

Solutions Manual

Fundamentals of Corporate Finance (2nd Asia Global Edition)
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CHAPTER 3

WORKING WITH FINANCIAL STATEMENTS

Answers to Concepts Review and Critical Thinking Questions

1.
 - a. If inventory is purchased with cash, then there is no change in the current ratio. If inventory is purchased on credit, then there is a decrease in the current ratio if it was initially greater than 1.0.
 - b. Reducing accounts payable with cash increases the current ratio if it was initially greater than 1.0.
 - c. Reducing short-term debt with cash increases the current ratio if it was initially greater than 1.0.
 - d. As long-term debt approaches maturity, the principal repayment and the remaining interest expense become current liabilities. Thus, if debt is paid off with cash, the current ratio increases if it was initially greater than 1.0. If the debt has not yet become a current liability, then paying it off will reduce the current ratio since current liabilities are not affected.
 - e. Reduction of accounts receivables and an increase in cash leaves the current ratio unchanged.
 - f. Inventory sold at cost reduces inventory and raises cash, so the current ratio is unchanged.
 - g. Inventory sold for a profit raises cash in excess of the inventory recorded at cost, so the current ratio increases.
2. The firm has increased inventory relative to other current assets; therefore, assuming current liability levels remain unchanged, liquidity has potentially decreased.
3. A current ratio of 0.50 means that the firm has twice as much in current liabilities as it does in current assets; the firm potentially has poor liquidity. If pressed by its short-term creditors and suppliers for immediate payment, the firm might have a difficult time meeting its obligations. A current ratio of 1.50 means the firm has 50% more current assets than it does current liabilities. This probably represents an improvement in liquidity; short-term obligations can generally be met completely with a safety factor built in. A current ratio of 15.0, however, might be excessive. Any excess funds sitting in current assets generally earn little or no return. These excess funds might be put to better use by investing in productive long-term assets or distributing the funds to shareholders.
4.
 - a. Quick ratio provides a measure of the short-term liquidity of the firm, after removing the effects of inventory, generally the least liquid of the firm's current assets.
 - b. Cash ratio represents the ability of the firm to completely pay off its current liabilities with its most liquid asset (cash).
 - c. Total asset turnover measures how much in sales is generated by each dollar of firm assets.
 - d. Equity multiplier represents the degree of leverage for an equity investor of the firm; it measures the dollar worth of firm assets each equity dollar has a claim to.
 - e. Long-term debt ratio measures the percentage of total firm capitalization funded by long-term debt.

- f.* Times interest earned ratio provides a relative measure of how well the firm's operating earnings can cover current interest obligations.
 - g.* Profit margin is the accounting measure of bottom-line profit per dollar of sales.
 - h.* Return on assets is a measure of bottom-line profit per dollar of total assets.
 - i.* Return on equity is a measure of bottom-line profit per dollar of equity.
 - j.* Price-earnings ratio reflects how much value per share the market places on a dollar of accounting earnings for a firm.
5. Common size financial statements express all balance sheet accounts as a percentage of total assets and all income statement accounts as a percentage of total sales. Using these percentage values rather than nominal dollar values facilitates comparisons between firms of different size or business type. Common-base year financial statements express each account as a ratio between their current year nominal dollar value and some reference year nominal dollar value. Using these ratios allows the total growth trend in the accounts to be measured.
6. Peer group analysis involves comparing the financial ratios and operating performance of a particular firm to a set of peer group firms in the same industry or line of business. Comparing a firm to its peers allows the financial manager to evaluate whether some aspects of the firm's operations, finances, or investment activities are out of line with the norm, thereby providing some guidance on appropriate actions to take to adjust these ratios if appropriate. An aspirant group would be a set of firms whose performance the company in question would like to emulate. The financial manager often uses the financial ratios of aspirant groups as the target ratios for his or her firm; some managers are evaluated by how well they match the performance of an identified aspirant group.
7. Return on equity is probably the most important accounting ratio that measures the bottom-line performance of the firm with respect to the equity shareholders. The Du Pont identity emphasizes the role of a firm's profitability, asset utilization efficiency, and financial leverage in achieving an ROE figure. For example, a firm with ROE of 20% would seem to be doing well, but this figure may be misleading if it were marginally profitable (low profit margin) and highly levered (high equity multiplier). If the firm's margins were to erode slightly, the ROE would be heavily impacted.
8. The book-to-bill ratio is intended to measure whether demand is growing or falling. It is closely followed because it is a barometer for the entire high-tech industry where levels of revenues and earnings have been relatively volatile.
9. If a company is growing by opening new stores, then presumably total revenues would be rising. Comparing total sales at two different points in time might be misleading. Same-store sales control for this by only looking at revenues of stores open within a specific period.
- 10.
- a.* For an electric utility such as Hong Kong Electric Company, expressing costs on a per kilowatt hour basis would be a way to compare costs with other utilities of different sizes.
 - b.* For a retailer such as Uniqlo, expressing sales on a per square foot basis would be useful in comparing revenue production against other retailers.
 - c.* For an airline such as Thai Airways, expressing costs on a per passenger mile basis allows for comparisons with other airlines by examining how much it costs to fly one passenger one mile.

- d. For an on-line service provider such as China Mobile, using a per call basis for costs would allow for comparisons with smaller services. A per subscriber basis would also make sense.
 - e. For a hotel such as Hilton, revenues and costs expressed on a per room basis would be useful.
 - f. For a bank such as Bank Mandiri in Indonesia, the average deposit per customer allows it to assess whether it is attracting the right type of customer. The cost of servicing a small customer is relatively more than that of servicing a larger customer.
11. Reporting the sale of Treasury securities as cash flow from operations is an accounting “trick”, and as such, should constitute a possible red flag about the companies accounting practices. For most companies, the gain from a sale of securities should be placed in the financing section. Including the sale of securities in the cash flow from operations would be acceptable for a financial company, such as an investment or commercial bank.
12. Increasing the payables period increases the cash flow from operations. This could be beneficial for the company as it may be a cheap form of financing, but it is basically a one time change. The payables period cannot be increased indefinitely as it will negatively affect the company’s credit rating if the payables period becomes too long.

Solutions to Questions and Problems

NOTE: All end of chapter problems were solved using a spreadsheet. Many problems require multiple steps. Due to space and readability constraints, when these intermediate steps are included in this solutions manual, rounding may appear to have occurred. However, the final answer for each problem is found without rounding during any step in the problem.

Basic

1. Using the formula for NWC, we get:

$$\begin{aligned} \text{NWC} &= \text{CA} - \text{CL} \\ \text{CA} &= \text{CL} + \text{NWC} = \$4,200 + 1,800 = \$6,000 \end{aligned}$$

So, the current ratio is:
 $\text{Current ratio} = \text{CA} / \text{CL} = \$6,000 / \$4,200 = 1.43 \text{ times}$

And the quick ratio is:
 $\text{Quick ratio} = (\text{CA} - \text{Inventory}) / \text{CL} = (\$6,000 - 2,800) / \$4,200 = 0.76 \text{ times}$

2. We need to find net income first. So:

$$\begin{aligned} \text{Profit margin} &= \text{Net income} / \text{Sales} \\ \text{Net income} &= \text{Sales} (\text{Profit margin}) \\ \text{Net income} &= (\$18,000,000)(0.08) = \$1,440,000 \end{aligned}$$

$$\text{ROA} = \text{Net income} / \text{TA} = \$1,440,000 / \$14,500,000 = .0993 \text{ or } 9.93\%$$

To find ROE, we need to find total equity. Since TL & OE equals TA:

$$TA = TD + TE$$

$$TE = TA - TD$$

$$TE = \$14,500,000 - 2,300,000 = \$12,200,000$$

$$ROE = \text{Net income} / TE = 1,440,000 / \$12,200,000 = .1180 \text{ or } 11.80\%$$

3. Receivables turnover = Sales / Receivables
Receivables turnover = $\$3,943,709 / \$431,287 = 9.14$ times

$$\text{Days' sales in receivables} = 365 \text{ days} / \text{Receivables turnover} = 365 / 9.14 = 39.92 \text{ days}$$

The average collection period for an outstanding accounts receivable balance was 39.92 days.

4. Inventory turnover = COGS / Inventory
Inventory turnover = $\$4,250,000 / \$375,200 = 11.33$ times

$$\text{Days' sales in inventory} = 365 \text{ days} / \text{Inventory turnover} = 365 / 11.33 = 32.22 \text{ days}$$

On average, a unit of inventory sat on the shelf 32.22 days before it was sold.

5. Total debt ratio = 0.63 = TD / TA

Substituting total debt plus total equity for total assets, we get:

$$0.63 = TD / (TD + TE)$$

Solving this equation yields:

$$0.63(TE) = 0.37(TD)$$

$$\text{Debt/equity ratio} = TD / TE = 0.63 / 0.37 = 1.70$$

$$\text{Equity multiplier} = 1 + D/E = 2.70$$

6. Net income = Addition to RE + Dividends = $\$430,000 + 175,000 = \$605,000$
- Earnings per share = NI / Shares = $\$605,000 / 210,000 = \2.88 per share
- Dividends per share = Dividends / Shares = $\$175,000 / 210,000 = \0.83 per share
- Book value per share = TE / Shares = $\$5,300,000 / 210,000 = \25.24 per share
- Market-to-book ratio = Share price / BVPS = $\$63 / \$25.24 = 2.50$ times
- P/E ratio = Share price / EPS = $\$63 / \$2.88 = 21.87$ times
- Sales per share = Sales / Shares = $\$4,500,000 / 210,000 = \21.43
- P/S ratio = Share price / Sales per share = $\$63 / \$21.43 = 2.94$ times

7. $ROE = (PM)(TAT)(EM)$
 $ROE = (.055)(1.15)(2.80) = .1771$ or 17.71%

8. This question gives all of the necessary ratios for the DuPont Identity except the equity multiplier, so, using the DuPont Identity:

$$ROE = (PM)(TAT)(EM)$$

$$ROE = .2005 = (.072)(1.95)(EM)$$

$$EM = .2005 / (.072)(1.95) = 1.43$$

$$D/E = EM - 1 = 1.43 - 1 = 0.43$$

9. Decrease in inventory is a source of cash
 Decrease in accounts payable is a use of cash
 Increase in notes payable is a source of cash
 Increase in accounts receivable is a use of cash
 Change in cash = sources – uses = $\$375 - 190 + 210 - 105 = \290
 Cash increased by \$290

10. Payables turnover = $COGS / Accounts\ payable$
 Payables turnover = $\$32,725 / \$5,800 = 5.64$ times

$$\text{Days' sales in payables} = 365 \text{ days} / \text{Payables turnover}$$

$$\text{Days' sales in payables} = 365 / 5.64 = 64.69 \text{ days}$$

The company left its bills to suppliers outstanding for 64.69 days on average. A large value for this ratio could imply that either (1) the company is having liquidity problems, making it difficult to pay off its short-term obligations, or (2) that the company has successfully negotiated lenient credit terms from its suppliers.

11. New investment in fixed assets is found by:

$$\text{Net investment in FA} = (NFA_{\text{end}} - NFA_{\text{beg}}) + \text{Depreciation}$$

$$\text{Net investment in FA} = \$980 + 245 = \$1,225$$

The company bought \$1,225 in new fixed assets; this is a use of cash.

12. The equity multiplier is:

$$EM = 1 + D/E$$

$$EM = 1 + 0.65 = 1.65$$

One formula to calculate return on equity is:

$$ROE = (ROA)(EM)$$

$$ROE = .085(1.65) = .1403$$
 or 14.03%

ROE can also be calculated as:

$$\text{ROE} = \text{NI} / \text{TE}$$

So, net income is:

$$\text{NI} = \text{ROE}(\text{TE})$$

$$\text{NI} = (.1403)(\$540,000) = \$75,735$$

13. through 15:

	2014	#13	2015	#13	#14	#15
Assets						
Current assets						
Cash	\$8,436	2.86%	\$10,157	3.13%	1.2040	1.0961
Accounts receivable	21,530	7.29%	23,406	7.21%	1.0871	0.9897
Inventory	38,760	13.12%	42,650	13.14%	1.1004	1.0017
Total	\$68,726	23.26%	\$76,213	23.48%	1.1089	1.0095
Fixed assets						
Net plant and equipment	226,706	76.74%	248,306	76.52%	1.0953	0.9971
Total assets	\$295,432	100%	\$324,519	100%	1.0985	1.0000
Liabilities and Owners' Equity						
Current liabilities						
Accounts payable	\$43,050	14.57%	\$46,821	14.43%	1.0876	0.9901
Notes payable	18,384	6.22%	17,382	5.36%	0.9455	0.8608
Total	\$61,434	20.79%	\$64,203	19.78%	1.0451	0.9514
Long-term debt	25,000	8.46%	32,000	9.86%	1.2800	1.1653
Owners' equity						
Common stock and paid-in surplus	\$40,000	13.54%	\$40,000	12.33%	1.0000	0.9104
Accumulated retained earnings	168,998	57.20%	188,316	58.03%	1.1143	1.0144
Total	\$208,998	70.74%	\$228,316	70.36%	1.0924	0.9945
Total liabilities and owners' equity	\$295,432	100%	\$324,519	100%	1.0985	1.0000

The common-size balance sheet answers are found by dividing each category by total assets. For example, the cash percentage for 2014 is:

$$\$8,436 / \$295,432 = .0286 \text{ or } 2.86\%$$

This means that cash is 2.86% of total assets.

The common-base year answers for Question 14 are found by dividing each category value for 2015 by the same category value for 2014. For example, the cash common-base year number is found by:

$$\$10,157 / \$8,436 = 1.2040$$

This means the cash balance in 2015 is 1.2040 times as large as the cash balance in 2014.

The common-size, common-base year answers for Question 15 are found by dividing the common-size percentage for 2015 by the common-size percentage for 2014. For example, the cash calculation is found by:

$$3.13\% / 2.86\% = 1.0961$$

This tells us that cash, as a percentage of assets, increased by 9.61%.

16.	2014	Sources/Uses	2015
Assets			
Current assets			
Cash	\$8,436	\$1,721 U	\$10,157
Accounts receivable	21,530	1,876 U	23,406
Inventory	38,760	3,890 U	42,650
Total	<u>\$68,726</u>	<u>\$7,487 U</u>	<u>\$76,213</u>
Fixed assets			
Net plant and equipment	<u>\$226,706</u>	<u>\$21,600 U</u>	<u>\$248,306</u>
Total assets	<u>\$295,432</u>	<u>\$29,087 U</u>	<u>\$324,519</u>
Liabilities and Owners' Equity			
Current liabilities			
Accounts payable	\$43,050	3,771 S	\$46,821
Notes payable	<u>18,384</u>	<u>-1,002 U</u>	<u>17,382</u>
Total	\$61,434	2,769 S	\$64,203
Long-term debt	25,000	\$7,000 S	32,000
Owners' equity			
Common stock and paid-in surplus	\$40,000	\$0	\$40,000
Accumulated retained earnings	<u>168,998</u>	<u>19,318 S</u>	<u>188,316</u>
Total	<u>\$208,998</u>	<u>\$19,318 S</u>	<u>\$228,316</u>
Total liabilities and owners' equity	<u>\$295,432</u>	<u>\$29,087 S</u>	<u>\$324,519</u>

The firm used \$29,087 in cash to acquire new assets. It raised this amount of cash by increasing liabilities and owners' equity by \$29,087. In particular, the needed funds were raised by internal financing (on a net basis), out of the additions to retained earnings, an increase in current liabilities, and by an issue of long-term debt.

17. a. Current ratio = Current assets / Current liabilities
 Current ratio 2014 = \$68,726 / \$61,434 = 1.12 times
 Current ratio 2015 = \$76,213 / \$64,203 = 1.19 times
- b. Quick ratio = (Current assets – Inventory) / Current liabilities
 Quick ratio 2014 = (\$67,726 – 38,760) / \$61,434 = 0.49 times
 Quick ratio 2015 = (\$76,213 – 42,650) / \$64,203 = 0.52 times
- c. Cash ratio = Cash / Current liabilities
 Cash ratio 2014 = \$8,436 / \$61,434 = 0.14 times
 Cash ratio 2015 = \$10,157 / \$64,203 = 0.16 times
- d. NWC ratio = NWC / Total assets
 NWC ratio 2014 = (\$68,726 – 61,434) / \$295,432 = 2.47%
 NWC ratio 2015 = (\$76,213 – 64,203) / \$324,519 = 3.70%
- e. Debt-equity ratio = Total debt / Total equity
 Debt-equity ratio 2014 = (\$61,434 + 25,000) / \$208,998 = 0.41 times
 Debt-equity ratio 2015 = (\$64,206 + 32,000) / \$228,316 = 0.42 times
- Equity multiplier = 1 + D/E
 Equity multiplier 2014 = 1 + 0.41 = 1.41
 Equity multiplier 2015 = 1 + 0.42 = 1.42
- f. Total debt ratio = (Total assets – Total equity) / Total assets
 Total debt ratio 2014 = (\$295,432 – 208,998) / \$295,432 = 0.29
 Total debt ratio 2015 = (\$324,519 – 228,316) / \$324,519 = 0.30
- Long-term debt ratio = Long-term debt / (Long-term debt + Total equity)
 Long-term debt ratio 2014 = \$25,000 / (\$25,000 + 208,998) = 0.11
 Long-term debt ratio 2015 = \$32,000 / (\$32,000 + 228,316) = 0.12

Intermediate

18. This is a multi-step problem involving several ratios. The ratios given are all part of the DuPont Identity. The only DuPont Identity ratio not given is the profit margin. If we know the profit margin, we can find the net income since sales are given. So, we begin with the DuPont Identity:

$$\text{ROE} = 0.15 = (\text{PM})(\text{TAT})(\text{EM}) = (\text{PM})(\text{S} / \text{TA})(1 + \text{D/E})$$

Solving the DuPont Identity for profit margin, we get:

$$\text{PM} = [(\text{ROE})(\text{TA})] / [(1 + \text{D/E})(\text{S})]$$

$$\text{PM} = [(0.15)(\$3,105)] / [(1 + 1.4)(\$5,276)] = .0368$$

Now that we have the profit margin, we can use this number and the given sales figure to solve for net income:

$$\text{PM} = .0368 = \text{NI} / \text{S}$$

$$\text{NI} = .0368(\$5,276) = \$194.06$$

19. This is a multi-step problem involving several ratios. It is often easier to look backward to determine where to start. We need receivables turnover to find days' sales in receivables. To calculate receivables turnover, we need credit sales, and to find credit sales, we need total sales. Since we are given the profit margin and net income, we can use these to calculate total sales as:

$$PM = 0.087 = NI / \text{Sales} = \$321,000 / \text{Sales}; \text{Sales} = \$3,689,655$$

Credit sales are 70 percent of total sales, so:

$$\text{Credit sales} = \$3,689,655(0.70) = \$2,582,759$$

Now we can find receivables turnover by:

$$\text{Receivables turnover} = \text{Credit sales} / \text{Accounts receivable} = \$2,582,759 / \$165,000 = 15.65 \text{ times}$$

$$\text{Days' sales in receivables} = 365 \text{ days} / \text{Receivables turnover} = 365 / 15.65 = 23.32 \text{ days}$$

20. The solution to this problem requires a number of steps. First, remember that $CA + NFA = TA$. So, if we find the CA and the TA, we can solve for NFA. Using the numbers given for the current ratio and the current liabilities, we solve for CA:

$$CR = CA / CL$$

$$CA = CR(CL) = 1.25(\$875) = \$1,093.75$$

To find the total assets, we must first find the total debt and equity from the information given. So, we find the sales using the profit margin:

$$PM = NI / \text{Sales}$$

$$NI = PM(\text{Sales}) = .095(\$5,870) = \$549.10$$

We now use the net income figure as an input into ROE to find the total equity:

$$ROE = NI / TE$$

$$TE = NI / ROE = \$549.10 / .185 = \$2,968.11$$

Next, we need to find the long-term debt. The long-term debt ratio is:

$$\text{Long-term debt ratio} = 0.45 = LTD / (LTD + TE)$$

Inverting both sides gives:

$$1 / 0.45 = (LTD + TE) / LTD = 1 + (TE / LTD)$$

Substituting the total equity into the equation and solving for long-term debt gives the following:

$$2.222 = 1 + (\$2,968.11 / LTD)$$

$$LTD = \$2,968.11 / 1.222 = \$2,428.45$$

Now, we can find the total debt of the company:

$$TD = CL + LTD = \$875 + 2,428.45 = \$3,303.45$$

And, with the total debt, we can find the TD&E, which is equal to TA:

$$TA = TD + TE = \$3,303.45 + 2,968.11 = \$6,271.56$$

And finally, we are ready to solve the balance sheet identity as:

$$NFA = TA - CA = \$6,271.56 - 1,093.75 = \$5,177.81$$

21. Child: Profit margin = $NI / S = \$3.00 / \$50 = .06$ or 6%

Store: Profit margin = $NI / S = \$22,500,000 / \$750,000,000 = .03$ or 3%

The advertisement is referring to the store's profit margin, but a more appropriate earnings measure for the firm's owners is the return on equity.

$$ROE = NI / TE = NI / (TA - TD)$$

$$ROE = \$22,500,000 / (\$420,000,000 - 280,000,000) = .1607 \text{ or } 16.07\%$$

22. The solution requires substituting two ratios into a third ratio. Rearranging D/TA:

Firm A

$$D / TA = .30$$

$$(TA - E) / TA = .30$$

$$(TA / TA) - (E / TA) = .30$$

$$1 - (E / TA) = .30$$

$$E / TA = .70$$

$$E = .70(TA)$$

Firm B

$$D / TA = .20$$

$$(TA - E) / TA = .20$$

$$(TA / TA) - (E / TA) = .20$$

$$1 - (E / TA) = .20$$

$$E / TA = .80$$

$$E = .80(TA)$$

Rearranging ROA, we find:

$$NI / TA = .12$$

$$NI = .12(TA)$$

$$NI / TA = .11$$

$$NI = .11(TA)$$

Since $ROE = NI / E$, we can substitute the above equations into the ROE formula, which yields:

$$ROE = .12(TA) / .70(TA) = .12 / .70 = 17.14\% \quad ROE = .11(TA) / .80(TA) = .11 / .80 = 13.75\%$$

23. This problem requires you to work backward through the income statement. First, recognize that Net income = $(1 - t)EBT$. Plugging in the numbers given and solving for EBT, we get:

$$EBT = \$13,168 / (1 - 0.34) = \$19,951.52$$

Now, we can add interest to EBT to get EBIT as follows:

$$EBIT = EBT + \text{Interest paid} = \$19,951.52 + 3,605 = \$23,556.52$$

To get EBITD (earnings before interest, taxes, and depreciation), the numerator in the cash coverage ratio, add depreciation to EBIT:

$$\text{EBITD} = \text{EBIT} + \text{Depreciation} = \$23,556.52 + 2,382 = \$25,938.52$$

Now, simply plug the numbers into the cash coverage ratio and calculate:

$$\text{Cash coverage ratio} = \text{EBITD} / \text{Interest} = \$25,938.52 / \$3,605 = 7.20 \text{ times}$$

24. The only ratio given which includes cost of goods sold is the inventory turnover ratio, so it is the last ratio used. Since current liabilities is given, we start with the current ratio:

$$\text{Current ratio} = 1.60 = \text{CA} / \text{CL} = \text{CA} / \$365,000$$

$$\text{CA} = \$584,000$$

Using the quick ratio, we solve for inventory:

$$\text{Quick ratio} = 0.75 = (\text{CA} - \text{Inventory}) / \text{CL} = (\$584,000 - \text{Inventory}) / \$365,000$$

$$\text{Inventory} = \text{CA} - (\text{Quick ratio} \times \text{CL})$$

$$\text{Inventory} = \$584,000 - (0.75 \times \$365,000)$$

$$\text{Inventory} = \$310,250$$

$$\text{Inventory turnover} = 5.80 = \text{COGS} / \text{Inventory} = \text{COGS} / \$310,250$$

$$\text{COGS} = \$1,799,450$$

25. $\text{PM} = \text{NI} / \text{S} = -\$13,482,000 / \$138,793 = -0.0971$ or -9.71%

As long as both net income and sales are measured in the same currency, there is no problem; in fact, except for some market value ratios like EPS and BVPS, none of the financial ratios discussed in the text are measured in terms of currency. This is one reason why financial ratio analysis is widely used in international finance to compare the business operations of firms and/or divisions across national economic borders. The net income in dollars is:

$$\text{NI} = \text{PM} \times \text{Sales}$$

$$\text{NI} = -0.0971(\$274,213,000) = -\$26,636,355$$

26. *Short-term solvency ratios:*

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

$$\text{Current ratio 2014} = \$56,260 / \$38,963 = 1.44 \text{ times}$$

$$\text{Current ratio 2015} = \$60,550 / \$43,235 = 1.40 \text{ times}$$

$$\text{Quick ratio} = (\text{Current assets} - \text{Inventory}) / \text{Current liabilities}$$

$$\text{Quick ratio 2014} = (\$56,260 - 23,084) / \$38,963 = 0.85 \text{ times}$$

$$\text{Quick ratio 2015} = (\$60,550 - 24,650) / \$43,235 = 0.83 \text{ times}$$

$$\text{Cash ratio} = \text{Cash} / \text{Current liabilities}$$

$$\text{Cash ratio 2014} = \$21,860 / \$38,963 = 0.56 \text{ times}$$

$$\text{Cash ratio 2015} = \$22,050 / \$43,235 = 0.51 \text{ times}$$

Asset utilization ratios:

Total asset turnover	= Sales / Total assets
Total asset turnover	= \$305,830 / \$321,075 = 0.95 times
Inventory turnover	= Cost of goods sold / Inventory
Inventory turnover	= \$210,935 / \$24,650 = 8.56 times
Receivables turnover	= Sales / Accounts receivable
Receivables turnover	= \$305,830 / \$13,850 = 22.08 times

Long-term solvency ratios:

Total debt ratio	= (Total assets – Total equity) / Total assets
Total debt ratio 2010	= (\$290,328 – 176,365) / \$290,328 = 0.39
Total debt ratio 2011	= (\$321,075 – 192,840) / \$321,075 = 0.40
Debt-equity ratio	= Total debt / Total equity
Debt-equity ratio 2010	= (\$38,963 + 75,000) / \$176,365 = 0.65
Debt-equity ratio 2011	= (\$43,235 + 85,000) / \$192,840 = 0.66
Equity multiplier	= 1 + D/E
Equity multiplier 2010	= 1 + 0.65 = 1.65
Equity multiplier 2011	= 1 + 0.66 = 1.66
Times interest earned	= EBIT / Interest
Times interest earned	= \$68,045 / \$11,930 = 5.70 times
Cash coverage ratio	= (EBIT + Depreciation) / Interest
Cash coverage ratio	= (\$68,045 + 26,850) / \$11,930 = 7.95 times

Profitability ratios:

Profit margin	= Net income / Sales
Profit margin	= \$36,475 / \$305,830 = 0.1193 or 11.93%
Return on assets	= Net income / Total assets
Return on assets	= \$36,475 / \$321,075 = 0.1136 or 11.36%
Return on equity	= Net income / Total equity
Return on equity	= \$36,475 / \$192,840 = 0.1891 or 18.91%

27. The DuPont identity is:

$$\text{ROE} = (\text{PM})(\text{TAT})(\text{EM})$$
$$\text{ROE} = (0.1193)(0.95)(1.66) = 0.1891 \text{ or } 18.91\%$$

28.

TIGER GOLF CORP.
Statement of Cash Flows
For 2015

Cash, beginning of the year	\$ 21,860
 <i>Operating activities</i>	
Net income	\$ 36,475
Plus:	
Depreciation	\$ 26,850
Increase in accounts payable	3,530
Increase in other current liabilities	1,742
Less:	
Increase in accounts receivable	\$ (2,534)
Increase in inventory	(1,566)
	\$ 64,497
 <i>Investment activities</i>	
Fixed asset acquisition	\$(53,307)
	\$(53,307)
 <i>Financing activities</i>	
Increase in notes payable	\$ (1,000)
Dividends paid	(20,000)
Increase in long-term debt	10,000
	\$(11,000)
 <i>Net increase in cash</i>	 \$ 190
 Cash, end of year	 \$ 22,050

29. Earnings per share = Net income / Shares
Earnings per share = $\$36,475 / 25,000 = \1.46 per share
- P/E ratio = Shares price / Earnings per share
P/E ratio = $\$43 / \$1.46 = 29.47$ times
- Dividends per share = Dividends / Shares
Dividends per share = $\$20,000 / 25,000 = \0.80 per share
- Book value per share = Total equity / Shares
Book value per share = $\$192,840 / 25,000$ shares = $\$7.71$ per share

$$\begin{aligned}\text{Market-to-book ratio} &= \text{Share price} / \text{Book value per share} \\ \text{Market-to-book ratio} &= \$43 / \$7.71 = 5.57 \text{ times}\end{aligned}$$

$$\begin{aligned}\text{PEG ratio} &= \text{P/E ratio} / \text{Growth rate} \\ \text{PEG ratio} &= 29.47 / 9 = 3.27 \text{ times}\end{aligned}$$

- 30.** First, we will find the market value of the company's equity, which is:

$$\begin{aligned}\text{Market value of equity} &= \text{Shares} \times \text{Share price} \\ \text{Market value of equity} &= 25,000(\$43) = \$1,075,000\end{aligned}$$

The total book value of the company's debt is:

$$\begin{aligned}\text{Total debt} &= \text{Current liabilities} + \text{Long-term debt} \\ \text{Total debt} &= \$43,235 + 85,000 = \$128,235\end{aligned}$$

Now we can calculate Tobin's Q, which is:

$$\begin{aligned}\text{Tobin's Q} &= (\text{Market value of equity} + \text{Book value of debt}) / \text{Book value of assets} \\ \text{Tobin's Q} &= (\$1,075,000 + 128,235) / \$321,075 \\ \text{Tobin's Q} &= 3.75\end{aligned}$$

Using the book value of debt implicitly assumes that the book value of debt is equal to the market value of debt. This will be discussed in more detail in later chapters, but this assumption is generally true. Using the book value of assets assumes that the assets can be replaced at the current value on the balance sheet. There are several reasons this assumption could be flawed. First, inflation during the life of the assets can cause the book value of the assets to understate the market value of the assets. Since assets are recorded at cost when purchased, inflation means that it is more expensive to replace the assets. Second, improvements in technology could mean that the assets could be replaced with more productive, and possibly cheaper, assets. If this is true, the book value can overstate the market value of the assets. Finally, the book value of assets may not accurately represent the market value of the assets because of depreciation. Depreciation is done according to some schedule, generally straight-line or MACRS. Thus, the book value and market value can often diverge.