EXERCISES

Ex. 15–1

a.  

MANDELL TECHNOLOGIES CO.  
Comparative Income Statement  
For the Years Ended December 31, 2012 and 2011

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>Percent</th>
<th>2011</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$800,000</td>
<td>100.0%</td>
<td>$740,000</td>
<td>100.0%</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>504,000</td>
<td>63.0</td>
<td>407,000</td>
<td>55.0</td>
</tr>
<tr>
<td>Gross profit</td>
<td>$296,000</td>
<td>37.0%</td>
<td>$333,000</td>
<td>45.0%</td>
</tr>
<tr>
<td>Selling expenses</td>
<td>$120,000</td>
<td>15.0%</td>
<td>$140,600</td>
<td>19.0%</td>
</tr>
<tr>
<td>Administrative expenses</td>
<td>128,000</td>
<td>16.0</td>
<td>125,800</td>
<td>17.0</td>
</tr>
<tr>
<td>Total expenses</td>
<td>$248,000</td>
<td>31.0%</td>
<td>$266,400</td>
<td>36.0%</td>
</tr>
<tr>
<td>Income from operations</td>
<td>$ 48,000</td>
<td>6.0%</td>
<td>$ 66,600</td>
<td>9.0%</td>
</tr>
<tr>
<td>Income tax expense</td>
<td>33,600</td>
<td>4.2%</td>
<td>48,100</td>
<td>6.5%</td>
</tr>
<tr>
<td>Net income</td>
<td>$ 14,400</td>
<td>1.8%</td>
<td>$ 18,500</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

b. The vertical analysis indicates that the cost of goods sold as a percent of sales increased by 8 percentage points (63.0% – 55.0%), while selling expenses decreased by 4 percentage points (15.0% – 19.0%), administrative expenses decreased by 1.0% (16.0% – 17.0%), and income tax expense decreased by 2.3 percentage points (4.2% – 6.5%). Thus, net income as a percent of sales dropped by 0.7% (4.0% + 1.0% + 2.3% – 8.0%).
Ex. 15–2

a.

SPEEDWAY MOTORSPORTS, INC.
Comparative Income Statement (in thousands of dollars)
For the Years Ended December 31, 2008 and 2007

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th></th>
<th>2007</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenues:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Admissions</td>
<td>$188,036</td>
<td>30.8%</td>
<td>$179,765</td>
<td>32.0%</td>
</tr>
<tr>
<td>Event-related revenue</td>
<td>211,630</td>
<td>34.6</td>
<td>197,321</td>
<td>35.1</td>
</tr>
<tr>
<td>NASCAR broadcasting revenue</td>
<td>168,159</td>
<td>27.5</td>
<td>142,517</td>
<td>25.4</td>
</tr>
<tr>
<td>Other operating revenue</td>
<td>43,168</td>
<td>7.1</td>
<td>42,030</td>
<td>7.5</td>
</tr>
<tr>
<td><strong>Total revenue</strong></td>
<td>$610,993</td>
<td>100.0%</td>
<td>$561,633</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

| **Expenses and other:** |            |          |            |          |
| Direct expense of events | $113,477   | 18.6%    | $100,414   | 17.9%    |
| NASCAR purse and sanction fees | 118,766   | 19.4     | 100,608    | 17.9     |
| Other direct expenses    | 116,376    | 19.0     | 163,222    | 29.1     |
| General and administrative| 84,029    | 13.8     | 80,913     | 14.4     |
| **Total expenses and other** | $432,648  | 70.8%    | $445,157   | 79.3%    |
| **Income from continuing operations** | $178,345  | 29.2%    | $116,476   | 20.7%    |

b. While overall revenue increased some between the two years, the overall mix of revenue sources did change somewhat. The NASCAR broadcasting revenue increased as a percent of total revenue by almost two percentage points, while the percent of admissions revenue to total revenue decreased by about 1%. Two of the major expense categories (direct expense of events and NASCAR purse and sanction fees) as a percent of total revenue increased by approximately 2 percentage points. Other direct expenses, however, decreased by about 10%, and general and administrative expenses decreased by almost 1%. Overall, the income from continuing operations increased 8.5 percentage points of total revenue between the two years, which is a favorable trend. The income from continuing operations as a percent of sales exceeds 29% in the most recent year, which is excellent. Apparently, owning and operating motor speedways is a business that produces high operating profit margins.

_Note to Instructors:_ The high operating margin is probably necessary to compensate for the extensive investment in speedway assets.
Ex. 15–3

a. SHOESMITH ELECTRONICS COMPANY
Common-Sized Income Statement
For the Year Ended December 31, 20—

<table>
<thead>
<tr>
<th>Shoesmith Electronics Company</th>
<th>Electronics Industry Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount</td>
</tr>
<tr>
<td>Sales</td>
<td>$4,200,000</td>
</tr>
<tr>
<td>Sales returns and allowances</td>
<td>200,000</td>
</tr>
<tr>
<td>Net sales</td>
<td>$4,000,000</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>2,120,000</td>
</tr>
<tr>
<td>Gross profit</td>
<td>$1,880,000</td>
</tr>
<tr>
<td>Selling expenses</td>
<td>$1,160,000</td>
</tr>
<tr>
<td>Administrative expenses</td>
<td>480,000</td>
</tr>
<tr>
<td>Total operating expenses</td>
<td>$1,640,000</td>
</tr>
<tr>
<td>Operating income</td>
<td>$ 240,000</td>
</tr>
<tr>
<td>Other income</td>
<td>84,000</td>
</tr>
<tr>
<td>Other expense</td>
<td>60,000</td>
</tr>
<tr>
<td>Income before income tax</td>
<td>$ 264,000</td>
</tr>
<tr>
<td>Income expense</td>
<td>120,000</td>
</tr>
<tr>
<td>Net income</td>
<td>$ 144,000</td>
</tr>
</tbody>
</table>

b. The cost of goods sold is 6 percentage points lower than the industry average, but the selling expenses and administrative expenses are 5 percentage points and 1.5 percentage points higher than the industry average. The combined impact is for net income as a percent of sales to be 2.5 percentage points better than the industry average. Apparently, the company is managing the cost of manufacturing product better than the industry but has slightly higher selling and administrative expenses relative to the industry. The cause of the higher selling and administrative expenses as a percent of sales, relative to the industry, can be investigated further.
### Ex. 15–4

**BRYANT COMPANY**  
Comparative Balance Sheet  
December 31, 2012 and 2011

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>Percent</th>
<th>2011</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current assets</td>
<td>$ 775,000</td>
<td>31.0%</td>
<td>$ 585,000</td>
<td>26.0%</td>
</tr>
<tr>
<td>Property, plant, and equipment</td>
<td>1,425,000</td>
<td>57.0</td>
<td>1,597,500</td>
<td>71.0</td>
</tr>
<tr>
<td>Intangible assets</td>
<td>300,000</td>
<td>12.0</td>
<td>67,500</td>
<td>3.0</td>
</tr>
<tr>
<td>Total assets</td>
<td>$ 2,500,000</td>
<td>100.0%</td>
<td>$ 2,250,000</td>
<td>100.0%</td>
</tr>
<tr>
<td>Current liabilities</td>
<td>$ 525,000</td>
<td>21.0%</td>
<td>$ 360,000</td>
<td>16.0%</td>
</tr>
<tr>
<td>Long-term liabilities</td>
<td>900,000</td>
<td>36.0</td>
<td>855,000</td>
<td>38.0</td>
</tr>
<tr>
<td>Common stock</td>
<td>250,000</td>
<td>10.0</td>
<td>270,000</td>
<td>12.0</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>825,000</td>
<td>33.0</td>
<td>765,000</td>
<td>34.0</td>
</tr>
<tr>
<td>Total liabilities and stockholders’ equity</td>
<td>$ 2,500,000</td>
<td>100.0%</td>
<td>$ 2,250,000</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

### Ex. 15–5

**BOONE COMPANY**  
Comparative Income Statement  
For the Years Ended December 31, 2012 and 2011

<table>
<thead>
<tr>
<th></th>
<th>2012</th>
<th>2011</th>
<th>Increase (Decrease)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Amount</td>
<td>Amount</td>
<td>Amount</td>
</tr>
<tr>
<td>Sales</td>
<td>$446,400</td>
<td>$360,000</td>
<td>$86,400</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>387,450</td>
<td>315,000</td>
<td>72,450</td>
</tr>
<tr>
<td>Gross profit</td>
<td>$ 58,950</td>
<td>$ 45,000</td>
<td>$13,950</td>
</tr>
<tr>
<td>Selling expenses</td>
<td>27,900</td>
<td>22,500</td>
<td>5,400</td>
</tr>
<tr>
<td>Administrative expenses</td>
<td>21,960</td>
<td>18,000</td>
<td>3,960</td>
</tr>
<tr>
<td>Total operating expenses</td>
<td>$ 49,860</td>
<td>$ 40,500</td>
<td>$ 9,360</td>
</tr>
<tr>
<td>Income before income tax</td>
<td>$ 9,090</td>
<td>$ 4,500</td>
<td>$ 4,590</td>
</tr>
<tr>
<td>Income tax expense</td>
<td>5,400</td>
<td>2,700</td>
<td>2,700</td>
</tr>
<tr>
<td>Net income</td>
<td>$ 3,690</td>
<td>$ 1,800</td>
<td>$ 1,890</td>
</tr>
</tbody>
</table>

b. The net income for Boone Company increased by approximately 105.0% from 2011 to 2012. This increase was the combined result of an increase in sales of 24.0% and lower percentage increases in operating expenses. The cost of goods sold increased at a slower rate than the increase in sales, thus causing the percentage increase in gross profit to exceed the percentage increase in sales.
Ex. 15–6

a. (1) Working Capital = Current Assets – Current Liabilities
   2012: $1,342,000 = $1,952,000 – $610,000
   2011: $810,000 = $1,350,000 – $540,000

(2) Current Ratio = \( \frac{\text{Current Assets}}{\text{Current Liabilities}} \)
   2012: \( \frac{1,952,000}{610,000} = 3.2 \)
   2011: \( \frac{1,350,000}{540,000} = 2.5 \)

(3) Quick Ratio = \( \frac{\text{Quick Assets}}{\text{Current Liabilities}} \)
   2012: \( \frac{1,220,000}{610,000} = 2.0 \)
   2011: \( \frac{918,000}{540,000} = 1.7 \)

b. The liquidity of Beatty has improved from the preceding year to the current year. The working capital, current ratio, and quick ratio have all increased. Most of these changes are the result of an increase in current assets.

Ex. 15–7

a. (1) Current Ratio = \( \frac{\text{Current Assets}}{\text{Current Liabilities}} \)
   Dec. 26, 2009: \( \frac{12,571}{8,756} = 1.4 \)
   Dec. 27, 2008: \( \frac{10,806}{8,787} = 1.2 \)

(2) Quick Ratio = \( \frac{\text{Quick Assets}}{\text{Current Liabilities}} \)
   Dec. 26, 2009: \( \frac{8,759}{8,756} = 1.0 \)
   Dec. 27, 2008: \( \frac{6,960}{8,787} = 0.8 \)

b. The liquidity of PepsiCo has increased some over this time period. Both the current and quick ratios have increased. The current ratio increased from 1.2 to 1.4, and the quick ratio increased from 0.8 to 1.0. PepsiCo is a strong company with ample resources for meeting short-term obligations.
Ex. 15–8

a. The working capital, current ratio, and quick ratio are calculated incorrectly. The working capital and current ratio incorrectly include intangible assets and property, plant, and equipment as a part of current assets. Both are non-current. The quick ratio has both an incorrect numerator and denominator. The numerator of the quick ratio is incorrectly calculated as the sum of inventories, prepaid expenses, and property, plant, and equipment ($114,400 + $45,600 + $172,000). The denominator is also incorrect, as it does not include accrued liabilities. The denominator of the quick ratio should be total current liabilities.

The correct calculations are as follows:

Working Capital = Current Assets – Current Liabilities
$160,000 = $960,000 – $800,000

Current Ratio = \( \frac{\text{Current Assets}}{\text{Current Liabilities}} \)
$960,000
$800,000 = 1.2

Quick Ratio = \( \frac{\text{Quick Assets}}{\text{Current Liabilities}} \)
$302,400 + $144,000 + $353,600 $800,000 = 1.0

b. Unfortunately, the current ratio and quick ratio are both below the minimum threshold required by the bond indenture. This may require the company to renegotiate the bond contract, including a possible unfavorable change in the interest rate.
Ex. 15–9

a. (1) Accounts Receivable Turnover = $\frac{\text{Net Sales on Account}}{\text{Average Monthly Accounts Receivable}}$

   \[
   2012: \frac{\$1,512,225}{\$229,125} = 6.6 \\
   2011: \frac{\$1,380,825}{\$242,250} = 5.7
   \]

(2) Number of Days’ Sales in Receivables = $\frac{\text{Average Accounts Receivable}}{\text{Average Daily Sales on Account}}$

   \[
   2012: \frac{\$229,125^1}{\$4,143^2} = 55.3 \text{ days} \\
   2011: \frac{\$242,250^3}{\$3,783^4} = 64.0 \text{ days}
   \]

   \[^1\$229,125 = (\$221,250 + \$237,000) \div 2\]
   \[^2\$4,143 = \$1,512,225 \div 365 \text{ days}\]
   \[^3\$242,250 = (\$237,000 + \$247,500) \div 2\]
   \[^4\$3,783 = \$1,380,825 \div 365 \text{ days}\]

b. The collection of accounts receivable has improved. This can be seen in both the increase in accounts receivable turnover and the reduction in the collection period. The credit terms require payment in 60 days. In 2011, the collection period exceeded these terms. However, the company apparently became more aggressive in collecting accounts receivable or more restrictive in granting credit to customers. Thus, in 2012, the collection period is within the credit terms of the company.
Ex. 15–10

a. (1) Accounts Receivable Turnover = \( \frac{\text{Net Sales on Account}}{\text{Average Accounts Receivable}} \)

Klick: \( \frac{\$18,000}{(\$3,300 + \$2,700)/2} = 6.0 \)

Klack: \( \frac{\$70,980}{(\$9,000 + \$6,600)/2} = 9.1 \)

(2) Number of Days’ Sales in Receivables = \( \frac{\text{Accounts Receivable}}{\text{Average Daily Sales on Account}} \)

Klick: \( \frac{(\$3,300 + \$2,700)/2}{\$49.32} = 60.8 \text{ days} \)

Klack: \( \frac{(\$9,000 + \$6,600)/2}{\$194.47} = 40.1 \text{ days} \)

\( ^1 \$49.32 = \$18,000 \div 365 \text{ days} \)

\( ^2 \$194.47 = \$70,980 \div 365 \text{ days} \)

b. Klack’s accounts receivable turnover is much higher than Klick’s (9.1 for Klack vs. 6.0 for Klick). The number of days’ sales in receivables is lower for Klack than for Klick (40.1 days for Klack vs. 60.8 days for Klick). These differences indicate that Klack is able to turn over its receivables more quickly than Klick. As a result, it takes Klack less time to collect its receivables.
Ex. 15-11

a.  (1) Inventory Turnover = \( \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} \)

Current Year: \( \frac{\$1,221,800}{\$140,000 + \$158,000 \div 2} = 8.2 \)

Preceding Year: \( \frac{\$1,440,000}{\$158,000 + \$130,000 \div 2} = 10.0 \)

(2) Number of Days’ Sales in Inventory = \( \frac{\text{Average Inventory}}{\text{Average Daily Cost of Goods Sold}} \)

Current Year: \( \frac{(\$140,000 + \$158,000 \div 2)}{\$3,347^1} = 44.5 \text{ days} \)

Preceding Year: \( \frac{(\$158,000 + \$130,000 \div 2)}{\$3,945^2} = 36.5 \text{ days} \)

\(^1\$3,347 = \$1,221,800 \div 365 \text{ days}\)

\(^2\$3,945 = \$1,440,000 \div 365 \text{ days}\)

b. The inventory position of the business has deteriorated. The inventory turnover has decreased, while the number of days’ sales in inventory has increased. The sales volume has declined faster than the inventory has declined, thus resulting in the deteriorating inventory position.
Ex. 15–12

a. (1) **Inventory Turnover** = \( \frac{\text{Cost of Goods Sold}}{\text{Average Inventory}} \)

Dell: \( \frac{50,144}{(1,180 + 867) ÷ 2} = 49.0 \)

HP: \( \frac{56,503}{(7,879 + 6,128) ÷ 2} = 8.1 \)

(2) **Number of Days’ Sales in Inventory** = \( \frac{\text{Average Inventory}}{\text{Average Daily Cost of Goods Sold}} \)

Dell: \( \frac{(1,180 + 867) ÷ 2}{137.38^1} = 7.5 \text{ days} \)

HP: \( \frac{(7,879 + 6,128) ÷ 2}{154.80^2} = 45.2 \text{ days} \)

\(^1\) $137.38 = 50,144 ÷ 365 \text{ days} \)

\(^2\) $154.80 = 56,503 ÷ 365 \text{ days} \)

b. Dell has a much higher inventory turnover ratio than does HP (49.0 vs. 8.1 for HP). Likewise, Dell has a much smaller number of days’ sales in inventory (7.5 days vs. 45.2 days for HP). These significant differences are a result of Dell’s make-to-order strategy. Dell has successfully developed a manufacturing process that is able to fill a customer order quickly. As a result, Dell does not need to pre-build computers to inventory. HP, in contrast, pre-builds computers, printers, and other equipment to be sold by retail stores and other retail channels. In this industry, there is great obsolescence risk in holding computers in inventory. New technology can make an inventory of computers difficult to sell; therefore, inventory is costly and risky. Dell’s operating strategy is considered revolutionary and is now being adopted by many both in and out of the computer industry. Apple Computer, Inc., also employs similar manufacturing techniques and thus enjoys excellent inventory efficiency.
Ex. 15–13

a. Ratio of Liabilities to Stockholders’ Equity = Total Liabilities
    Total Stockholders’ Equity

Dec. 31, 2012: \( \frac{3,473,960}{4,962,800} = 0.7 \)  Dec. 31, 2011: \( \frac{3,825,000}{4,250,000} = 0.9 \)

b. Number of Times Bond Interest Charges Are Earned = Income Before Tax + Interest Expense
    Interest Expense

Dec. 31, 2012: \( \frac{891,000 + 270,000}{270,000} = 4.3 \)
Dec. 31, 2011: \( \frac{787,500 + 315,000}{315,000} = 3.5 \)

\*\((2,500,000 + 500,000) \times 9\% = 270,000\)
\**\((3,000,000 + 500,000) \times 9\% = 315,000\)

c. Both the ratio of liabilities to stockholders’ equity and the number of times bond interest charges were earned have improved from 2011 to 2012. These results are the combined result of a larger income before taxes and lower serial bonds payable in the year 2012 compared to 2011.

Ex. 15–14

a. Ratio of Liabilities to Stockholders’ Equity = Total Liabilities
    Total Stockholders’ Equity

Hasbro: \( \frac{1,778,011}{1,390,786} = 1.3 \)
Mattel, Inc.: \( \frac{2,557,904}{2,117,135} = 1.2 \)

b. Number of Times Bond Interest Charges Are Earned = Income Before Tax + Interest Expense
    Interest Expense

Hasbro: \( \frac{494,296 + 47,143}{47,143} = 11.5 \)
Mattel, Inc.: \( \frac{541,792 + 81,944}{81,944} = 7.6 \)
Ex. 15–14 (Concluded)

c. Both companies carry a moderate proportion of debt to the stockholders’ equity, at 1.3 and 1.2 times stockholders’ equity. Therefore, the companies’ debt as a percent of stockholders’ equity is similar. Both companies also have very strong interest coverage; however, Hasbro’s ratio is a bit stronger than Mattel’s. Together, these ratios indicate that both companies provide creditors with a margin of safety, and that earnings appear more than enough to make interest payments.

Ex. 15–15

a. Ratio of Liabilities to Stockholders’ Equity = \[
\frac{Total \, Liabilities}{Total \, Stockholders' \, Equity}
\]
   
   H.J. Heinz: \[
\frac{\$2,062,846 + \$5,076,186 + \$1,305,214}{\$1,219,938} = 6.9
\]
   
   Hershey: \[
\frac{\$1,270,212 + \$1,505,954 + \$540,354}{\$318,199} = 10.4
\]

b. Ratio of Fixed Assets to Long-Term Liabilities = \[
\frac{Fixed \, Assets \, (net)}{Long-Term \, Liabilities}
\]
   
   H.J. Heinz: \[
\frac{\$1,978,302}{\$6,381,400} = 0.3
\]
   
   Hershey: \[
\frac{\$1,458,949}{\$2,046,308} = 0.7
\]

c. Hershey uses more debt than does H.J. Heinz. As a result, Hershey’s total liabilities to stockholders’ equity ratio is higher than H.J. Heinz (10.4 vs. 6.9). H.J. Heinz has a much lower ratio of fixed assets to long-term liabilities than Hershey. This ratio divides the property, plant, and equipment (net) by the long-term debt. The ratio for H.J. Heinz is aggressive with fixed assets covering only 30% of the long-term debt. That is, the creditors of H.J. Heinz have 30 cents of property, plant, and equipment covering every dollar of long-term debt. The same ratio for Hershey shows fixed assets covering 0.7 times the long-term debt. That is, Hershey’s creditors have $0.70 of property, plant, and equipment covering every dollar of long-term debt. This would suggest that Hershey has stronger creditor protection and borrowing capacity than does H.J. Heinz.
Ex. 15–16

a. Ratio of Net Sales to Total Assets: \[ \frac{\text{Net Sales}}{\text{Total Assets}} \]

YRC Worldwide: \[ \frac{8,940,401}{4,514,368} = 2.0 \]

Union Pacific: \[ \frac{17,970,000}{38,877,500} = 0.5 \]

C.H. Robinson Worldwide Inc.: \[ \frac{8,578,614}{1,813,514} = 4.7 \]

b. The ratio of net sales to assets measures the number of sales dollars earned for each dollar of assets. The greater the number of sales dollars earned for every dollar of assets, the more efficient a firm is in using assets. Thus, the ratio is a measure of the efficiency in using assets. The three companies are different in their efficiency in using assets, because they are different in the nature of their operations. Union Pacific earns only 50 cents for every dollar of assets. This is because Union Pacific is very asset intensive. That is, Union Pacific must invest in locomotives, railcars, terminals, tracks, right-of-way, and information systems in order to earn revenues. These investments are significant. YRC Worldwide is able to earn $2.00 for every dollar of assets, and thus, is able to earn more revenue for every dollar of assets than the railroad. This is because the motor carrier invests in trucks, trailers, and terminals, which require less investment per dollar of revenue than does the railroad. Moreover, the motor carrier does not invest in the highway system, because the government owns the highway system. Thus, the motor carrier has no investment in the transportation network itself unlike the railroad. C.H. Robinson Worldwide Inc., the transportation arranger, hires transportation services from motor carriers and railroads, but does not own these assets itself. The transportation arranger has assets in accounts receivable and information systems but does not require transportation assets; thus, it is able to earn the highest revenue per dollar of assets.

Note to Instructors: Students may wonder how asset-intensive companies overcome their asset efficiency disadvantages to competitors with better asset efficiencies, as in the case between railroads and motor carriers. Asset efficiency is part of the financial equation; the other part is the profit margin made on each dollar of sales. Thus, companies with high asset efficiency often operate on thinner margins than do companies with lower asset efficiency. For example, the motor carrier must pay highway taxes, which lowers its operating margins when compared to railroads that own their right-of-way, and thus do not have the tax expense of the highway. While not required in this exercise, the railroad has the highest profit margins, the motor carrier is in the middle, while the transportation arranger operates on very thin margins.
Ex. 15–17

a. Rate Earned on Total Assets = \( \frac{\text{Net Income} + \text{Interest Expense}}{\text{Average Total Assets}} \)

\[
\begin{align*}
2012: & \quad \frac{\$435,750 + \$120,000}{\$4,275,000} = 13.0\% \\
2011: & \quad \frac{\$453,750 + \$120,000}{\$3,825,000} = 15.0\%
\end{align*}
\]

\([(\$4,500,000 + \$4,050,000) ÷ 2 \quad \text{2012:} \quad \frac{\$435,750}{\$2,453,625} = 17.8\% \\
2011: & \quad \frac{\$453,750}{\$2,020,875} = 22.5\% \]

\([(\$2,665,500 + \$2,241,750) ÷ 2 \quad \text{2012:} \quad \frac{\$435,750 - \$12,000}{\$2,153,625} = 19.7\% \\
2011: & \quad \frac{\$453,750 - \$12,000}{\$1,720,875} = 25.7\% \]

\([(\$2,365,500 + \$1,941,750) ÷ 2 \quad \text{2012:} \quad \frac{\$435,750 - \$12,000}{\$2,153,625} = 19.7\% \\
2011: & \quad \frac{\$453,750 - \$12,000}{\$1,720,875} = 25.7\% \]

b. The profitability ratios indicate that Preslar Inc.'s profitability has deteriorated. Most of this change is from net income falling from $453,750 in 2011 to $435,750 in 2012. The cost of debt is 8%. Since the rate of return on assets exceeds this amount in either year, there is positive leverage from use of debt. However, this leverage is greater in 2011 because the rate of return on assets exceeds the cost of debt by a greater amount in 2011.
Ex. 15–18

a. Rate Earned on Total Assets = \[
\frac{\text{Net Income + Interest Expense}}{\text{Average Total Assets}}
\]

Fiscal Year 2007: \[
\frac{\$97,235 + $2,172}{($1,393,755 + $1,568,503) \div 2} = 6.7\%
\]

Fiscal Year 2006: \[
\frac{\$142,982 + $2,230}{($1,568,503 + $1,492,906) \div 2} = 9.5\%
\]

b. Rate Earned on Stockholders’ Equity = \[
\frac{\text{Net Income}}{\text{Average Total Stockholders’ Equity}}
\]

Fiscal Year 2007: \[
\frac{\$97,235}{($839,484 + $1,049,911) \div 2} = 10.3\%
\]

Fiscal Year 2006: \[
\frac{\$142,982}{($1,049,911 + $1,034,482) \div 2} = 13.7\%
\]

c. Both the rate earned on total assets and the rate earned on stockholders’ equity have decreased over the two-year period. The rate earned on total assets decreased from 9.5% to 6.7%, and the rate earned on stockholders’ equity decreased from 13.7% to 10.3%. The rate earned on stockholders’ equity exceeds the rate earned on total assets due to the positive use of leverage.

d. During fiscal 2007, Ann Taylor’s results were strong compared to the industry average. The rate earned on total assets for Ann Taylor was more than the industry average (6.7% vs. 5.0%). The rate earned on stockholders’ equity was more than the industry average (10.3% vs. 8.0%). These relationships suggest that Ann Taylor has more leverage than the industry, on average.
Ex. 15–19

a. Ratio of Fixed Assets to Long-Term Liabilities = \( \frac{\text{Fixed Assets}}{\text{Long-Term Liabilities}} \)
\[
\frac{\$1,800,000}{\$2,700,000} = 1.5
\]

b. Ratio of Liabilities to Stockholders' Equity = \( \frac{\text{Total Liabilities}}{\text{Total Stockholders' Equity}} \)
\[
\frac{\$2,466,500}{\$4,933,000} = 0.5
\]

c. Ratio of Net Sales to Assets = \( \frac{\text{Net Sales}}{\text{Average Total Assets (excluding investments)}} \)
\[
\frac{\$17,211,375}{\$3,824,750^*} = 4.5
\]
*\([($6,250,000 + $7,399,500) \div 2] – $3,000,000. The end-of-period total assets are equal to the sum of total liabilities ($2,466,500) and stockholders’ equity ($4,933,000).

d. Rate Earned on Total Assets = \( \frac{\text{Net Income} + \text{Interest Expense}}{\text{Average Total Assets}} \)
\[
\frac{\$750,000 + \$144,000}{\$6,824,750^*} = 13.1%
\]
*\([($6,250,000 + $7,399,500) \div 2]

e. Rate Earned on Stockholders' Equity = \( \frac{\text{Net Income}}{\text{Average Stockholders' Equity}} \)
\[
\frac{\$750,000}{\$4,668,000^*} = 16.1%
\]
*\([(\$1,200,000 + $1,000,000 + $2,203,000) + $4,933,000] \div 2

f. Rate Earned on Common Stockholders' Equity = \( \frac{\text{Net Income} – \text{Preferred Dividends}}{\text{Average Common Stockholders' Equity}} \)
\[
\frac{\$750,000 - \$120,000}{\$3,468,000^*} = 18.2%
\]
*\([(\$1,000,000 + $2,733,000) + ($1,000,000 + $2,203,000)] \div 2
a. Number of Times Bond Interest Charges Are Earned = \frac{Income \ Before \ Tax + Interest \ Expense}{Interest \ Expense} \\
\frac{2,400,000 + 375,000*}{375,000} = 7.4 \ times \\
*\$3,750,000 \ bonds \ payable \times 10\%

b. Number of Times Preferred Dividends Are Earned = \frac{Net \ Income}{Preferred \ Dividends} \\
\frac{2,000,000**}{200,000} = 10.0 \ times \\
**\$2,400,000 \ income \ before \ tax – \$400,000 \ income \ tax

c. Earnings per Share on Common Stock = \frac{Net \ Income - Preferred \ Dividends}{Common \ Shares \ Outstanding} \\
\frac{2,000,000 - 200,000}{360,000 \ shares} = 5.00

d. Price-Earnings Ratio = \frac{Market \ Price \ per \ Share}{Earnings \ per \ Share} \\
\frac{72}{5.00} = 14.4

e. Dividends per Share of Common Stock = \frac{Common \ Dividends}{Common \ Shares \ Outstanding} \\
\frac{720,000}{360,000 \ shares} = 2.00

f. Dividend Yield = \frac{Common \ Dividends \ per \ Share}{Share \ Price} \\
\frac{2.00}{72.00} = 2.8\%
Ex. 15–21

a. Earnings per Share = \( \frac{\text{Net Income} - \text{Preferred Dividends}}{\text{Common Shares Outstanding}} \)

\[ \frac{1,250,000 - 250,000\ast}{400,000\ast} = 2.50 \]

\*\( \frac{1,250,000}{25} \times 5 \)

\*\*\( \frac{4,000,000}{10} \)

b. Price-Earnings Ratio = \( \frac{\text{Market Price per Share}}{\text{Earnings per Share}} \)

\[ \frac{40.00}{2.50} = 16.0 \]

c. Dividends per Share = \( \frac{\text{Common Dividends}}{\text{Common Shares Outstanding}} \)

\[ \frac{800,000}{400,000} = 2.00 \]

d. Dividend Yield = \( \frac{\text{Common Dividends per Share}}{\text{Share Price}} \)

\[ \frac{2.00}{40.00} = 5.0\% \]
Ex. 15–22

a. Price-Earnings Ratio = \( \frac{\text{Market Price per Share}}{\text{Earnings per Share}} \)

The Home Depot: \( \frac{\$33.43}{\$1.57} = 21.3 \)

Google: \( \frac{\$493.14}{\$21.99} = 22.4 \)

Coca-Cola: \( \frac{\$52.67}{\$3.04} = 17.3 \)

Dividend Yield = \( \frac{\text{Dividends per Share}}{\text{Market Price per Share}} \)

The Home Depot: \( \frac{\$0.95}{\$33.43} = 2.8\% \)

Google: \( \frac{\$0.00}{\$493.14} = 0.0\% \)

Coca-Cola: \( \frac{\$1.76}{\$52.67} = 3.3\% \)

b. Coca-Cola has the largest dividend yield, but the smallest price-earnings ratio. Stock market participants value Coca-Cola common stock on the basis of its dividend. The dividend is an attractive yield at this date. Because of this attractive yield, stock market participants do not expect the share price to grow significantly, hence the low price-earnings valuation. This is a typical pattern for companies that pay high dividends. Google shows the opposite extreme. Google pays no dividend, and thus has no dividend yield. However, Google has the largest price-earnings ratio of the three companies. Stock market participants are expecting a return on their investment from appreciation in the stock price. The Home Depot is priced in between the other two companies. The Home Depot has a moderate dividend producing a yield of 2.8%. The price-earnings ratio is slightly over 21. Thus, The Home Depot is expected to produce shareholder returns through a combination of some share price appreciation and a small dividend.