a. A liquidity ratio is a ratio that shows the relationship of a firm's cash and other current assets to its current liabilities. The current ratio is found by dividing current assets by current liabilities. It indicates the extent to which current liabilities are covered by those assets expected to be converted to cash in the near future. The quick, or acid test, ratio is found by taking current assets less inventories and then dividing by current liabilities.

b. Asset management ratios are a set of ratios that measure how effectively a firm is managing its assets. The inventory turnover ratio is sales divided by inventories. Days sales outstanding is used to appraise accounts receivable and indicates the length of time the firm must wait after making a sale before receiving cash. It is found by dividing receivables by average sales per day. The fixed assets turnover ratio measures how effectively the firm uses its plant and equipment. It is the ratio of sales to net fixed assets. Total assets turnover ratio measures the turnover of all the firm's assets; it is calculated by dividing sales by total assets.

c. Financial leverage ratios measure the use of debt financing. The debt ratio is the ratio of total debt to total assets, it measures the percentage of funds provided by creditors. The times-interest-earned ratio is determined by dividing earnings before interest and taxes by the interest charges. This ratio measures the extent to which operating income can decline before the firm is unable to meet its annual interest costs. The EBITDA coverage ratio is similar to the times-interest-earned ratio, but it recognizes that many firms lease assets and also must make sinking fund payments. It is found by adding EBITDA and lease payments then dividing this total by interest charges, lease payments, and sinking fund payments over one minus the tax rate.

d. Profitability ratios are a group of ratios that show the combined effects of liquidity, asset management, and debt on operations. The profit margin on sales, calculated by dividing net income by sales, gives the profit per dollar of sales. Basic earning power is calculated by dividing EBIT by total assets. This ratio shows the raw earning power of the firm's assets, before the influence of taxes and leverage. Return on total assets is the ratio of net income to total assets. Return on common equity is found by dividing net income into common equity.
e. Market value ratios relate the firm's stock price to its earnings and book value per share. The price/earnings ratio is calculated by dividing price per share by earnings per share—this shows how much investors are willing to pay per dollar of reported profits. The price/cash flow is calculated by dividing price per share by cash flow per share. This shows how much investors are willing to pay per dollar of cash flow. Market-to-book ratio is simply the market price per share divided by the book value per share. Book value per share is common equity divided by the number of shares outstanding.

f. Trend analysis is an analysis of a firm's financial ratios over time. It is used to estimate the likelihood of improvement or deterioration in its financial situation. Comparative ratio analysis is when a firm compares its ratios to other leading companies in the same industry. This technique is also known as benchmarking.

g. The Du Pont chart is a chart designed to show the relationships among return on investment, asset turnover, the profit margin, and leverage. The Du Pont equation is a formula that shows how the rate of return on assets can be found as the product of the profit margin times the total assets turnover.

h. Window dressing is a technique employed by firms to make their financial statements look better than they really are. Seasonal factors can distort ratio analysis. At certain times of the year a firm may have excessive inventories in preparation of a “season” of high demand. Therefore an inventory turnover ratio taken at this time as opposed to after the season will be radically distorted.

The emphasis of the various types of analysts is by no means uniform nor should it be. Management is interested in all types of ratios for two reasons. First, the ratios point out weaknesses that should be strengthened; second, management recognizes that the other parties are interested in all the ratios and that financial appearances must be kept up if the firm is to be regarded highly by creditors and equity investors. Equity investors are interested primarily in profitability, but they examine the other ratios to get information on the riskiness of equity commitments. Long-term creditors are more interested in the debt ratio, TIE, and fixed-charge coverage ratios, as well as the profitability ratios. Short-term creditors emphasize liquidity and look most carefully at the liquidity ratios.

The inventory turnover ratio is important to a grocery store because of the much larger inventory required and because some of that inventory is perishable. An insurance company would have no inventory to speak of since its line of business is selling insurance policies or other similar financial products—contracts written on paper and entered into between the company and the insured. This question demonstrates the fact that the student should not take a routine approach to financial analysis but rather should examine the particular business he or she is dealing with.
b. Common equity is determined at a point in time, say December 31, 2001. Profits are earned over time, say during 2001. If a firm is growing rapidly, year-end equity will be much larger than beginning-of-year equity, so the calculated rate of return on equity will be different depending on whether end-of-year, beginning-of-year, or average common equity is used as the denominator. Average common equity is conceptually the best figure to use. In public utility rate cases, people are reported to have deliberately used end-of-year or beginning-of-year equity to make returns on equity appear excessive or inadequate. Similar problems can arise when a firm is being evaluated.

Firms within the same industry may employ different accounting techniques, which makes it difficult to compare financial ratios. More fundamentally, comparisons may be misleading if firms in the same industry differ in their other investments. For example, comparing PepsiCo and Coca-Cola may be misleading because apart from their soft drink business, Pepsi also owns other businesses such as Frito-Lay, Pizza Hut, Taco Bell, and KFC.

<table>
<thead>
<tr>
<th></th>
<th>Total Assets</th>
<th>Current Ratio</th>
<th>Effect on Net Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>Cash is acquired through issuance of additional common stock.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>b.</td>
<td>Merchandise is sold for cash.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>c.</td>
<td>Federal income tax due for the previous year is paid.</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>d.</td>
<td>A fixed asset is sold for less than book value.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>e.</td>
<td>A fixed asset is sold for more than book value.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>f.</td>
<td>Merchandise is sold on credit.</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>g.</td>
<td>Payment is made to trade creditors for previous purchases.</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>h.</td>
<td>A cash dividend is declared and paid.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>i.</td>
<td>Cash is obtained through short-term bank loans.</td>
<td>+</td>
<td>-</td>
</tr>
<tr>
<td>j.</td>
<td>Short-term notes receivable are sold at a discount.</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>k.</td>
<td>Marketable securities are sold below cost.</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Answers and Solutions: 7-8
SOLUTIONS TO END-OF-CHAPTER PROBLEMS

7-1  \[ CA = \$3,000,000; \quad \frac{CA}{CL} = 1.5; \quad \frac{CA - I}{CL} = 1.0; \]

\[ CL = ?; \quad I = ? \]

\[ \frac{CA}{CL} = 1.5 \]
\[ \frac{\$3,000,000}{CL} = 1.5 \]
\[ 1.5 \cdot CL = \$3,000,000 \]
\[ CL = \$2,000,000. \]

\[ \frac{CA - I}{CL} = 1.0 \]
\[ \frac{\$3,000,000 - I}{\$2,000,000} = 1.0 \]
\[ \$3,000,000 - I = \$2,000,000 \]
\[ I = \$1,000,000. \]

7-2  \[ DSO = 40 \text{ days}; \quad ADS = \$20,000; \quad AR = ? \]

\[ DSO = \frac{AR}{S} \cdot \frac{360}{S} \]
\[ 40 = \frac{AR}{\$20,000} \]
\[ AR = \$800,000 \]

7-3  \[ A/E = 2.4; \quad D/A = ? \]

\[ D \quad A \]
\[ \begin{pmatrix} 1 & -\frac{1}{A} \\ -\frac{1}{E} & 1 \end{pmatrix} \]
\[ D \quad A \]
\[ \begin{pmatrix} 1 & -\frac{1}{2.4} \\ 0.5833 & 58.33\% \end{pmatrix} \]

Answers and Solutions: 7 - 10
a. (Dollar amounts in thousands.)

<table>
<thead>
<tr>
<th></th>
<th>Firm</th>
<th>Industry Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current assets</td>
<td>$655,000</td>
<td>1.98x</td>
</tr>
<tr>
<td>Current liabilities</td>
<td>$330,000</td>
<td>2.0x</td>
</tr>
<tr>
<td>DSO - Accounts</td>
<td>$336,000</td>
<td>75 days</td>
</tr>
<tr>
<td>accounts receivable</td>
<td>$4,465.28</td>
<td>35 days</td>
</tr>
<tr>
<td>Sales/360</td>
<td>$1,607,500</td>
<td>6.66x</td>
</tr>
<tr>
<td>Sales</td>
<td>$241,500</td>
<td>6.7x</td>
</tr>
<tr>
<td>Inventory</td>
<td>$1,607,500</td>
<td>5.50x</td>
</tr>
<tr>
<td>Fixed assets</td>
<td>$292,500</td>
<td>12.1x</td>
</tr>
<tr>
<td>Sales</td>
<td>$1,607,500</td>
<td>1.70x</td>
</tr>
<tr>
<td>Total assets</td>
<td>$947,500</td>
<td>3.0x</td>
</tr>
<tr>
<td>Net income / Sales</td>
<td>$27,300</td>
<td>1.7%</td>
</tr>
<tr>
<td>Sales</td>
<td>$1,607,500</td>
<td>1.2%</td>
</tr>
<tr>
<td>Net income / Total</td>
<td>$27,300</td>
<td>2.9%</td>
</tr>
<tr>
<td>assets</td>
<td>$947,500</td>
<td>3.6%</td>
</tr>
<tr>
<td>Net income / Common</td>
<td>$27,300</td>
<td>7.6%</td>
</tr>
<tr>
<td>equity</td>
<td>$361,000</td>
<td>9.0%</td>
</tr>
<tr>
<td>Total debt / Total</td>
<td>$586,500</td>
<td>61.9%</td>
</tr>
<tr>
<td>assets</td>
<td>$947,500</td>
<td>60.0%</td>
</tr>
</tbody>
</table>

b. For the firm,

\[
\text{ROE} = PM \times \text{T.A. turnover} \times \text{EM} = 1.7\% \times 1.7 \times \frac{947,500}{361,000} = 7.6\%.
\]

For the industry, \(\text{ROE} = 1.2\% \times 3 \times 2.5 = 9\%\).

Note: To find the industry ratio of assets to common equity, recognize that 1 - (total debt/total assets) = common equity/total assets. So, common equity/total assets = 40%, and \(1/0.40 = 2.5 = \text{total assets/common equity}\).
c. The firm’s days sales outstanding is more than twice as long as the industry average, indicating that the firm should tighten credit or enforce a more stringent collection policy. The total assets turnover ratio is well below the industry average so sales should be increased, assets decreased, or both. While the company’s profit margin is higher than the industry average, its other profitability ratios are low compared to the industry—net income should be higher given the amount of equity and assets. However, the company seems to be in an average liquidity position and financial leverage is similar to others in the industry.

d. If 2001 represents a period of supernormal growth for the firm, ratios based on this year will be distorted and a comparison between them and industry averages will have little meaning. Potential investors who look only at 2001 ratios will be misled, and a return to normal conditions in 2002 could hurt the firm’s stock price.

7-14  1. Debt = (0.50)(Total assets) = (0.50)($300,000) = $150,000.

2. Accounts payable - Debt - Long-term debt = $150,000 - $60,000 = $90,000

3. Common stock = Total liabilities - Debt - Retained earnings
   and equity
   = $300,000 - $150,000 - $97,500 = $52,500.

4. Sales = (1.5)(Total assets) = (1.5)($300,000) = $450,000.

5. Inventory = Sales/5 = $450,000/5 = $90,000.

6. Accounts receivable = (Sales/360)(DSO) = ($450,000/360)(36) = $45,000.

7. Cash + Accounts receivable = (0.80)(Accounts payable)
   Cash + $45,000 = (0.80)($90,000)
   Cash = $72,000 - $45,000 = $27,000.

8. Fixed assets = Total assets - (Cash + Accts rec. + Inventories)
   = $300,000 - ($27,000 + $45,000 + $90,000) = $138,000.

9. Cost of goods sold = (Sales)(1 - 0.25) = ($450,000)(0.75) = $337,500.