1. From abbreviated financial statements (dollars in millions):

   **Liquidity**
   (1) Net working capital = Current assets – Current liabilities:
       \[ = \$150 - \$100 = \$50 \]
   (2) Current ratio = Current assets/Current liabilities
       \[ = \$150/\$100 = 1.50 \]

   **Activity**
   (3) Total asset turnover = Sales/Total assets
       \[ = \$500/\$350 = 1.43 \]

   **Leverage**
   (4) Debt-equity ratio = Long-term debt/Stockholders’ equity
       \[ = \$50/\$200 = 0.25 \]
   (5) Times interest earned = Earnings before interest and taxes/Interest
       \[ = \$65/\$10 = 6.50 \]

   **Profitability**
   (6) Net profit margin = Net profits after taxes/Sales
       \[ = \$35/\$500 = 7.0\% \]
   (7) Return on total assets = Net profits after taxes/Total assets
       \[ = \$35/\$350 = 10.0\% \]
   (8) Return on equity = Net profits after taxes/Stockholders’ equity
       \[ = \$35/\$200 = 17.5\% \]

   **Common Stock Ratios**
   (9) Earnings per share = (Net profits after taxes – Preferred dividends)/
       Number of shares of common stock outstanding
       \[ = \$35 - 0/10 = \$3.50 \text{ per share} \]
   (10) Price/earnings ratio = Share price/EPS
       \[ = \$75/\$3.50 = 21.43 \text{ times} \]
   (11) Price-to-sales ratio = Share price/Sales per share
       \[ = \$75/(\$500/10) = 1.50 \]
   (12) Dividends per share = Total common dividends paid/Common shares outstanding
       \[ = \$10/10 = \$1 \text{ per share} \]
   (13) Dividend yield = Dividends per share/Share price
       \[ = \$1/\$75 = 1.33\% \]
   (14) Payout ratio = Dividends per share/EPS
       \[ = \$1/\$3.50 = 29\% \]
   (15) Book value per share = Common equity/Common shares outstanding
       \[ = \$200/10 = \$20 \]
   (16) Price-to-book value = Share price/Book value per share
$75/$20 = $3.75

3. Book value = ($750-$300)/300=$1.50

Price to book value =$5.25/$1.50=3.5

5. P/E = 15 and P = $25

$25/E = 15  $25/15 = E = $1.67

7. a. Total asset turnover = \( \frac{\text{Annual sales}}{\text{Total assets}} \)

For Highgate Computer:

Total asset turnover = \( \frac{28,000,000}{15,000,000} \) = 1.87 times

Net profit margin = \( \frac{\text{Net profits after taxes}}{\text{Annual sales}} \)

For Highgate Computer:

Net profit margin = \( \frac{2,000,000}{28,000,000} \) = 7.14%

b. Return on assets (ROA) = \( \frac{\text{Net profits after taxes}}{\text{Total assets}} \)

For Highgate Computer:

\[ \text{ROA} = \frac{2,000,000}{15,000,000} = 13.33\% \]

Note: The instructor might want to show that ROA can also be found by multiplying the firm’s total asset turnover by its net profit margin. This approach can be used to demonstrate that ROA is a function of a company’s profitability and its asset productivity. In the case of Highgate Computer, we have:

\[ \text{ROA} = \text{Total asset turnover} \times \text{Net profit margin} \]

\[ = 1.87 \times 0.0714 = 13.3\% \]

Return on equity (ROE) = \( \frac{\text{Net profits after taxes}}{\text{Stockholders' equity}} \)

For Highgate Computer:

\[ \text{ROE} = \frac{2,000,000}{6,000,000} = 33.33\% \]

Book value per share = \( \frac{\text{Stockholders' equity}}{\# \text{ of shares of common stock outstanding}} \)

For Highgate Computer:

Book value per share = \( \frac{6,000,000}{500,000} = $12 \text{ per share} \)

9. a. i. EPS = \( \frac{\text{Net profits after taxes – Preferred dividends}}{\text{Number of common shares outstanding}} \)
For Financial Learning Systems:

\[
EPS = \frac{\$6,850,000 - \$500,000}{2,500,000} = \$2.54
\]

(ii) Price/earning (P/E) ratio = \(\frac{\text{Market price of stock}}{\text{EPS}}\)

For Financial Learning Systems:

\[
P/E = \frac{\$45.00}{\$2.54} = 17.72
\]

(iii) Book value per share = \(\frac{\text{Stockholders' equity}}{\text{Number of common shares outstanding}}\)

For Financial Learning Systems:

\[
\text{Book value per share} = \frac{\$78,000,000 - \$32,000,000 - \$5,000,000}{2,500,000} = \$16.40 \text{ per share}
\]

b. If the EPS rises to $3.75:

\[
17.72 = \frac{\text{Market price of stock}}{\$3.75}
\]

Market price of stock = $66.45

If the EPS drops to $1.50:

\[
17.72 = \frac{\text{Market price of stock}}{\$1.50}
\]

Market price of stock = $26.58

c. If the EPS rises to $3.75 and P/E jumps to 25:

\[
25 = \frac{\text{Market price of stock}}{\$3.75}
\]

Market price of stock = $93.75

d. Both the EPS and P/E drop—to $1.50 and 10 times earnings:

\[
10 = \frac{\text{Market price of stock}}{\$1.50}
\]

Market price of stock = $15.00

e. As shown in the case of Financial Learning Systems, higher earnings improve the stock price for a given P/E multiple, and when the P/E multiple rises, for a given level of earnings, the stock price rises.

11. Price/earnings (P/E) ratio = \(\frac{\text{Market price of the stock}}{\text{EPS}}\)

First, find EPS:
\[
\text{EPS} = \frac{\text{Net profit after taxes}}{\text{Number of shares of stock outstanding}}
\]

Since Net profit after taxes = Sales \times \text{Net profit margin}:

\[
\text{EPS} = \frac{\$150,000,000 \times 0.10}{5,000,000} = \frac{\$15,000,000}{5,000,000} = \$3 \text{ per share}
\]

\[\text{P/E ratio} = \frac{\$25}{\$3} = 8.3 \text{ times}\]

\[\text{Price-to-sales ratio} = \frac{\text{Market price of stock}}{\text{Sales per share}}\]

Find sales per share:

\[
\text{SPS} = \frac{\text{Sales}}{\text{Number of shares outstanding}} = \frac{\$150,000,000}{5,000,000} = \$30 \text{ per share}
\]

Now the price-sales ratio is:

\[
\text{PSR} = \frac{\$25}{\$30} = 0.833
\]

\[\text{Dividend yield} = \frac{\text{Dividends per share}}{\text{Market price of common}} = \frac{\text{EPS} \times \text{Dividend payout ratio} \times \text{Market price of common}}{\text{Market price of common}} = \frac{\$3 \times 0.35}{\$25} = \frac{\$1.05}{\$25} = 4.2\%
\]

*Note: Dividends per share = EPS \times \text{Dividend payout ratio}

\[\text{PEG ratio} = \frac{\text{Stock's P/E ratio}}{3 \text{ to 5 years growth rate in earnings}}\]

This implies: Growth = \frac{\text{Stock's P/E Ratio}}{\text{PEG Ratio}}

\[\text{Growth} = 8.3/2 = 4.15\%\]

13. Return on equity = net income / equity

We know that equity is $125 million, so we need to calculate net income.

If the firm has asset turnover of 2.5 and total assets of $250 million, then sales are $625 million ($250 million \times 2.5). If the net profit margin is 6%, then net income is $37.5 million (6% \times $625 million). This implies that ROE is 30%.

We could also use the relationship \[\text{ROE} = \text{Profit margin} \times \text{Total asset turnover} \times \text{Assets/Equity}\]

\[6\% \times 2.5 \times \$25/\$125 = 30\%\]
15. There is no set solution to this problem because the answer will vary with the stock selected by the student. The students should be encouraged (or required) to actually compute the requested ratios from the recent financial statements of the companies they select. They can use annual reports, Mergent, or S&P to obtain needed balance sheet and income statement information. The Internet also has several useful sites.

This problem may result in some interesting and possibly confusing responses because students will get their information from many diverse sources. Frequently, the ratio calculations will differ. This presents the instructor with the opportunity to discuss refinements to ratio calculations, the importance of consistency, and the fact that the ratios are only tools to be used in the stock evaluation and selection process.

17. a. All of the following ratios for Otago Bay Marine Motors are based on the 2012 and 2013 financial statements (dollars in thousands) and are computed using the formulas in the chapter:

- **Current ratio**
  
  \[
  \text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}
  \]
  
  2012: \( \frac{133,212}{22,498} = 5.92 \)
  
  2013: \( \frac{111,914}{50,862} = 2.20 \)
  
  Industry: \( = 2.36 \)

- **Total asset turnover**
  
  \[
  \text{Total asset turnover} = \frac{\text{Sales}}{\text{Total assets}}
  \]
  
  2012: \( \frac{245,424}{224,470} = 1.09 \)
  
  2013: \( \frac{259,593}{303,940} = 0.85 \)
  
  Industry: \( = 1.27 \)

- **Debt-equity ratio**
  
  \[
  \text{Debt-equity ratio} = \frac{\text{Long-term debt}}{\text{Stockholders’ equity}}
  \]
  
  2012: \( \frac{20,268}{181,704} = 11.15\% \)
  
  2013: \( \frac{40,735}{212,343} = 19.18\% \)
  
  Industry: \( = 10.00\% \)

- **Net profit margin**
  
  \[
  \text{Net profit margin} = \frac{\text{Net profit after taxes}}{\text{Total revenues}}
  \]
  
  2012: \( \frac{32,032}{245,424} = 13.05\% \)
  
  2013: \( \frac{35,442}{259,593} = 13.65\% \)
  
  Industry: \( = 9.30\% \)

- **ROA**
  
  \[
  \text{ROA} = \frac{\text{Net profit after taxes}}{\text{Total assets}}
  \]
  
  2012: \( \frac{32,032}{224,470} = 14.27\% \)
  
  2013: \( \frac{35,442}{303,940} = 11.66\% \)
  
  Industry: \( = 15.87\% \)

- **ROE**
  
  \[
  \text{ROE} = \frac{\text{Net profit after taxes}}{\text{Stockholders’ equity}}
  \]
  
  2012: \( \frac{32,032}{181,704} = 17.63\% \)
  
  2013: \( \frac{35,442}{212,343} = 16.69\% \)
  
  Industry: \( = 19.21\% \)

- **EPS**
  
  \[
  \text{EPS} = \frac{\text{Net profit after taxes} - \text{Preferred dividends}}{\text{Number of common shares outstanding}}
  \]
  
  2012: \( \frac{32,032 - 0}{10,848} = \$2.95 \) per share
  
  2013: \( \frac{35,442 - 0}{10,848} = \$3.27 \) per share
Industry = $1.59

(8) P/E ratio = Shared price/EPS
   2012 $80.75/$2.95 = 27.37
   2013 $74.25/$3.27 = 22.71
   Industry = 19.87

(9) Dividend yield = Dividends per share/Market price per share
   2012 $0.27/$80.75 = 0.33%
   2013 $0.35/$74.25 = 0.47%
   Industry = 0.44%

(10) Dividend payout ratio = Dividends per share/EPS
   2012 $0.27/$2.95 = 9.15%
   2013 $0.35/$3.27 = 10.70%
   Industry = 26.00%

(11) Price-to-book-value ratio = Share price/Book value per share
    
    Book value per share = Stockholders' equity
                           Number of common shares outstanding
    
    2012 BV = \$181,704 = \$16.75
              10,848
    2013 BV = \$212,343 = \$19.57
              10,848
    
    Price-to-book value:
    2012 = $80.75/$16.75 = 4.82
    2013 = $74.25/$19.57 = 3.79
    Industry = 6.65

b. Based on the comparison to industry average ratios, the financial condition of Otago Bay Marine Motors (OBMM) appears to be deteriorating. First, OBMM’s current ratio has declined 63%, indicating its ability to meet short-term obligations has weakened substantially. OBMM’s current liabilities, which have grown 126% over the past year, are driving this weakened position in liquidity.

Also, the activity measure—total asset turnover—which was below the industry average last year, has declined even further, suggesting that corporate resources are being poorly managed. With respect to leverage, OBMM’s ratio has grown to nearly twice the industry average, indicating a need to control and reduce the amount of debt in the capital structure. Despite the high leverage ratio, the firm’s ROE, which indicates the extent to which leverage has enhanced the returns to stockholders, has declined even further below the industry’s average. Similarly, OBMM’s ROA has declined even further below the industry’s average ROA. The decline in ROA is related to the large increase (115%) in PPE and the 107% increase in other long-term assets. A complete analysis would necessarily include an analysis of these assets. For example, the increase in PPE could indicate that the company is anticipating future growth or that the company has updated its PPE and will be much more profitable in the future due to the efficiencies of modern equipment.

The market appears to reflect this deterioration in OBMM’s financial picture from 2009 to 2010. The stock price has declined 8%, and the P/E ratio has declined 17%, and the price-to-book value has declined another 1% to about half of the industry average.
In summary, despite the relatively small percentage increases in net profit after taxes, Otago Bay Marine Motors seems poorly managed. If left unchecked, OBMM’s financial condition will deteriorate further and be reflected in profitability measures well-below industry averages. Although OBMM’s ratios are only one part of their total financial outlook, they seem to indicate that problems exist within the firm.