{2}$$
$$= \frac{\$11,800,000 + \$12,050,000}{2}$$
$$= \$11,925,000$$

**Note:** Remember that beginning (or ending) Common Stockholders' Equity equals Total Stockholders' Equity minus Preferred Stock.
2. Return on common stockholders' equity = 
$$\frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common stockholders' equity}}$$
$$= \frac{\$3,182,000 - \$320,000^*}{\$11,925,000}$$
$$= 0.24, \text{ or } 24\%$$

\*Preferred dividends =  $\$4,000,000 \times 0.08 = \$320,000$

**E 16-41**

1. Preferred dividends =  $\$4,000,000 \times 0.08 = \$320,000$
2. Number of common shares =  $\frac{\$3,000,000}{\$3} = 1,000,000$
3. Earnings per share =  $\frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common shares}}$   
 $= \frac{\$3,182,000 - \$320,000}{1,000,000 \text{ shares}}$   
 $= \frac{\$2,862,000}{1,000,000 \text{ shares}}$   
 $= 2.86 \text{ per share}$
4. Price-earnings ratio =  $\frac{\text{Market price per share}}{\text{Earnings per share}}$   
 $= \frac{\$51.50}{\$2.86}$   
 $= 18$

**E 16-42**

1. Dividends per share =  $\frac{\$2,600,000}{1,000,000 \text{ shares}}$   
 $= 2.60 \text{ per share}$
2. Dividend yield =  $\frac{\text{Dividends per common share}}{\text{Market price per common share}}$   
 $= \frac{\$2.60}{\$51.50}$   
 $= 0.05, \text{ or } 5.0\%$
3. Dividend payout ratio =  $\frac{\text{Common dividends}}{\text{Net income} - \text{Preferred dividends}}$   
 $= \frac{\$2,600,000}{\$3,182,000 - \$320,000}$   
 $= \frac{\$2,600,000}{\$2,862,000}$   
 $= 0.91$

## PROBLEMS

## P 16-43

$$\begin{aligned} 1. \text{ Current assets} &= \$250,000 + \$400,000 + \$100,000 + \$200,000 + \$50,000 \\ &= \$1,000,000 \end{aligned}$$

$$\begin{aligned} \text{Current liabilities} &= \$175,000 + \$85,000 + \$90,000 + \$50,000 \\ &= \$400,000 \end{aligned}$$

$$\begin{aligned} \text{Current ratio} &= \frac{\text{Current assets}}{\text{Current liabilities}} \\ &= \frac{\$1,000,000}{\$400,000} = 2.5 \end{aligned}$$

$$\begin{aligned} 2. \text{ Quick or acid-test ratio} &= \frac{\text{Cash} + \text{Marketable securities} + \text{Accounts receivable}}{\text{Current liabilities}} \\ &= \frac{\$700,000}{\$400,000} = 1.75 \end{aligned}$$

$$\begin{aligned} 3. \text{ Accounts receivable turnover ratio} &= \frac{\text{Net sales}}{\text{Average receivable}} \\ &= \frac{\$2,450,000}{350,000^*} \\ &= 7 \text{ times} \end{aligned}$$

$$^* \text{Average Accounts receivable} = (\$300,000 + \$400,000)/2$$

$$\begin{aligned} 4. \text{ Accounts receivable turnover in days} &= \frac{365 \text{ days}}{\text{Accounts receivable turnover}} \\ &= \frac{365 \text{ days}}{7 \text{ times}} = 52.14 \text{ days} \end{aligned}$$

$$\begin{aligned} 5. \text{ Inventory turnover ratio} &= \frac{\text{Cost of goods sold}}{\text{Average inventory}} \\ &= \frac{\$1,300,000}{\$225,000}^* \\ &= 5.78 \text{ times} \end{aligned}$$

$$^* \text{Average inventory} = (\$200,000 + \$250,000)/2$$

$$\begin{aligned} 6. \text{ Inventory turnover in days} &= \frac{365 \text{ days}}{\text{Inventory turnover ratio}} \\ &= \frac{365 \text{ days}}{5.78 \text{ times}} \\ &= 63.15 \text{ days} \end{aligned}$$

**P 16-44**

$$\begin{aligned}
 1. \text{ Times-interest-earned ratio} &= \frac{\text{Income before taxes} + \text{Interest expense}}{\text{Interest expense}} \\
 &= \frac{\$200,000 + \$140,000}{\$140,000} \\
 &= \frac{\$340,000}{\$140,000} \\
 &= 2.43
 \end{aligned}$$

$$\begin{aligned}
 2. \text{ Debt ratio} &= \frac{\text{Total liabilities}}{\text{Total assets}^*} \\
 &= \frac{\$2,500,000}{\$7,250,000} \\
 &= 0.34
 \end{aligned}$$

$$\begin{aligned}
 \text{*Total assets} &= \text{Total liabilities} + \text{Total equity} \\
 &= \$2,500,000 + \$4,750,000 = \$7,250,000
 \end{aligned}$$

3. The times-interest-earned ratio is very close to the lower quartile, which means that relative to most companies in the industry, Grammatico Company has a significant expense burden (relative to its income). Its debt ratio is in the lower quartile, which means that the company may still have additional credit. Because of its interest expense and income level, however, Grammatico should be very careful about taking on additional debt.

**P 16-45**

$$\begin{aligned}
 1. \text{ Return on assets} &= \frac{\text{Net income} + [\text{Interest expense} (1 - \text{tax rate})]}{\text{Average total assets}} \\
 &= \frac{\$5,000,000 + (\$400,000 \times 0.66)}{\$60,000,000} \\
 &= 0.088
 \end{aligned}$$

$$\begin{aligned}
 2. \text{ Return on common stockholders' equity} &= \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common stockholders equity}} \\
 &= \frac{\$5,000,000 - \$400,000}{\$20,000,000} \\
 &= \frac{\$4,600,000}{\$20,000,000} \\
 &= 0.23
 \end{aligned}$$

**P 16-45 (Continued)**

$$\begin{aligned}
 3. \text{ Earnings per share} &= \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common shares}} \\
 &= \frac{\$5,000,000 - \$400,000}{800,000 \text{ shares}} \\
 &= \$5.75 \text{ per share}
 \end{aligned}$$

$$\begin{aligned}
 4. \text{ Price-earnings ratio} &= \frac{\text{Market price per share}}{\text{Earning per share}} \\
 &= \frac{\$40.00}{\$5.75} \\
 &= 6.96
 \end{aligned}$$

$$\begin{aligned}
 5. \text{ Dividend yield} &= \frac{\text{Dividends per common share}}{\text{Market price per common share}} \\
 &= \frac{\$1,200,000 / 800,000 \text{ shares}}{\$40} \\
 &= \frac{\$1.50}{\$40.00} \\
 &= 0.0375
 \end{aligned}$$

$$\begin{aligned}
 6. \text{ Dividend payout ratio} &= \frac{\text{Common dividends}}{\text{Net income} - \text{Preferred dividends}} \\
 &= \frac{\$1,200,000}{\$5,000,000 - \$400,000} \\
 &= 0.26
 \end{aligned}$$

## P 16-46

1.

Kepler Company Comparative Balance Sheets			
	<u>This Year</u>	<u>Last Year</u>	<u>Percent Change</u>
	<b>Assets</b>		
Current assets:			
Cash	\$ 50,000	\$100,000	(50.0) %
Accounts receivable, net	300,000	150,000	100.0
Inventory	600,000	400,000	50.0
Prepaid expenses	25,000	30,000	(16.7)
Total current assets	<u>\$ 975,000</u>	<u>\$680,000</u>	43.4
Property and equipment, net	125,000	150,000	(16.7)
Total assets	<u><u>\$1,100,000</u></u>	<u><u>\$830,000</u></u>	32.5
<b>Liabilities and Stockholders' Equity</b>			
Liabilities:			
Current liabilities:			
Accounts payable	\$ 400,000	\$290,000	37.9 %
Short-term notes payable	200,000	60,000	233.3
Total current liabilities	<u>\$ 600,000</u>	<u>\$350,000</u>	71.4
Long-term bonds payable, 12%	100,000	150,000	(33.3)
Total liabilities	<u>\$ 700,000</u>	<u>\$500,000</u>	40.0
Stockholders' equity:			
Common stock			
(100,000 shares)	200,000	200,000	0.0
Retained earnings	<u>200,000</u>	<u>130,000</u>	53.8
Total liabilities and stockholders' equity	<u><u>\$1,100,000</u></u>	<u><u>\$830,000</u></u>	32.5
Kepler Company Comparative Income Statements			
	<u>This Year</u>	<u>Last Year</u>	<u>Percent Change</u>
Sales	\$ 950,000	\$ 900,000	5.6 %
Less cost of goods sold	<u>(500,000)</u>	<u>(490,000)</u>	2.0
Gross margin	\$ 450,000	\$ 410,000	9.8
Less selling and admin. exp.	<u>(275,000)</u>	<u>(260,000)</u>	5.8
Operating income	\$ 175,000	\$ 150,000	16.7
Less interest expense	<u>(12,000)</u>	<u>(18,000)</u>	(33.3)
Income before taxes	\$ 163,000	\$ 132,000	23.5
Less income taxes	<u>(65,200)</u>	<u>(52,800)</u>	23.5
Net income	\$ 97,800	\$ 79,200	23.5
Less dividends	<u>(27,800)</u>	<u>(19,200)</u>	44.8
Net income, retained	<u><u>\$ 70,000</u></u>	<u><u>\$ 60,000</u></u>	16.7

**P 16-46 (Continued)**

2. Cash has decreased by 50%, accounts receivables have doubled, and inventory has increased by 50%. At the same time, liabilities have increased by 40%, mostly due to increases in short-term liabilities. Management may want to know why inventories and receivables increased so dramatically.

**P 16-47**

<b>1. Assets</b>	<b><u>This Year</u></b>		<b><u>Last Year</u></b>	
<b>Current assets:</b>				
Cash	\$ 50,000	4.5 %	\$100,000	12.0 %
Accounts receivable, net	300,000	27.3	150,000	18.1
Inventory	600,000	54.5	400,000	48.2
Prepaid expenses	25,000	2.3	30,000	3.6
<b>Total current assets</b>	<b>\$ 975,000</b>	<b>88.6</b>	<b>\$680,000</b>	<b>81.9</b>
Property and equipment, net	125,000	11.4	150,000	18.1
<b>Total assets</b>	<b>\$1,100,000</b>	<b>100.0</b>	<b>\$830,000</b>	<b>100.0</b>
<b>2. Liabilities and Stockholders' Equity</b>				
<b>Liabilities:</b>	<b><u>This Year</u></b>		<b><u>Last Year</u></b>	
<b>Current liabilities:</b>				
Accounts payable	\$ 400,000	36.4 %	\$290,000	34.9 %
Notes payable	200,000	18.2	60,000	7.2
<b>Total current liabilities</b>	<b>\$ 600,000</b>	<b>54.5</b>	<b>\$350,000</b>	<b>42.2</b>
Long-term bonds payable, 12%	100,000	9.1	150,000	18.1
<b>Total liabilities</b>	<b>\$ 700,000</b>	<b>63.6</b>	<b>\$500,000</b>	<b>60.2</b>
<b>Stockholders' equity:</b>				
Common stock	200,000	18.2	200,000	24.1
Retained earnings	200,000	18.2	130,000	15.7
<b>Total liabilities and stockholders' equity</b>	<b>\$1,100,000</b>	<b>100.0</b>	<b>\$830,000</b>	<b>100.0</b>
<b>3. Sales</b>	<b><u>This Year</u></b>		<b><u>Last Year</u></b>	
	\$ 950,000	100.0 %	\$ 900,000	100.0 %
Less cost of goods sold	(500,000)	52.6	(490,000)	54.4
<b>Gross margin</b>	<b>\$ 450,000</b>	<b>47.4</b>	<b>\$ 410,000</b>	<b>45.6</b>
Less selling and admin. exp.	(275,000)	28.9	(260,000)	28.9
<b>Operating income</b>	<b>\$ 175,000</b>	<b>18.4</b>	<b>\$ 150,000</b>	<b>16.7</b>
Less interest expense	(12,000)	1.3	(18,000)	2.0
<b>Income before taxes</b>	<b>\$ 163,000</b>	<b>17.2</b>	<b>\$ 132,000</b>	<b>14.7</b>
Less income taxes	(65,200)	6.9	(52,800)	5.9
<b>Net income</b>	<b>\$ 97,800</b>	<b>10.3</b>	<b>\$ 79,200</b>	<b>8.8</b>
Less dividends	(27,800)	2.9	(19,200)	2.1
<b>Net income, retained</b>	<b>\$ 70,000</b>	<b>7.4</b>	<b>\$ 60,000</b>	<b>6.7</b>



## P 16-48

1. a. Current ratio = 
$$\frac{\text{Current assets}}{\text{Current liabilities}}$$
- |               | <u>This Year</u>                | <u>Last Year</u>                |
|---------------|---------------------------------|---------------------------------|
| Current ratio | $= \frac{\$975,000}{\$600,000}$ | $= \frac{\$680,000}{\$350,000}$ |
|               | $= 1.63$                        | $= 1.94$                        |
- b. Quick ratio = 
$$\frac{\text{Cash} + \text{Marketable securities} + \text{Accounts receivable}}{\text{Current liabilities}}$$
- |             | <u>This Year</u>                           | <u>Last Year</u>                            |
|-------------|--|---|
| Quick ratio | $= \frac{\$50,000 + \$300,000}{\$600,000}$ | $= \frac{\$100,000 + \$150,000}{\$350,000}$ |
|             | $= \frac{\$350,000}{\$600,000}$            | $= \frac{\$250,000}{\$350,000}$             |
|             | $= 0.58$                                   | $= 0.71$                                    |
- c. Receivables turnover = 
$$\frac{\text{Net sales}}{\text{Average receivables}}$$
- |                      | <u>This Year</u>                                | <u>Last Year</u>                             |
|----------------------|---|--|
| Receivables turnover | $= \frac{\$950,000}{\$225,000}$                 | $= \frac{\$900,000}{\$150,000}^*$            |
|                      | $= 4.22 \text{ times}$                          | $= 6 \text{ times}$                          |
| Turnover in days     | $= \frac{365 \text{ days}}{4.22 \text{ times}}$ | $= \frac{365 \text{ days}}{6 \text{ times}}$ |
|                      | $= 86.49 \text{ days}$                          | $= 60.83 \text{ days}$                       |

\*Since the beginning balance is not known for receivables, the average is assumed to be the ending balance.

- d. Inventory turnover = 
$$\frac{\text{Cost of goods sold}}{\text{Average inventory}}$$
- |                    | <u>This Year</u>                                | <u>Last Year</u>                                |
|--------------------|---|---|
| Inventory turnover | $= \frac{\$500,000}{\$500,000}$                 | $= \frac{\$490,000}{\$400,000}^*$               |
|                    | $= 1.00 \text{ times}$                          | $= 1.23 \text{ times}$                          |
| Turnover in days   | $= \frac{365 \text{ days}}{1.00 \text{ times}}$ | $= \frac{365 \text{ days}}{1.23 \text{ times}}$ |
|                    | $= 365 \text{ days}$                            | $= 297.96 \text{ days}$                         |

\*Since the beginning balance is not known for inventory, the average is assumed to be the ending balance.

2. The liquidity of Kepler has declined over the past year as measured by the turnover ratios and the current and quick ratios. Industrial liquidity performance would allow us to assess what is normal for the industry and thus better assess what is a reasonable liquidity level for Kepler.

**P 16-49**

$$1. \text{ a. Times-interest-earned ratio} = \frac{\text{Income before taxes} + \text{Interest expense}}{\text{Interest expense}}$$

	<u>This Year</u>	<u>Last Year</u>
Times-interest-earned ratio	$= \frac{\$163,000 + \$12,000}{\$12,000}$	$= \frac{\$132,000 + \$18,000}{\$18,000}$
	$= \frac{\$175,000}{\$12,000}$	$= \frac{\$150,000}{\$18,000}$
	$= 14.58 \text{ times}$	$= 8.33 \text{ times}$

$$\text{b. Debt ratio} = \frac{\text{Total liabilities}}{\text{Total assets}}$$

	<u>This Year</u>	<u>Last Year</u>
Debt ratio	$= \frac{\$700,000}{\$1,100,000}$	$= \frac{\$500,000}{\$830,000}$
	$= 0.64$	$= 0.60$

2. There appears to be good income coverage of interest. The debt ratio is over 50%, but whether this is good or bad depends to some extent on what is normal for the firm's industry. The fact that the proportion of debt has increased is certainly a negative factor. Knowing the industrial statistics would help in the assessment.

**P 16-50**

$$1. \text{ a. Return on assets} = \frac{\text{Net income} + [\text{Interest expense}(1 - \text{tax rate})]}{\text{Average total assets}}$$

	<u>This year</u>	<u>Last year</u>
Return on assets	$= \frac{\$105,000}{\$965,000} \text{ }^a$	$= \frac{\$90,000}{\$830,000} \text{ }^b$
	$= 0.11$	$= 0.11$

$$^a \$97,800 + [\$12,000(1 - 0.40)]$$

$$^b \$79,200 + [\$18,000(1 - 0.40)]$$

$$\text{b. Return on stockholders' equity} = \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average stockholders' equity}}$$

	<u>This year</u>	<u>Last year</u>
Return on stockholders' equity	$= \frac{\$97,800}{\$365,000}$	$= \frac{\$79,200}{\$330,000}$
	$= 0.27, \text{ or } 26.8\%$	$= 0.24, \text{ or } 24.0\%$

**P 16-50 (Continued)**

$$\text{c. Earnings per share} = \frac{\text{Net income}}{\text{Average common shares}}$$

$$\begin{array}{lcl} \text{EPS} & = & \frac{\text{This Year}}{\text{Last Year}} \\ & = & \frac{\$97,800}{\$79,200} \\ & = & \frac{100,000 \text{ shares}}{100,000 \text{ shares}} \\ & = & \$0.98 \text{ per share} \end{array}$$

$$\text{d. Price-earnings ratio} = \frac{\text{Market price per share}}{\text{Earning per share}}$$

$$\begin{array}{lcl} \text{PE ratio} & = & \frac{\text{This Year}}{\text{Last Year}} \\ & = & \frac{\$2.98}{\$0.792} \\ & = & 3.05 \end{array}$$

$$\text{e. Dividend yield} = \frac{\text{Dividend per common share}}{\text{Market price per share}}$$

$$\begin{array}{lcl} \text{Yield} & = & \frac{\text{This Year}}{\text{Last Year}} \\ & = & \frac{\$0.278}{\$2.98} \\ & = & 0.0933, \text{ or } 9.33\% \end{array}$$

$$\text{f. Dividend payout} = \frac{\text{Common dividends}}{\text{Net income} - \text{Preferred dividends}}$$

$$\begin{array}{lcl} \text{Payout} & = & \frac{\text{This Year}}{\text{Last Year}} \\ & = & \frac{\$27,800}{\$79,200} \\ & = & 0.28 \end{array}$$

2. The return on assets and the PE ratio have declined, while EPS, return on equity, yield, and payout measures have increased. Thus, the profitability measures are providing mixed signals. More information is needed before an investment decision is made. Will the decline in the return on assets continue? How do these returns compare to other firms in the same industry? Will the dividend payout continue? What is the historical performance of this firm?

**P 16-51**

$$\begin{aligned}
 \text{1. a. Return on sales} &= \frac{\text{Net income}}{\text{Sales}} \\
 &= \frac{\$10,500}{\$100,000} \\
 &= 0.105, \text{ or } 10.5\% \\
 \text{b. Return on assets} &= \frac{\text{Net income} + [\text{Interest expense} (1 - \text{tax rate})]}{\text{Average total assets}} \\
 &= \frac{\$10,500 + (\$350 \times 0.60)}{\$123,000^*} \\
 &= \frac{\$10,710}{\$123,000} \\
 &= 0.087, \text{ or } 8.7\% \\
 \text{*Average total assets} &= \frac{\$120,000 + \$126,000}{2} \\
 \text{c. Return on stockholders' equity} &= \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average stockholders' equity}} \\
 &= \frac{\$10,500 - \$300}{\$55,000} \\
 &= \frac{\$10,200}{\$55,000} \\
 &= 0.185, \text{ or } 18.5\% \\
 \text{d. EPS} &= \frac{\text{Net income} - \text{Preferred dividends}}{\text{Average common shares}} \\
 &= \frac{\$10,500 - \$300}{35,000 \text{ shares}^*} \\
 &= \frac{\$10,200}{35,000 \text{ shares}} \\
 &= \$0.29 \text{ per share} \\
 \text{*Average common shares} &= \frac{30,000 + 40,000}{2} \\
 \text{e. PE ratio} &= \frac{\text{Market price per share}}{\text{Earning per share}} \\
 &= \frac{\$12.00}{\$0.29} \\
 &= 41.38
 \end{aligned}$$

**P 16-51 (Continued)**

$$\begin{aligned}
 \text{f. Dividend yield} &= \frac{\text{Dividend per common share}}{\text{Market price per share}} \\
 &= \frac{\$0.20}{\$12.00} * \\
 &= 0.017, \text{ or } 1.7\%
 \end{aligned}$$

$$\begin{aligned}
 \text{*Dividends per share} &= \frac{\$8,000}{40,000 \text{ shares}} = \$0.20
 \end{aligned}$$

$$\begin{aligned}
 \text{g. Dividend payout ratio} &= \frac{\text{Common dividends}}{\text{Income} - \text{Preferred dividends}} \\
 &= \frac{\$8,000}{\$10,500 - \$300} \\
 &= 0.7843
 \end{aligned}$$

2. Since all the ratios are profitability ratios, they should all be of interest to investors. Some, however, may be of more interest than others, depending on the objectives of the potential investor. For example, an investor looking for retirement income may be particularly interested in the dividend yield ratio.

**P 16-52**

$$\text{1. Accounts receivables turnover} = \frac{\text{Net sales}}{\text{Average receivables}}$$

$$\text{2008 Accounts receivables turnover} = \frac{\$500,000}{\$100,000} = 5 \text{ times}$$

$$\text{Days} = \frac{365 \text{ days}}{5 \text{ times}} = 73 \text{ days}$$

$$\text{2009 Accounts receivables turnover} = \frac{\$600,000}{\$110,000} * = 5.45 \text{ times}$$

$$\text{Days} = \frac{365 \text{ days}}{5.45 \text{ times}} = 67 \text{ days}$$

$$\text{*Average receivables} = \frac{\$100,000 + \$120,000}{2}$$

$$\text{2010 Accounts receivables turnover} = \frac{\$510,000}{\$110,000} * = 4.64 \text{ times}$$

$$\text{Days} = \frac{365 \text{ days}}{4.64 \text{ times}} = 78.66 \text{ days}$$

$$\text{*Average receivables} = \frac{\$120,000 + \$100,000}{2}$$

**P 16-52 (Continued)**

$$\text{2011 Accounts receivables turnover} = \frac{\$510,000}{\$125,000} = 4.08 \text{ times}$$

$$\text{Days} = \frac{365 \text{ days}}{4.08 \text{ times}} = 89 \text{ days}$$

$$\text{*Average receivables} = \frac{\$100,000 + \$150,000}{2}$$

$$\text{2012 Accounts receivables turnover} = \frac{\$520,000}{\$170,000} = 3.06 \text{ times}$$

$$\text{Days} = \frac{365 \text{ days}}{3.06 \text{ times}} = 119.3 \text{ days}$$

$$\text{*Average receivables} = \frac{\$150,000 + \$190,000}{2}$$

2. The new credit policy reduced the accounts receivable turnover because of the fact that the customer now has 60 days before full payment of the account is required. This in turn slowed the inflow of cash to the company. The slower inflow of cash created the company's difficulty in meeting its short-term obligations.
3. If Ted Pendleton had known that the industry had an average receivables turnover of six times per year, he may not have liberalized the company's credit policy because the turnover was already slower than the industry average.

**P 16-53**

$$\begin{aligned} \text{1. a. McGregor EPS} &= \frac{\$2,640,000 - \$300,000}{1,000,000 \text{ shares}} \\ &= \$2.34 \text{ per share} \\ \text{Fasnacht EPS} &= \frac{\$2,640,000 - \$100,000}{1,200,000 \text{ shares}} \\ &= \$2.12 \text{ per share} \end{aligned}$$

$$\begin{aligned} \text{b. McGregor dividends per common share} &= \frac{\$840,000 - \$1(300,000)}{1,000,000 \text{ shares}} \\ &= \$0.54 \end{aligned}$$

$$\begin{aligned} \text{McGregor dividend yield} &= \frac{\$0.54}{\$5.00} \\ &= 0.108 \end{aligned}$$

**P 16-53 (Continued)**

$$\begin{aligned}\text{Fasnacht dividends per common share} &= \frac{\$1,040,000 - \$1(100,000)}{1,200,000 \text{ shares}} \\ &= \$0.78\end{aligned}$$

$$\begin{aligned}\text{Fasnacht dividend yield} &= \frac{\$0.78}{\$9.80} \\ &= 0.08\end{aligned}$$

$$\begin{aligned}\text{c. McGregor dividend payout ratio} &= \frac{\$540,000}{\$2,640,000 - \$300,000} \\ &= 0.23\end{aligned}$$

$$\begin{aligned}\text{Fasnacht dividend payout ratio} &= \frac{\$940,000}{\$2,640,000 - \$100,000} \\ &= 0.37\end{aligned}$$

$$\begin{aligned}\text{d. McGregor price-earnings ratio} &= \frac{\$5.00}{\$2.34} \\ &= 2.14\end{aligned}$$

$$\begin{aligned}\text{Fasnacht price-earnings ratio} &= \frac{\$9.80}{\$2.12} \\ &= 4.62\end{aligned}$$

$$\begin{aligned}\text{e. McGregor return on assets} &= \frac{\$2,640,000 + [\$1,000,000(1 - 0.34)]}{\$20,000,000} \\ &= 0.165\end{aligned}$$

$$\begin{aligned}\text{McGregor return on assets} &= \frac{\$2,640,000 + [\$3,000,000(1 - 0.34)]}{\$22,000,000} \\ &= 0.210\end{aligned}$$

$$\begin{aligned}\text{f. McGregor return on stockholders' equity} &= \frac{\$2,640,000 - \$300,000}{\$10,000,000} \\ &= 0.234\end{aligned}$$

$$\begin{aligned}\text{Fasnacht return on stockholders' equity} &= \frac{\$2,640,000 - \$100,000}{\$13,000,000} \\ &= 0.195\end{aligned}$$

2. Fasnacht dominates on every profitability measure except the EPS, dividend yield ratio, and return on equity. If this pattern is expected to persist in the future, Fasnacht appears to be the better investment.

## CASES

### Case 16-54

1. Pete Donaldson's behavior is not ethical. Hiding a loan and obsolete safety equipment is dishonest. The \$30,000 cannot be considered to be donated when he is making interest payments of \$3,000 per year and has a requirement to return the \$30,000. (Standard III: 2, 3)
2.
  - a. First, consult with Pete Donaldson and tell him that you cannot prepare the statements in the way he has requested and explain why. If he insists on their preparation following his classification, then resignation is called for. To prepare the statements would violate a number of standards of ethical conduct and would be prohibited by most corporate codes of conduct. (Even if Donaldson Mining Supplies does not have a written corporate code of conduct, lying on financial statements is neither ethical nor legal.) (Standard III: 2, 3)
  - b. First, Pete Donaldson should be approached. He should be requested to withdraw the loan request or provide corrected financial statements. Should he refuse, then the ethical dilemma has been significantly compounded. Communication of the problem to outside parties is usually not considered appropriate unless legally prescribed. If a possibility of being held legally responsible for the fraudulent statements is present, then the correct action would be to notify the bank that new information has surfaced that makes the financial statements unreliable. In fact, consultation with an attorney is strongly recommended. The attorney could then determine the means by which the bank is notified.
3. One possible solution is to approach the father-in-law who gave the loan originally and offer part ownership in the company. The loan could then legitimately be converted to equity in exchange for an ownership share. With the legitimate reclassification, a loan application could be submitted in good conscience.

### Case 16-55

Answers will vary. **NOTE TO INSTRUCTOR:** You can easily turn this into a group exercise by forming groups of two or three and assigning each group an industry (e.g., airlines, medical care, retail, computer hardware or software developers). Then the group members can complete this exercise and present their findings to the class.