# Chapter 17
# "How Well Am I Doing?" Financial Statement Analysis

## Solutions to Questions

**17-1** Horizontal analysis involves examining how a particular item on a financial statement such as sales revenues behaves over time. Vertical analysis involves analysis of items on an income statement or balance sheet for a single year. In vertical analysis, all the items on the financial statement are stated as a percentage of a single item such as sales revenues or total assets.

**17-2** By looking at trends, an analyst hopes to get some idea of whether a situation is improving, remaining the same, or deteriorating. Such analyses can provide insight into what is likely to happen in the future. Rather than looking at trends, an analyst may compare one company to another or to industry averages using common-size financial statements.

**17-3** Price-earnings ratios are influenced by how investors see a firm's future prospects. Current reported earnings are generally considered to be useful only so far as they can assist investors in judging what will happen in the future. For this reason, two firms might have the same current earnings, but one might have a much higher price-earnings ratio if investors believe it has superior future prospects. In some cases, firms with very small current earnings enjoy very high price-earnings ratios. This is simply because investors view these firms as having very favorable prospects for earnings in future years. By definition, a stock with current earnings of $4 and a price-earnings ratio of 20 would be selling for $80 per share.

**17-4** A company in a rapidly growing technological industry probably would have many opportunities to invest its earnings at a high rate of return; thus, one would expect it to have a low dividend payout ratio.

**17-5** The dividend yield is the return on an investment from simply collecting dividends. The other source of return on an investment is increases in market value. The dividend yield is computed by dividing the dividend per share by the current market price per share of common stock.

**17-6** Financial leverage results from borrowing funds at an interest rate that differs from the rate of return on assets acquired using those funds. If the rate of return on the assets is higher than the interest rate at which the funds were borrowed, financial leverage is positive and stockholders gain. If the return on the assets is lower than the interest rate, then financial leverage is negative and the stockholders lose.

**17-7** How a stockholder would feel would depend in large part on the stability of the firm and its industry. If the firm is in an industry that experiences wide fluctuations in earnings, then stockholders might be very pleased that no interest-paying debt exists in the firm's capital structure. In hard times, interest payments might be very difficult to meet, or earnings might be so poor that negative leverage would result.

On the other hand, firms with stable earnings that do not take on interest-paying debt may be shortchanging their stockholders. If the assets in which debt sources of funds are invested can earn at a rate greater than the cost of the debt, then the stockholders can enjoy the benefits of positive leverage. In rapidly expanding industries, profits are often very good, thereby minimizing the possibility of

negative leverage. A company with reasonable prospects for good earnings that will not take on interest-bearing debt also places heavy limitations on its own ability to grow, due to the fact that its sources of new investment funds will be limited to current earnings and new issues of stock.

**17-8** It is more difficult to obtain positive financial leverage from preferred stock than from long-term debt due to the fact that interest on long-term debt is tax deductible, whereas dividends paid on preferred stock are not tax deductible.

**17-9** No, the stock is not necessarily overpriced. Book value represents the cumulative effects on the balance sheet of past activities, evaluated using historical prices. The market value of the stock reflects investors' beliefs about the company's future earning prospects. For most companies market value exceeds book value because investors anticipate future growth in earnings.

**17-10** The current ratio would probably be highest during January, when both current assets and current liabilities are at a minimum. During peak operating periods, current liabilities generally include short-term borrowings that are used to temporarily finance inventories and receivables. As the peak periods end, these short-term borrowings are paid off, thereby enhancing the current ratio.

**17-11** A 2-to-1 current ratio might not be adequate for several reasons. First, the composition of the current assets may be heavily weighted toward slow-turning inventory, or the inventory may consist of large amounts of obsolete goods. Second, the receivables may be large and of doubtful collectibility, or the receivables may be turning very slowly due to poor collection procedures.

**Exercise 17-1** (15 minutes)

1.

| | *2002* | *2001* |
|---|---|---|
| Sales | 100.0% | 100.0% |
| Less cost of goods sold | 63.2 | 60.0 |
| Gross margin | 36.8 | 40.0 |
| Selling expenses | 18.0 | 17.5 |
| Administrative expenses | 13.6 | 14.6 |
| Total expenses | 31.6 | 32.1 |
| Net operating income | 5.2 | 7.9 |
| Interest expense | 1.4 | 1.0 |
| Net income before taxes | 3.8% | 6.9% |

2. The company's major problem seems to be the increase in cost of goods sold, which increased from 60.0% of sales in 2001 to 63.2% of sales in 2002. This suggests that the company is not passing the increases in costs of its products on to its customers. As a result, cost of goods sold as a percentage of sales has increased and gross margin has decreased. Selling expenses and interest expense have both increased slightly during the year, which suggests that costs generally are going up in the company. The only exception is the administrative expenses, which have decreased from 14.6% of sales in 2001 to 13.6% of sales in 2002. This probably is a result of the company's efforts to reduce administrative expenses during the year.

**Exercise 17-2** (15 minutes)

1. Current assets
   ($80,000 + $460,000 + $750,000 + $10,000) ..... $1,300,000
   Current liabilities ($1,300,000 ÷ 2.5) ..... 520,000
   Working capital ..... $ 780,000

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

$$= \frac{\$80,000 + \$0 + \$460,000}{\$520,000} = 1.04 \text{ to } 1 \text{ (rounded)}$$

3. a. Working capital would not be affected:

| | |
|---|---|
| Current assets ($1,300,000 – $100,000) ..... | $1,200,000 |
| Current liabilities ($520,000 – $100,000)..... | 420,000 |
| Working capital..... | $ 780,000 |

   b. The current ratio would rise:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$= \frac{\$1,200,000}{\$420,000} = 2.9 \text{ to } 1 \text{ (rounded)}$$

**Exercise 17-3** (20 minutes)

1. Return on total assets:

$$\text{Return on total assets} = \frac{\text{Net income} + \left[\text{Interest expense} \times (1\text{-Tax rate})\right]}{\text{Average total assets}}$$

$$= \frac{\$470{,}000 + \left[\$90{,}000 \times (1 - 0.30)\right]}{1/2\ (\$5{,}000{,}000 + \$4{,}800{,}000)}$$

$$= \frac{\$533{,}000}{\$4{,}900{,}000} = 10.9\% \text{ (rounded)}$$

2. Return on common stockholders' equity:

| | |
|---|---|
| Net income as reported | $ 470,000 |
| Less preferred dividends: 7% × $800,000 | 56,000 |
| Net income remaining for common (a) | $ 414,000 |
| Average stockholders' equity: | |
| 1/2 ($3,100,000 + $2,900,000) | $3,000,000 |
| Less average preferred stock | 800,000 |
| Average common stockholders' equity (b) | $2,200,000 |
| Return on common stockholders' equity (a) ÷ (b) | 18.8% (rounded) |

3. The company has positive financial leverage, since the return on common stockholders' equity (18.8%) is greater than the return on total assets (10.9%). This positive leverage arises from the long-term debt, which has an after-tax interest cost of only 8.4% [12% interest rate × (1 – 0.30)], and the preferred stock, which carries a dividend rate of only 7%. Both of these figures are smaller than the return that the company is earning on its total assets; thus, the difference goes to the common stockholders.

**Exercise 17-4** (30 minutes)

1. Gross margin percentage:

$$\frac{\text{Gross margin}}{\text{Sales}} = \frac{\$840{,}000}{\$2{,}100{,}000} = 40\%$$

2. Current ratio:

$$\frac{\text{Current assets}}{\text{Current liabilities}} = \frac{\$490{,}000}{\$200{,}000} = 2.45 \text{ to } 1$$

3. Acid-test ratio:

$$\frac{\text{Quick assets}}{\text{Current liabilities}} = \frac{\$181{,}000}{\$200{,}000} = 0.91 \text{ to } 1 \text{ (rounded)}$$

4. Accounts receivable turnover:

$$\frac{\text{Sales}}{\text{Average accounts receivable}} = \frac{\$2{,}100{,}000}{\$150{,}000} = 14 \text{ times}$$

$$\frac{365 \text{ days}}{14 \text{ times}} = 26.1 \text{ days (rounded)}$$

5. Inventory turnover:

$$\frac{\text{Cost of goods sold}}{\text{Average inventory}} = \frac{\$1{,}260{,}000}{\$280{,}000} = 4.5 \text{ times}$$

$$\frac{365 \text{ days}}{4.5 \text{ times}} = 81.1 \text{ days to turn (rounded)}$$

6. Debt-to-equity ratio:

$$\frac{\text{Total liabilities}}{\text{Total stockholders' equity}} = \frac{\$500{,}000}{\$800{,}000} = 0.63 \text{ to } 1 \text{ (rounded)}$$

7. Times interest earned:

$$\frac{\text{Earnings before interest and income taxes}}{\text{Interest expense}} = \frac{\$180{,}000}{\$30{,}000} = 6.0 \text{ times}$$

**Exercise 17-4** (continued)

8. Book value per share:

$$\frac{\text{Stockholders' equity}}{\text{Common shares outstanding}} = \frac{\$800{,}000}{20{,}000 \text{ shares}^*} = \$40 \text{ per share}$$

*$100,000 total par value ÷ $5 par value per share = 20,000 shares

**Exercise 17-5** (20 minutes)

1. Earnings per share:

$$\frac{\text{Net income to common stock}}{\text{Average common shares outstanding}} = \frac{\$105{,}000}{20{,}000 \text{ shares}} = \$5.25 \text{ per share}$$

2. Dividend payout ratio:

$$\frac{\text{Dividends paid per share}}{\text{Earnings per share}} = \frac{\$3.15}{\$5.25} = 60\%$$

3. Dividend yield ratio:

$$\frac{\text{Dividends paid per share}}{\text{Market price per share}} = \frac{\$3.15}{\$63.00} = 5\%$$

4. Price-earnings ratio:

$$\frac{\text{Market price per share}}{\text{Earnings per share}} = \frac{\$63.00}{\$5.25} = 12.0$$

**Exercise 17-6** (20 minutes)

1. Return on total assets:

$$\text{Return on total assets} = \frac{\text{Net income} + \left[\text{Interest expense} \times (1 - \text{Tax rate})\right]}{\text{Average total assets}}$$

$$= \frac{\$105{,}000 + \left[\$30{,}000 \times (1 - 0.30)\right]}{1/2\ (\$1{,}100{,}000 + \$1{,}300{,}000)}$$

$$= \frac{\$126{,}000}{\$1{,}200{,}000} = 10.5\%$$

2. Return on common stockholders' equity:

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

$$= \frac{\$105{,}000}{1/2\ (\$725{,}000 + \$800{,}000)}$$

$$= \frac{\$105{,}000}{\$762{,}500} = 13.8\% \text{ (rounded)}$$

3. Financial leverage was positive, since the rate of return to the common stockholders (13.8%) was greater than the rate of return on total assets (10.5%). This positive leverage is traceable in part to the company's current liabilities, which may carry no interest cost, and to the bonds payable, which have an after-tax interest cost of only 7%.

   10% interest rate × (1 – 0.30) = 7% after-tax cost.

**Exercise 17-7** (15 minutes)

1. The trend percentages are:

| | *Year 5* | *Year 4* | *Year 3* | *Year 2* | *Year 1* |
|---|---|---|---|---|---|
| Sales | 125.0 | 120.0 | 110.0 | 105.0 | 100.0 |
| Cash | 80.0 | 90.0 | 105.0 | 110.0 | 100.0 |
| Accounts receivable | 140.0 | 124.0 | 108.0 | 104.0 | 100.0 |
| Inventory | 112.0 | 110.0 | 102.0 | 108.0 | 100.0 |
| Total current assets | 118.8 | 113.1 | 104.1 | 106.9 | 100.0 |
| Current liabilities | 130.0 | 106.0 | 108.0 | 110.0 | 100.0 |

2. Sales: The sales are increasing at a steady rate, with a particularly strong gain in Year 4.

   Assets: Cash declined from Year 3 through Year 5. This may have been due to the growth in both inventories and accounts receivable. In particular, the accounts receivable grew far faster than sales in Year 5. The decline in cash may reflect delays in collecting receivables. This is a matter for management to investigate further.

   Liabilities: The current liabilities jumped up in Year 5. This was probably due to the buildup in accounts receivable in that the company doesn't have the cash needed to pay bills as they come due.

**Problem 17-8** (30 minutes)

1. Net income to the common stockholders:

| | *Method A* | *Method B* | *Method C* |
|---|---|---|---|
| Income before interest and taxes | $100,000 | $100,000 | $100,000 |
| Deduct interest expense: | | | |
| 10% × $250,000 | | | 25,000 |
| Income before taxes | 100,000 | 100,000 | 75,000 |
| Deduct income taxes (30%) | 30,000 | 30,000 | 22,500 |
| Net income | 70,000 | 70,000 | 52,500 |
| Deduct preferred dividends: | | | |
| 10% × $250,000 | | 25,000 | |
| Net income remaining for common stockholders | $ 70,000 | $ 45,000 | $ 52,500 |

2. Return on common equity:

| | | | |
|---|---|---|---|
| Net income remaining for common stockholders (a) | $70,000 | $45,000 | $52,500 |
| Common stockholders' investment (b) | $500,000 | $250,000 | $250,000 |
| Return on common equity (a) ÷ (b) | 14% | 18% | 21% |

3. Methods B and C provide a greater return on common equity than Method A because of the effect of positive leverage in the company. Methods B and C each contain sources of funds that require a fixed annual return on the funds provided. Apparently, this fixed annual cost is less than what is being earned on the assets in the company, with the difference going to the common stockholders.

   Method C, which involves the use of debt, provides more leverage than Method B, which involves the use of preferred stock, due to the fact that the interest on the debt is tax deductible, whereas the dividends on the preferred stock are not.

**Problem 17-9** (30 minutes)

1. a. Computation of working capital:

| | |
|---|---|
| Current assets: | |
| Cash | $ 70,000 |
| Marketable securities | 12,000 |
| Accounts receivable, net | 350,000 |
| Inventory | 460,000 |
| Prepaid expenses | 8,000 |
| Total current assets | 900,000 |
| Current liabilities: | |
| Accounts payable | 200,000 |
| Accrued liabilities | 60,000 |
| Notes due in one year | 100,000 |
| Total current liabilities | 360,000 |
| Working capital | $540,000 |

b. Computation of the current ratio:

$$\frac{\text{Current assets}}{\text{Current liabilities}} = \frac{\$900,000}{\$360,000} = 2.5 \text{ to } 1$$

c. Computation of the acid-test ratio:

$$\frac{\text{Cash, Marketable securities, Accounts receivable}}{\text{Current liabilities}} = \frac{\$432,000}{\$360,000} = 1.2 \text{ to } 1$$

**Problem 17-9** (continued)

2.

| Transaction | *The Effect on Working Capital* | *Current Ratio* | *Acid-Test Ratio* |
|---|---|---|---|
| (a) Declared a cash dividend | Decrease | Decrease | Decrease |
| (b) Paid accounts payable | None | Increase | Increase |
| (c) Collected cash on accounts receivable | None | None | None |
| (d) Purchased equipment for cash | Decrease | Decrease | Decrease |
| (e) Paid a cash dividend previously declared | None | Increase | Increase |
| (f) Borrowed cash on a short-term note | None | Decrease | Decrease |
| (g) Sold inventory at a profit | Increase | Increase | Increase |
| (h) Wrote off uncollectible accounts | None | None | None |
| (i) Sold marketable securities at a loss | Decrease | Decrease | Decrease |
| (j) Issued capital stock for cash | Increase | Increase | Increase |
| (k) Paid off short-term notes | None | Increase | Increase |

**Problem 17-10** (60 minutes)

| | | *This Year* | *Last Year* |
|---|---|---|---|
| 1. a. | Current assets | $2,060,000 | $1,470,000 |
| | Current liabilities | 1,100,000 | 600,000 |
| | Working capital | $ 960,000 | $ 870,000 |
| b. | Current assets (a) | $2,060,000 | $1,470,000 |
| | Current liabilities (b) | $1,100,000 | $600,000 |
| | Current ratio (a) ÷ (b) | 1.87 to 1 | 2.45 to 1 |
| c. | Quick assets (a) | $740,000 | $650,000 |
| | Current liabilities (b) | $1,100,000 | $600,000 |
| | Acid-test ratio (a) ÷ (b) | 0.67 to 1 | 1.08 to 1 |
| d. | Sales on account (a) | $7,000,000 | $6,000,000 |
| | Average receivables (b) | $525,000 | $375,000 |
| | Turnover of receivables (a) ÷ (b) | 13.3 times | 16.0 times |
| | Average age of receivables: 365 ÷ turnover | 27.4 days | 22.8 days |
| e. | Cost of goods sold (a) | $5,400,000 | $4,800,000 |
| | Average inventory (b) | $1,050,000 | $760,000 |
| | Inventory turnover (a) ÷ (b) | 5.1 times | 6.3 times |
| | Turnover in days: 365 ÷ turnover | 71.6 days | 57.9 days |
| f. | Total liabilities (a) | $1,850,000 | $1,350,000 |
| | Stockholders' equity (b) | $2,150,000 | $1,950,000 |
| | Debt-to-equity ratio (a) ÷ (b) | 0.86 to 1 | 0.69 to 1 |
| g. | Net income before interest and taxes (a) | $630,000 | $490,000 |
| | Interest expense (b) | $90,000 | $90,000 |
| | Times interest earned (a) ÷ (b) | 7.0 times | 5.4 times |

**Problem 17-10** (continued)

2. a.

MODERN BUILDING SUPPLY
Common-Size Balance Sheets

| | *This Year* | *Last Year* |
|---|---|---|
| Current assets: | | |
| Cash | 2.3% | 6.1% |
| Marketable securities | 0.0 | 1.5 |
| Accounts receivable, net | 16.3 | 12.1 |
| Inventory | 32.5 | 24.2 |
| Prepaid expenses | 0.5 | 0.6 |
| Total current assets | 51.5 | 44.5 |
| Plant and equipment, net | 48.5 | 55.5 |
| Total assets | 100.0% | 100.0% |
| Liabilities: | | |
| Current liabilities | 27.5% | 18.2% |
| Bonds payable, 12% | 18.8 | 22.7 |
| Total liabilities | 46.3 | 40.9 |
| Stockholders' equity: | | |
| Preferred stock, $50 par, 8% | 5.0 | 6.1 |
| Common stock, $10 par | 12.5 | 15.2 |
| Retained earnings | 36.3 | 37.9 |
| Total stockholders' equity | 53.8 | 59.1 |
| Total liabilities and equity | 100.0% | 100.0% |

Note: Columns do not total down in all cases due to rounding.

**Problem 17-10** (continued)

b.

MODERN BUILDING SUPPLY
Common-Size Income Statements

| | *This Year* | *Last Year* |
|---|---|---|
| Sales | 100.0% | 100.0% |
| Less cost of goods sold | 77.1 | 80.0 |
| Gross margin | 22.9 | 20.0 |
| Less operating expenses | 13.9 | 11.8 |
| Net operating income | 9.0 | 8.2 |
| Less interest expense | 1.3 | 1.5 |
| Net income before taxes | 7.7 | 6.7 |
| Less income taxes | 3.1 | 2.7 |
| Net income | 4.6% | 4.0% |

3. The following points can be made from the analytical work in parts (1) and (2) above:

   The company has improved its profit margin from last year. This is attributable to an increase in gross margin, which is offset somewhat by an increase in operating expenses. In both years the company's net income as a percentage of sales equals or exceeds the industry average of 4%.

   Although the company's working capital has increased, its current position actually has deteriorated significantly since last year. Both the current ratio and the acid-test ratio are well below the industry average, and both are trending downward. (This shows the importance of not just looking at the working capital in assessing the financial strength of a company.) Given the present trend, it soon will be impossible for the company to pay its bills as they come due.

**Problem 17-10** (continued)

The drain on the cash account seems to be a result mostly of a large buildup in accounts receivable and inventory. This is evident both from the common-size balance sheet and from the financial ratios. Notice that the average age of the receivables has increased by 5 days since last year, and that it is now 9 days over the industry average. Many of the company's customers are not taking their discounts, since the average collection period is 27 days and collection terms are 2/10, n/30. This suggests financial weakness on the part of these customers, or sales to customers who are poor credit risks. Perhaps the company has been too aggressive in expanding its sales.

The inventory turned only 5 times this year as compared to over 6 times last year. It takes three weeks longer for the company to turn its inventory than the average for the industry (71 days as compared to 50 days for the industry). This suggests that inventory stocks are higher than they need to be.

In the authors' opinion, the loan should be approved on the condition that the company take immediate steps to get its accounts receivable and inventory back under control. This would mean more rigorous checks of creditworthiness before sales are made and perhaps paring out of slow paying customers. It would also mean a sharp reduction of inventory levels to a more manageable size. If these steps are taken, it appears that sufficient funds could be generated to repay the loan in a reasonable period of time.

**Problem 17-11** (60 minutes)

1. a.

| | *This Year* | *Last Year* |
|---|---|---|
| Net income | $324,000 | $240,000 |
| Less preferred dividends | 16,000 | 16,000 |
| Net income remaining for common (a) | $308,000 | $224,000 |
| Average number of common shares (b) | 50,000 | 50,000 |
| Earnings per share (a) ÷ (b) | $6.16 | $4.48 |

| | | |
|---|---|---|
| b. Common dividend per share (a)* | $2.16 | $1.20 |
| Market price per share (b) | $45.00 | $36.00 |
| Dividend yield ratio (a) ÷ (b) | 4.8% | 3.33% |

*$108,000 ÷ 50,000 shares = $2.16;
$60,000 ÷ 50,000 shares = $1.20

| | | |
|---|---|---|
| c. Common dividend per share (a) | $2.16 | $1.20 |
| Earnings per share (b) | $6.16 | $4.48 |
| Dividend payout ratio (a) ÷ (b) | 35.1% | 26.8% |

| | | |
|---|---|---|
| d. Market price per share (a) | $45.00 | $36.00 |
| Earnings per share (b) | $6.16 | $4.48 |
| Price-earnings ratio (a) ÷ (b) | 7.3 | 8.0 |

Investors regard Modern Building Supply less favorably than other firms in the industry. This is evidenced by the fact that they are willing to pay only 7.3 times current earnings for a share of the company's stock, as compared to 9 times current earnings for the average of all stocks in the industry. If investors were willing to pay 9 times current earnings for Modern Building Supply's stock, then it would be selling for about $55 per share (9 × $6.16), rather than for only $45 per share.

**Problem 17-11** (continued)

e.

| | *This Year* | *Last Year* |
|---|---|---|
| Stockholders' equity | $2,150,000 | $1,950,000 |
| Less preferred stock | 200,000 | 200,000 |
| Common stockholders' equity (a) | $1,950,000 | $1,750,000 |
| Number of common shares (b) | 50,000 | 50,000 |
| Book value per share (a) ÷ (b) | $39.00 | $35.00 |

A market price in excess of book value does not mean that the price of a stock is too high. Market value is an indication of investors' perceptions of future earnings and/or dividends, whereas book value is a result of already completed transactions and is geared to the past.

2. a.

| | *This Year* | *Last Year* |
|---|---|---|
| Net income | $ 324,000 | $ 240,000 |
| Add after-tax cost of interest paid: [$90,000 × (1 – 0.40)] | 54,000 | 54,000 |
| Total (a) | $ 378,000 | $ 294,000 |
| Average total assets (b) | $3,650,000 | $3,000,000 |
| Return on total assets (a) ÷ (b) | 10.4% | 9.8% |

b.

| | *This Year* | *Last Year* |
|---|---|---|
| Net income | $ 324,000 | $ 240,000 |
| Less preferred dividends | 16,000 | 16,000 |
| Net income remaining for common stockholders (a) | $ 308,000 | $ 224,000 |
| Average total stockholders' equity* | $2,050,000 | $1,868,000 |
| Less average preferred stock | 200,000 | 200,000 |
| Average common stockholders' equity (b) | $1,850,000 | $1,668,000 |

*1/2($2,150,000 + $1,950,000); 1/2($1,950,000 + $1,786,000).

| | | |
|---|---|---|
| Return on common equity (a) ÷ (b) | 16.6% | 13.4% |

**Problem 17-11** (continued)

c. Financial leverage is positive in both years, since the return on common equity is greater than the return on total assets. This positive financial leverage is due to three factors: the preferred stock, which has a dividend of only 8%; the bonds, which have an after-tax interest cost of only 7.2% [12% interest rate × (1 – 0.40) = 7.2%]; and the accounts payable, which may bear no interest cost.

3. We would recommend keeping the stock. The stock's downside risk seems small, since it is selling for only 7.3 times current earnings as compared to 9 times earnings for the average firm in the industry. In addition, its earnings are strong and trending upward, and its return on common equity (16.6%) is extremely good. Its return on total assets (10.4%) compares favorably with that of the industry.

   The risk, of course, is whether the company can get its cash problem under control. Conceivably, the cash problem could worsen, leading to an eventual reduction in profits through inability to operate, a reduction in dividends, and a precipitous drop in the market price of the company's stock. This does not seem likely, however, since the company can easily control its cash problem through more careful management of accounts receivable and inventory. If this problem is brought under control, the price of the stock could rise sharply over the next few years, making it an excellent investment.

**Problem 17-12** (90 minutes)

1. a.

| | *This Year* | *Last Year* |
|---|---|---|
| Net income | $ 280,000 | $ 168,000 |
| Add after-tax cost of interest: | | |
| $120,000 × (1 – 0.30) | 84,000 | |
| $100,000 × (1 – 0.30) | | 70,000 |
| Total (a) | $ 364,000 | $ 238,000 |
| Average total assets (b) | $5,330,000 | $4,640,000 |
| Return on total assets (a) ÷ (b) | 6.8% | 5.1% |

b.

| | | |
|---|---|---|
| Net income | $ 280,000 | $ 168,000 |
| Less preferred dividends | 48,000 | 48,000 |
| Net income remaining for common (a) | $ 232,000 | $ 120,000 |
| Average total stockholders' equity | $3,120,000 | $3,028,000 |
| Less average preferred stock | 600,000 | 600,000 |
| Average common equity (b) | $2,520,000 | $2,428,000 |
| Return on common equity (a) ÷ (b) | 9.2% | 4.9% |

c. Leverage is positive for this year, since the return on common equity (9.2%) is greater than the return on total assets (6.8%). For last year, leverage is negative since the return on the common equity (4.9%) is less than the return on total assets (5.1%).

2. a.

| | | |
|---|---|---|
| Net income remaining for common (a) | $ 232,000 | $ 120,000 |
| Average number of common shares (b) | 50,000 | 50,000 |
| Earnings per share (a) ÷ (b) | $4.64 | $2.40 |

b.

| | | |
|---|---|---|
| Common dividend per share (a) | $1.44 | $0.72 |
| Market price per share (b) | $36.00 | $20.00 |
| Dividend yield ratio (a) ÷ (b) | 4.0% | 3.6% |

**Problem 17-12** (continued)

| | *This Year* | *Last Year* |
|---|---|---|
| c. Common dividend per share (a) | $1.44 | $0.72 |
| Earnings per share (b) | $4.64 | $2.40 |
| Dividend payout ratio (a) ÷ (b) | 31.0% | 30.0% |
| d. Market price per share (a) | $36.00 | $20.00 |
| Earnings per share (b) | $4.64 | $2.40 |
| Price-earnings ratio (a) ÷ (b) | 7.8 | 8.3 |

Notice from the data given in the problem that the average P/E ratio for companies in Hedrick's industry is 10. Since Hedrick Company presently has a P/E ratio of only 7.8, investors appear to regard it less well than they do other companies in the industry. That is, investors are willing to pay only 7.8 times current earnings for a share of Hedrick Company's stock, as compared to 10 times current earnings for a share of stock for the average company in the industry.

| | | |
|---|---|---|
| e. Stockholders' equity | $3,200,000 | $3,040,000 |
| Less preferred stock | 600,000 | 600,000 |
| Common stockholders' equity (a) | $2,600,000 | $2,440,000 |
| Number of common shares (b) | 50,000 | 50,000 |
| Book value per share (a) ÷ (b) | $52.00 | $48.80 |

Note that the book value of Hedrick Company's stock is greater than the market value for both years. This does not necessarily indicate that the stock is selling at a bargain price. Market value is an indication of investors' perceptions of future earnings and/or dividends, whereas book value is a result of already completed transactions and is geared to the past.

| | | |
|---|---|---|
| f. Gross margin (a) | $1,050,000 | $860,000 |
| Sales (b) | $5,250,000 | $4,160,000 |
| Gross margin percentage (a) ÷ (b) | 20.0% | 20.7% |

**Problem 17-12** (continued)

| 3. a. | *This Year* | *Last Year* |
|---|---|---|
| Current assets | $2,600,000 | $1,980,000 |
| Current liabilities | 1,300,000 | 920,000 |
| Working capital | $1,300,000 | $1,060,000 |
| b. Current assets (a) | $2,600,000 | $1,980,000 |
| Current liabilities (b) | $1,300,000 | $920,000 |
| Current ratio (a) ÷ (b) | 2.0 to 1 | 2.15 to 1 |
| c. Quick assets (a) | $1,220,000 | $1,120,000 |
| Current liabilities (b) | $1,300,000 | $920,000 |
| Acid-test ratio (a) ÷ (b) | 0.94 to 1 | 1.22 to 1 |
| d. Sales on account (a) | $5,250,000 | $4,160,000 |
| Average receivables (b) | $750,000 | $560,000 |
| Accounts receivable turnover (a) ÷ (b) | 7.0 times | 7.4 times |
| Average age of receivables, 365 ÷ turnover | 52 days | 49 days |
| e. Cost of goods sold (a) | $4,200,000 | $3,300,000 |
| Average inventory (b) | $1,050,000 | $720,000 |
| Inventory turnover (a) ÷ (b) | 4.0 times | 4.6 times |
| Number of days to turn inventory, 365 days ÷ turnover (rounded) | 91 days | 79 days |
| f. Total liabilities (a) | $2,500,000 | $1,920,000 |
| Stockholders' equity (b) | $3,200,000 | $3,040,000 |
| Debt-to-equity ratio (a) ÷ (b) | 0.78 to 1 | 0.63 to 1 |
| g. Net income before interest and taxes (a) | $520,000 | $340,000 |
| Interest expense (b) | $120,000 | $100,000 |
| Times interest earned (a) ÷ (b) | 4.3 times | 3.4 times |

**Problem 17-12** (continued)

4. As stated by Marva Rossen, both net income and sales are up from last year. The return on total assets has improved from 5.1% last year to 6.8% this year, and the return on common equity is up to 9.2% from 4.9% the year before. But this appears to be the only bright spot in the company's operating picture. Virtually all other ratios are below the industry average, and, more important, they are trending downward. The deterioration in the gross margin percentage, while not large, is worrisome. Sales and inventories have increased substantially, which should ordinarily result in an improvement in the gross margin percentage as fixed costs are spread over more units. However, the gross margin percentage has declined.

   Notice particularly that the average age of receivables has lengthened to 52 days—about three weeks over the industry average—and that the inventory turnover is 50% longer than the industry average. One wonders if the increase in sales was obtained at least in part by extending credit to high-risk customers. Also notice that the debt-to-equity ratio is rising rapidly. If the $1,000,000 loan is granted, the ratio will rise further to 1.09 to 1.

   In our opinion, what the company needs is more equity—not more debt. Therefore, the loan should not be approved. The company should be encouraged to make another issue of common stock in order to provide a broader equity base on which to operate.

**Problem 17-13** (30 minutes)

1.

HEDRICK COMPANY
Comparative Balance Sheets

| | *This Year* | *Last Year* |
|---|---|---|
| Current assets: | | |
| Cash | 5.6% | 8.5% |
| Marketable securities | 0.0 | 2.0 |
| Accounts receivable, net | 15.8 | 12.1 |
| Inventory | 22.8 | 16.1 |
| Prepaid expenses | 1.4 | 1.2 |
| Total current assets | 45.6 | 39.9 |
| Plant and equipment, net | 54.4 | 60.1 |
| Total assets | 100.0% | 100.0% |
| Current liabilities | 22.8% | 18.5% |
| Bonds payable, 10% | 21.1 | 20.2 |
| Total liabilities | 43.9 | 38.7 |
| Stockholders' equity: | | |
| Preferred stock, 8%, $30 par value | 10.5 | 12.1 |
| Common stock, $40 par value | 35.1 | 40.3 |
| Retained earnings | 10.5 | 8.9 |
| Total stockholders' equity | 56.1 | 61.3 |
| Total liabilities and equity | 100.0% | 100.0% |

Note: Columns do not total down in all cases due to rounding.

**Problem 17-13** (continued)

2.

HEDRICK COMPANY
Comparative Income Statements

| | *This Year* | *Last Year* |
|---|---|---|
| Sales | 100.0% | 100.0% |
| Less cost of goods sold | 80.0 | 79.3 |
| Gross margin | 20.0 | 20.7 |
| Less operating expenses | 10.1 | 12.5 |
| Net operating income | 9.9 | 8.2 |
| Less interest expense | 2.3 | 2.4 |
| Net income before taxes | 7.6 | 5.8 |
| Less income taxes (30%) | 2.3 | 1.7 |
| Net income | 5.3% | 4.0%* |

*Column does not total down due to rounding.

3. The company's current position has declined substantially between the two years. Cash this year represents only 5.6% of total assets, whereas it represented 10.5% last year (Cash + Marketable Securities). In addition, both accounts receivable and inventory are up from last year, which helps to explain the decrease in the Cash account. The company is building inventories, but not collecting from customers. (See Problem 17-12 for a ratio analysis of the current assets.) Apparently part of the financing required to build inventories was supplied by short-term creditors, as evidenced by the increase in current liabilities.

   Looking at the income statement, as noted in the solution to the preceding problem, the gross margin percentage has deteriorated. Ordinarily, the increase in sales (and in inventories) should have resulted in an increase in the gross margin percentage since fixed manufacturing costs would be spread across more units. Note that the other operating expenses are down as a percentage of sales—possibly because of the existence of fixed operating expenses.

**Problem 17-14** (30 minutes)

a. The market price is going down. The dividends paid per share over the three-year period are unchanged, but the dividend yield is going up. Therefore, the market price per share of stock must be decreasing.

b. The amount of earnings per share is increasing. Again, the dividends paid per share have remained constant. However, the dividend payout ratio is decreasing. In order for the dividend payout ratio to be decreasing, the earnings per share must be increasing.

c. The price-earnings ratio is going down. If the market price of the stock is going down [see part (a) above], and the earnings per share are going up [see part (b) above], then the price-earnings ratio must be decreasing.

d. In Year 1, leverage was negative since in that year the return on total assets exceeded the return on common equity. In Year 2 and in Year 3, leverage was positive since in those years the return on common equity exceeded the return on total assets employed.

e. It is becoming more difficult for the company to pay its bills as they come due. Although the current ratio has improved over the three years, the acid-test ratio is down. Also notice that the accounts receivable and inventory are both turning more slowly, indicating that an increasing portion of the current assets is being made up of those items, from which bills cannot be paid.

f. Customers are paying their bills more slowly in Year 3 than in Year 1. This is evidenced by the decline in accounts receivable turnover.

g. The total of accounts receivable is increasing. This is evidenced both by a slowdown in turnover and in an increase in total sales.

h. The level of inventory undoubtedly is increasing. Notice that the inventory turnover is decreasing. Even if sales (and cost of goods sold) just remained constant, this would be evidence of a larger average inventory on hand. However, sales are not constant but rather are increasing. With sales increasing (and undoubtedly cost of goods sold also increasing), the average level of inventory must be increasing as well in order to service the larger volume of sales.

**Problem 17-15** (45 minutes)

| | | |
|---|---|---|
| 1. | Decrease | Sale of inventory at a profit will be reflected in an increase in retained earnings, which is part of stockholders' equity. An increase in stockholders' equity will result in a decrease in the ratio of assets provided by creditors as compared to assets provided by owners. |
| 2. | No effect | Purchasing land for cash has no effect on earnings or on the number of shares of common stock outstanding. One asset is exchanged for another. |
| 3. | Increase | A sale of inventory on account will increase the quick assets (cash, accounts receivable, marketable securities) but have no effect on the current liabilities. For this reason, the acid-test ratio will increase. |
| 4. | No effect | Payments on account reduce cash and accounts payable by equal amounts; thus, the net amount of working capital is not affected. |
| 5. | Decrease | When a customer pays a bill, the accounts receivable balance is reduced. This increases the accounts receivable turnover, which in turn decreases the average collection period. |
| 6. | Decrease | Declaring a cash dividend will increase current liabilities, but have no effect on current assets. Therefore, the current ratio will decrease. |
| 7. | Increase | Payment of a previously declared cash dividend will reduce both current assets and current liabilities by the same amount. An equal reduction in both current assets and current liabilities will always result in an increase in the current ratio, so long as the current assets exceed the current liabilities. |
| 8. | No effect | Book value per share is not affected by the current market price of the company's stock. |

**Problem 17-15** (continued)

| | | |
|---|---|---|
| 9. | Decrease | The dividend yield ratio is obtained by dividing the dividend per share by the market price per share. If the dividend per share remains unchanged and the market price goes up, then the yield will decrease. |
| 10. | Increase | Selling property for a profit would increase net income and therefore the return on total assets would increase. |
| 11. | Increase | A write-off of inventory will reduce the inventory balance, thereby increasing the turnover in relation to a given level of cost of goods sold. |
| 12. | Increase | Since the company's assets earn at a rate that is higher than the rate paid on the bonds, leverage is positive, increasing the return to the common stockholders. |
| 13. | No effect | Changes in the market price of a stock have no direct effect on the dividends paid or on the earnings per share and therefore have no effect on this ratio. |
| 14. | Decrease | A decrease in net income would mean less income available to cover interest payments. Therefore, the times-interest-earned ratio would decrease. |
| 15. | No effect | Write-off of an uncollectible account against the Allowance for Bad Debts will have no effect on total current assets. For this reason, the current ratio will remain unchanged. |
| 16. | Decrease | A purchase of inventory on account will increase current liabilities, but will not increase the quick assets (cash, accounts receivable, marketable securities). Therefore, the ratio of quick assets to current liabilities will decrease. |
| 17. | Increase | The price-earnings ratio is obtained by dividing the market price per share by the earnings per share. If the earnings per share remains unchanged, and the market price goes up, then the price-earnings ratio will increase. |
| 18. | Decrease | Payments to creditors will reduce the total liabilities of a company, thereby decreasing the ratio of total debt to total equity. |

**Problem 17-16** (60 minutes)

1.

| | *This Year* | *Last Year* |
|---|---|---|
| a. Net income | $ 525,000 | $ 420,000 |
| Less preferred dividends | 60,000 | 60,000 |
| Net income remaining for common (a) | $ 465,000 | $ 360,000 |
| Average common shares outstanding* (b) | 100,000 | 100,000 |
| Earnings per share (a) ÷ (b) | $4.65 | $3.60 |

*$500,000 total par value ÷ $5 par value per share = 100,000 shares

| | | |
|---|---|---|
| b. Cash dividends per share* (a) | $1.80 | $1.40 |
| Market price per share (b) | $60.00 | $45.00 |
| Dividend yield ratio (a) ÷ (b) | 3.0% | 3.1% |

*Last Year: $140,000 ÷ 100,000 shares = $1.40 per share;
This Year: $180,000 ÷ 100,000 shares = $1.80 per share

| | | |
|---|---|---|
| c. Cash dividends per share (a) | $1.80 | $1.40 |
| Earnings per share (b) | $4.65 | $3.60 |
| Dividend payout ratio (a) ÷ (b) | 38.7% | 38.9% |

| | | |
|---|---|---|
| d. Market price per share (a) | $60.00 | $45.00 |
| Earnings per share (b) | $4.65 | $3.60 |
| Price-earnings ratio (a) ÷ (b) | 12.9 times | 12.5 times |

| | | |
|---|---|---|
| e. Total stockholders' equity | $2,735,000 | $2,450,000 |
| Less preferred stock | 750,000 | 750,000 |
| Common stockholders' equity (a) | $1,985,000 | $1,700,000 |
| Common shares outstanding (b) | 100,000 | 100,000 |
| Book value per share (a) ÷ (b) | $19.85 | $17.00 |

**Problem 17-16** (continued)

| | | *This Year* | *Last Year* |
|---|---|---|---|
| f. | Gross margin (a) | $3,500,000 | $3,000,000 |
| | Sales (b) | $10,000,000 | $7,500,000 |
| | Gross margin percentage (a) ÷ (b) | 35% | 40% |
| 2. a. | | | |
| | Net income | $525,000 | $420,000 |
| | Add after-tax cost of interest paid: $120,000 × (1 – 0.30) | 84,000 | 84,000 |
| | Total (a) | $609,000 | $504,000 |
| | Average total assets (b) | $4,467,500 | $3,600,000 |
| | Return on total assets (a) ÷ (b) | 13.6% | 14.0% |
| b. | Net income | $525,000 | $420,000 |
| | Less preferred dividends | 60,000 | 60,000 |
| | Net income remaining for common (a) | $465,000 | $360,000 |
| | Average common stockholders' equity (b) | $1,842,500 | $1,575,000 |
| | Return on common stockholders' equity (a) ÷ (b) | 25.2% | 22.9% |

c. Financial leverage is positive in both years, since the return on common equity is greater than the return on total assets. This positive leverage arises from (1) the preferred stock, which has a dividend cost of only 8%; and the bonds, which have an after-tax interest cost of only 8.4% [12% interest rate × (1 – 0.30)]; and the current liabilities, which may have no interest cost.

**Problem 17-16** (continued)

3. The company's common stock is probably not an attractive investment. Even though most of its ratios equal (or are better than) the industry averages, the company has a relatively low price-earnings ratio. This indicates that the market does not view the company's future prospects as favorably as those of other companies in the industry. The sharp deterioration in the gross margin percentage is particularly troubling. Both sales and inventories have been growing, which should usually result in an improvement in the gross margin percentage due to fixed costs being spread over more units. However, the gross margin percentage has declined from 40% down to 35%. This suggests the existence of some major operating problems.

**Problem 17-17** (45 minutes)

1.

| | *This Year* | *Last Year* |
|---|---|---|
| a. Current assets | $2,400,000 | $1,250,000 |
| Current liabilities | 1,250,000 | 500,000 |
| Working capital | $1,150,000 | $ 750,000 |
| b. Current assets (a) | $2,400,000 | $1,250,000 |
| Current liabilities (b) | $1,250,000 | $500,000 |
| Current ratio (a) ÷ (b) | 1.92 to 1 | 2.50 to 1 |
| c. Quick assets (a) | $850,000 | $600,000 |
| Current liabilities (b) | $1,250,000 | $500,000 |
| Acid-test ratio (a) ÷ (b) | 0.68 to 1 | 1.20 to 1 |
| d. Sales on account (a) | $10,000,000 | $7,500,000 |
| Average accounts receivable (b) | $575,000 | $350,000 |
| Accounts receivable turnover (a) ÷ (b) | 17.4 times | 21.4 times |
| Average collection period: 365 ÷ turnover | 21.0 days | 17.1 days |
| e. Cost of goods sold (a) | $6,500,000 | $4,500,000 |
| Average inventory (b) | $1,050,000 | $550,000 |
| Inventory turnover (a) ÷ (b) | 6.2 times | 8.2 times |
| Average sale period: 365 ÷ turnover | 58.9 days | 44.5 days |
| f. Net operating income (a) | $870,000 | $720,000 |
| Interest expense (b) | $120,000 | $120,000 |
| Times interest earned (a) ÷ (b) | 7.25 times | 6.00 times |
| g. Total liabilities (a) | $2,250,000 | $1,500,000 |
| Total stockholders' equity (b) | $2,735,000 | $2,450,000 |
| Debt-to-equity ratio (a) ÷ (b) | 0.82 to 1 | 0.61 to 1 |

**Problem 17-17** (continued)

2. The following comments can be made relative to the company's current financial condition:

   a. The working capital is increasing, but both the current ratio and the acid-test ratio have deteriorated significantly over the last year. (This shows the danger of relying on working capital alone in assessing the well-being of a company.) With an acid-test ratio of only 0.68 to 1, it is not surprising that the company is having difficulty paying its bills. The company may be only months away from being forced into bankruptcy.

   b. The company is taking 5 days longer to collect an account than the average for the industry. Equally significant, the collection period has increased over the last year. This is the result either of poor collection efforts or sales to customers who are poor credit risks.

   c. The company is taking nearly 19 days longer to turn its inventory than the average for the industry and the average sale period has increased significantly over the last year. Slow turnover of inventory is usually indicative of inventory stocks that are too large or too many unsalable goods.

   d. The company's earning power is very strong, as evidenced by its excellent times-interest-earned ratio.

   e. The company's 0.82 to 1 debt-to-equity ratio is already above the industry average of 0.70 to 1, even without the proposed $250,000 loan.

3. Despite the problems noted in (2) above, the authors would approve the loan. With the help of the $250,000 in new funds, the company should have breathing room to tighten up the collection of its accounts receivable and reduce its inventory. If the receivables and inventory are brought under control, then several hundred thousand dollars should become available either to pay off the loan or to further strengthen the company's current financial condition. This is not a hopeless situation; it is simply a situation where a good company has allowed control over certain key assets to slip over the last year or so.

**Problem 17-18** (30 minutes)

The income statement in common-size form would be:

1.

| *Income Statement* | *This Year* | *Last Year* |
|---|---|---|
| Sales | 100.0% | 100.0% |
| Less cost of goods sold | 65.0 | 60.0 |
| Gross margin | 35.0 | 40.0 |
| Less operating expenses | 26.3 | 30.4 |
| Net operating income | 8.7 | 9.6 |
| Less interest expense | 1.2 | 1.6 |
| Net income before taxes | 7.5 | 8.0 |
| Less income taxes | 2.3 | 2.4 |
| Net income | 5.3% | 5.6% |

| *Balance Sheet* | *This Year* | *Last Year* |
|---|---|---|
| Current assets: | | |
| Cash | 2.0% | 5.1% |
| Accounts receivable | 15.0 | 10.1 |
| Inventory | 30.1 | 15.2 |
| Prepaid expenses | 1.0 | 1.3 |
| Total current assets | 48.1 | 31.6 |
| Plant and equipment | 51.9 | 68.4 |
| Total assets | 100.0% | 100.0% |
| Liabilities: | | |
| Current liabilities | 25.1% | 12.7% |
| Bonds payable, 12% | 20.1 | 25.3 |
| Total liabilities | 45.1 | 38.0 |
| Stockholders' equity: | | |
| Preferred stock, 8%, $10 par | 15.0 | 19.0 |
| Common stock, $5 par | 10.0 | 12.7 |
| Retained earnings | 29.8 | 30.4 |
| Total stockholders' equity | 54.9 | 62.0 |
| Total liabilities and stockholders' equity | 100.0% | 100.0% |

Note: Columns do not total down in all cases due to rounding.

**Problem 17-18** (continued)

2. The company's cost of goods sold has increased from 60% of sales last year to 65% of sales this year. This appears to be the major reason the company's profits showed so little increase between the two years. Some benefits were realized from the company's cost-cutting efforts, as evidenced by the fact that operating expenses were only 26.3% of sales this year as compared to 30.4% last year. Unfortunately, this reduction in operating expenses was not enough to offset the increase in cost of goods sold. As a result, the company's net income declined from 5.6% of sales last year to 5.3% of sales this year.

**Problem 17-19** (60 minutes or longer)

TANNER COMPANY
Income Statement
For the Year Ended December 31

| | | *Key* |
|---|---|---|
| Sales | $2,700,000 | |
| Less cost of goods sold | 1,800,000 | (h) |
| Gross margin | 900,000 | (i) |
| Less operating expenses | 585,000 | (j) |
| Net operating income | 315,000 | (a) |
| Less interest expense | 45,000 | |
| Net income before taxes | 270,000 | (b) |
| Less income taxes (40%) | 108,000 | (c) |
| Net income | $ 162,000 | (d) |

TANNER COMPANY
Balance Sheet
December 31

| | | |
|---|---|---|
| Current assets: | | |
| Cash | $ 80,000 | (f) |
| Accounts receivable, net | 200,000 | (e) |
| Inventory | 320,000 | (g) |
| Total current assets | 600,000 | (g) |
| Plant and equipment | 900,000 | (q) |
| Total assets | $1,500,000 | (p) |
| Current liabilities | $ 250,000 | |
| Bonds payable, 10% | 450,000 | (k) |
| Total liabilities | 700,000 | (l) |
| Stockholders' equity: | | |
| Common stock, $2.50 par value | 100,000 | (m) |
| Retained earnings | 700,000 | (o) |
| Total stockholders' equity | 800,000 | (n) |
| Total liabilities and equity | $1,500,000 | (p) |

**Problem 17-19** (continued)

Computation of missing amounts (other computational sequences are possible):

a. $$\frac{\text{Earnings before interest and taxes}}{\text{Interest expense}} = \frac{\text{Earnings before interest and taxes}}{\$45{,}000}$$

$$= 7.0 \text{ times interest earned}$$

$$\text{Earnings before interest and taxes} = \$45{,}000 \times 7.0 = \$315{,}000$$

b. $315,000 – $45,000 = $270,000.

c. $270,000 × 40% tax rate = $108,000 income tax expense.

d. $270,000 – $108,000 = $162,000.

e. $$\text{Accounts receivable turnover} = \frac{\text{Sales on account}}{\text{Average accounts receivable balance}}$$

$$= \frac{\$2{,}700{,}000}{\text{Average accounts receivable balance}} = 15.0 \text{ times}$$

$$\text{Average accounts receivable balance} = \$2{,}700{,}000 \div 15.0 = \$180{,}000$$

Therefore, the average accounts receivable balance for the year must have been $180,000. Since the beginning balance was $160,000, the ending balance must have been $200,000.

**Problem 17-19** (continued)

f.
$$\text{Acid-test ratio} = \frac{\text{Cash + Marketable securities + Current receivables}}{\text{Current liabilities}}$$

$$= \frac{\text{Cash + Marketable securities + Current receivables}}{\$250{,}000} = 1.12 \text{ to } 1$$

$$\text{Cash + Marketable securities + Current receivables} = \$250{,}000 \times 1.12 = \$280{,}000$$

Therefore, the total quick assets must be $280,000. Since there are no marketable securities and since the accounts receivable are $200,000, the cash must be $80,000.

g.
$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$= \frac{\text{Current assets}}{\$250{,}000} = 2.4 \text{ to } 1 \text{ ratio}$$

$$\text{Current assets} = \$250{,}000 \times 2.4 = \$600{,}000$$

Therefore, the current assets must total $600,000. Since the quick assets (cash and accounts receivable) total $280,000 of this amount, the inventory must be $320,000.

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

$$= \frac{\text{Cost of goods sold}}{1/2(\$280{,}000 + \$320{,}000)}$$

$$= \frac{\text{Cost of goods sold}}{\$300{,}000} = 6.0 \text{ times}$$

$$\text{Cost of goods sold} = \$300{,}000 \times 6.0 = \$1{,}800{,}000$$

**Problem 17-19** (continued)

i. $2,700,000 – $1,800,000 = $900,000 Gross margin.

j. $900,000 Gross margin – $315,000 Net operating income = $585,000 Operating expenses.

k. Since the interest expense for the year was $45,000 and the interest rate was 10%, the bonds payable must total $450,000.

l. $250,000 + $450,000 = $700,000.

m.
$$\text{Earnings per share} = \frac{\text{Net income-Preferred dividends}}{\text{Average number of common shares outstanding}}$$

$$= \frac{\$162,000}{\text{Average number of common shares outstanding}} = \$4.05$$

$$\text{Average number of common shares outstanding} = \$162,000 \div \$4.05 \text{ per share}$$

$$= 40,000 \text{ shares}$$

Therefore, there must be 40,000 common shares outstanding. Since the stock is $2.50 par value per share, the total common stock must be $100,000.

n.
$$\text{Debt-to-equity ratio} = \frac{\text{Total liabilities}}{\text{Stockholders' equity}}$$

$$= \frac{\$700,000}{\text{Stockholders' equity}} = 0.875$$

$$\text{Stockholders' equity} = \$700,000 \div 0.875 = \$800,000$$

o. Total stockholders’ equity, $800,000 – Common stock, $100,000 = $700,000 Retained earnings.

**Problem 17-19** (continued)

p. $700,000 Liabilities + $800,000 Stockholders' equity = $1,500,000 Total. This answer can also be obtained through the return on total assets ratio:

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

$$= \frac{\$162{,}000 + [\$45{,}000 \times (1 - 0.40)]}{\text{Average total assets}}$$

$$= \frac{\$189{,}000}{\text{Average total assets}} = 14.0\%$$

$$\text{Average total assets} = \$189{,}000 \div 0.14 = \$1{,}350{,}000$$

Therefore the average total assets must be $1,350,000. Since the total assets at the beginning of the year were $1,200,000, the total assets at the end of the year must have been $1,500,000 (which would also equal the total of the liabilities and the stockholders' equity).

q. Total assets, $1,500,000 – $600,000 Current assets = $900,000 Plant and equipment.

**Problem 17-20** (45 minutes)

1. The loan officer stipulated that the current ratio prior to obtaining the loan must be higher than 2.0, the acid-test ratio must be higher than 1.0, and the interest on the loan must be no more than one-fourth of net operating income. These ratios are computed below:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$= \frac{\$435{,}000}{\$246{,}000} = 1.8 \text{ (rounded)}$$

$$\text{Acid-test ratio} = \frac{\text{Cash} + \text{Marketable securities} + \text{Current receivables}}{\text{Current liabilities}}$$

$$= \frac{\$105{,}000 + \$0 + \$75{,}000}{\$246{,}000} = 0.7 \text{ (rounded)}$$

$$\frac{\text{Net operating income}}{\text{Interest on the loan}} = \frac{\$30{,}000}{\$120{,}000 \times 0.10 \times (6/12)} = 5.0$$

The company would fail to qualify for the loan because both its current ratio and its acid-test ratio are too low.

**Problem 17-20** (continued)

2. By reclassifying the $68 thousand net book value of the old equipment as inventory, the current ratio would improve, but the acid-test ratio would be unaffected. This happens because inventory is considered to be a current asset for purposes of computing the current ratio, but is not included in the numerator when computing the acid-test ratio.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$= \frac{\$435,000 + \$68,000}{\$246,000} = 2.0 \text{ (rounded)}$$

$$\text{Acid-test ratio} = \frac{\text{Cash} + \text{Marketable securities} + \text{Current receivables}}{\text{Current liabilities}}$$

$$= \frac{\$105,000 + \$0 + \$75,000}{\$246,000} = 0.7 \text{ (rounded)}$$

Even if this tactic had succeeded in qualifying the company for the loan, we strongly advise against it. Inventories are assets the company has acquired for the sole purpose of selling them to outsiders in the normal course of business. Used production equipment is not considered to be inventory—even if there is a clear intention to sell it in the near future. Since the loan officer would not expect used equipment to be included in inventories, doing so would be intentionally misleading.

**Problem 17-20** (continued)

Nevertheless, the old equipment is an asset that could be turned into cash. If this were done, the company would immediately qualify for the loan since the $68 thousand in cash would be included in the numerator in both the current ratio and in the acid-test ratio.

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$= \frac{\$435,000 + \$68,000}{\$246,000} = 2.0 \text{ (rounded)}$$

$$\text{Acid-test ratio} = \frac{\text{Cash} + \text{Marketable securities} + \text{Current receivables}}{\text{Current liabilities}}$$

$$= \frac{(\$105,000 + \$68,000) + \$0 + \$75,000}{\$246,000} = 1.0 \text{ (rounded)}$$

However, other options may be available. After all, the old equipment is being used to relieve bottlenecks in the heat-treating process and it would be desirable to keep this standby capacity. We would advise Jurgen to fully and honestly explain the situation to the loan officer. The loan officer might insist that the equipment be sold before any loan is approved, but she might instead grant a waiver of the current ratio and acid-test ratio requirements on the basis that they could be satisfied by selling the old equipment. Or she may approve the loan on the condition that the equipment is pledged as collateral. In that case, Jurgen would only have to sell the equipment if he would otherwise be unable to pay back the loan.

## Group Exercise 17-21

The answers to this question will depend on the company that the students decide to analyze.