

Chapter-3 Solutions to Problems

P3-1. Reviewing basic financial statements

LG 1; Basic

Income statement: In this one-year summary of the firm's operations, Technica, Inc. showed a net profit for 2012 and the ability to pay cash dividends to its stockholders.

Balance sheet: The financial condition of Technica, Inc. at December 31, 2011 and 2012 is shown as a summary of assets and liabilities. Technica, Inc. has an excess of current assets over current liabilities, demonstrating liquidity. The firm's fixed assets represent over one-half of total assets (\$270,000 of \$408,300). The firm is financed by short-term debt, long-term debt, common stock, and retained earnings. It appears that it repurchased 500 shares of common stock in 2012.

Statement of retained earnings: Technica, Inc. earned a net profit of \$42,900 in 2012 and paid out \$20,000 in cash dividends. The reconciliation of the retained earnings account from \$50,200 to \$73,100 shows the net amount (\$22,900) retained by the firm.

P3-2. Financial statement account identification

LG 1; Basic

Account Name	(a) Statement	(b) Type of Account
Accounts payable	BS	CL
Accounts receivable	BS	CA
Accruals	BS	CL
Accumulated depreciation	BS	FA *
Administrative expense	IS	E
Buildings	BS	FA
Cash	BS	CA
Common stock (at par)	BS	SE
Cost of goods sold	IS	E
Depreciation	IS	E
Equipment	BS	FA
General expense	IS	E
Interest expense	IS	E
Inventories	BS	CA
Land	BS	FA
Long-term debt	BS	LTD
Machinery	BS	FA
Marketable securities	BS	CA
Notes payable	BS	CL
Operating expense	IS	E
Paid-in capital in excess of par	BS	SE
Preferred stock	BS	SE
Preferred stock dividends	IS	E
Retained earnings	BS	SE
Sales revenue	IS	R
Selling expense	IS	E
Taxes	IS	E
Vehicles	BS	FA

* This is really not a fixed asset, but a charge against a fixed asset, better known as a contra-asset.

P3-3. Income statement preparation

LG 1; Intermediate

a.

Cathy Chen, CPA Income Statement for the Year Ended December 31, 2012		
Sales revenue		\$360,000
Less: Operating expenses		
Salaries	180,000	
Employment taxes and benefits	34,600	
Supplies	10,400	
Travel & entertainment	17,000	
Lease payment	32,400	
Depreciation expense	<u>15,600</u>	
Total operating expense		<u>290,000</u>
Operating profits		\$ 70,000
Less: Interest expense		<u>15,000</u>
Net profits before taxes		\$ 55,000
Less: Taxes (30%)		<u>16,500</u>
Net profits after taxes		<u>\$ 38,500</u>

- b. In her first year of business, Cathy Chen covered all her operating expenses and earned a net profit of \$38,500 on revenues of \$360,000.

P3-4. Personal finance: Income statement preparation

LG 1; Intermediate

a.

Adam's salary	\$45,000	
Arin's salary	30,000	
Interest received	500	
Dividends received	<u>150</u>	
Total Income		\$75,650
Expenses		
Mortgage payments	14,000	
Utility expense	3,200	
Groceries	2,200	
Auto loan payment	3,300	
Home insurance	750	
Auto insurance	600	
Medical expenses	1,500	
Property taxes	1,659	
Income tax and social security	13,000	
Clothes and accessories	2,000	
Gas and auto repair	2,100	
Entertainment	<u>2,000</u>	
Total Expenses		\$46,309
Cash Surplus or (Deficit)		<u>\$29,341</u>

- b. Since income exceeds expenses, the Adams have a cash surplus.
- c. The cash surplus can be used for a variety of purposes. In the short term, they may replace their car, buy better furniture, or more quickly pay off their home. Alternatively, they may purchase stocks and bonds, or increase their savings for future needs. Investments in the stock market are generally designed to increase an individual's future wealth, the purchase of bonds typically allows one to at least retain their purchasing power, while investment in savings accounts provides liquidity.

P3-5. Calculation of EPS and retained earnings

LG 1; Intermediate

a. **Earnings per share:**

Net profit before taxes	\$218,000
Less: Taxes at 40%	<u>87,200</u>
Net profit after tax	\$130,800
Less: Preferred stock dividends	32,000
Earnings available to common stockholders	<u>\$ 98,800</u>

$$\text{Earnings per share} = \frac{\text{Earnings available to common stockholders}}{\text{Total shares outstanding}} = \frac{\$98,800}{85,000} = \$1.162$$

b. **Amount to retained earnings:**

85,000 shares × \$0.80 = \$68,000 common stock dividends	
Earnings available to common shareholders	\$98,800
Less: Common stock dividends	<u>68,000</u>
To retained earnings	<u>\$30,800</u>

P3-6. Income statement preparation

LG 1; Intermediate

Owen Davis Company Balance Sheet December 31, 2012	
Assets	
Current assets:	
Cash	\$ 215,000
Marketable securities	75,000
Accounts receivable	450,000
Inventories	<u>375,000</u>
Total current assets	\$1,115,000
Gross fixed assets	
Land and buildings	\$ 325,000
Machinery and equipment	560,000
Furniture and fixtures	170,000
Vehicles	<u>25,000</u>
Total gross fixed assets	\$1,080,000
Less: Accumulated depreciation	<u>265,000</u>
Net fixed assets	<u>\$ 815,000</u>
Total assets	<u>\$1,930,000</u>

Liabilities and stockholders' equity

Current liabilities:

Accounts payable	\$ 220,000
Notes payable	475,000
Accruals	<u>55,000</u>
Total current liabilities	\$ 750,000
Long-term debt	<u>420,000</u>
Total liabilities	\$1,170,000

Stockholders' equity

Preferred stock	\$ 100,000
Common stock (at par)	90,000
Paid-in capital in excess of par	360,000
Retained earnings	<u>210,000</u>
Total stockholders' equity	\$ 760,000
Total liabilities and stockholders' equity	<u>\$1,930,000</u>

P3-7. Personal Finance: Balance sheet preparation

LG 1; Basic

a.

Adam and Arin Adams Balance Sheet December 31, 2012			
Assets		Liabilities and Net Worth	
Cash	\$ 300	Utility bills	\$ 150
Checking	3,000	Medical bills	250
Savings	1,200	Credit card balance	<u>2,000</u>
Money market funds	<u>1,200</u>	Total Current Liabilities	\$ 2,400
Total Liquid Assets	\$ 5,700		
IBM stock	2,000	Mortgage	100,000
Retirement funds, IRA	<u>2,000</u>	Auto loan	8,000
Total Investments	\$ 4,000	Personal loan	<u>3,000</u>
		Total Long-Term Liabilities	\$111,000
Total Real Estate	\$150,000	Total Liabilities	\$113,400
2011 Sebring	15,000	Total Net Worth	<u>76,500</u>
2010 Jeep	8,000		
Household furnishings	4,200	Total Liabilities and Net Worth	<u>\$189,900</u>
Jewelry and artwork	<u>3,000</u>		
Total Personal Property	\$ 30,200		
Total Assets	\$189,900		

- b. Total assets of the Adams family must equal its debt plus the extent to which it has either experienced a gain in value or paid the cost of an asset (its net worth).
- c. Working Capital = Total Liquid Assets – Total Current Liabilities
 Working Capital = \$5,700 – \$2,400 = \$3,300

P3-8. Impact of net income on a firm's balance sheet

LG 1; Basic

	Account	Beginning Value	Change	Ending Value
a.	Marketable securities	\$ 35,000	+\$1,365,000	\$1,400,000
	Retained earnings	\$1,575,000	+\$1,365,000	\$2,940,000
b.	Long-term debt	\$2,700,000	-\$ 865,000	\$1,835,000
	Retained earnings	\$1,575,000	+\$ 865,000	\$2,440,000
c.	Buildings	\$1,600,000	+\$ 865,000	\$2,465,000
	Retained earnings	\$1,575,000	+\$ 865,000	\$2,440,000
d.	No net change in any accounts			

P3-9. Initial sale price of common stock

LG 1; Basic

$$\text{Initial sales price} = \frac{(\text{Par value of common stock} + \text{Paid in capital in excess of par})}{\text{Number of common shares outstanding}}$$

$$\text{Initial sales price} = \frac{\$225,000 + \$2,625,000}{300,000} = \$9.50 \text{ per share}$$

P3-10. Statement of retained earnings

LG 1; Intermediate

- a. Cash dividends paid on common stock = Net profits after taxes – preferred dividends – change in retained earnings
 $= \$377,000 - \$47,000 - (1,048,000 - \$928,000)$
 $= \$210,000$

Hayes Enterprises Statement of Retained Earnings for the Year Ended December 31, 2012	
Retained earnings balance (January 1, 2011)	\$ 928,000
Plus: Net profits after taxes (for 2012)	377,000
Less: Cash dividends (paid during 2012)	
Preferred stock	(47,000)
Common stock	<u>(210,000)</u>
Retained earnings (December 31, 2012)	<u>\$1,048,000</u>

$$b. \text{ Earnings per share} = \frac{\text{Net profit after tax} - \text{Preferred dividends (EACS*)}}{\text{Number of common shares outstanding}}$$

$$\text{Earnings per share} = \frac{\$377,000 - \$47,000}{140,000} = \$2.36$$

*Earnings available to common stockholders

$$c. \text{ Cash dividend per share} = \frac{\text{Total cash dividend}}{\text{\# shares}}$$

$$\text{Cash dividend per share} = \frac{\$210,000 \text{ (from Part a)}}{140,000} = \$1.50$$

P3-11. Changes in stockholders' equity

LG 1; Intermediate

$$a. \text{ Net income for 2012} = \text{change in retained earnings} + \text{dividends paid}$$

$$\text{Net income for 2012} = (\$1,500,000 - \$1,000,000) + \$200,000 = \$700,000$$

$$b. \text{ New shares issued} = \text{outstanding shares 2012} - \text{outstanding shares 2011}$$

$$\text{New shares issued} = 1,500,000 - 500,000 = 1,000,000$$

$$c. \text{ Average issuance price} = \frac{\Delta \text{Paid-in-capital} + \Delta \text{Common stock}}{\Delta \text{ shares outstanding}}$$

$$\text{Average issuance price} = \frac{\$4,000,000 + \$1,000,000}{1,000,000} = \$5.00$$

$$d. \text{ Original issuance price} = \frac{\text{Paid-in-capital} + \text{Common stock}}{\text{Number of shares issued}}$$

$$\text{Original issuance price} = \frac{\$500,000 + \$500,000}{500,000} = \$2.00$$

P3-12. Ratio comparisons

LG 2, 3, 4, 5; Basic

- The four companies are in very different industries. The operating characteristics of firms across different industries vary significantly, resulting in very different ratio values.
- The explanation for the lower current and quick ratios most likely rests on the fact that these two industries operate primarily on a cash basis. Their accounts receivable balances are going to be much lower than for the other two companies.
- High level of debt can be maintained if the firm has a large, predictable, and steady cash flow. Utilities tend to meet these cash flow requirements. The software firm will have very uncertain and changing cash flow. The software industry is subject to greater competition resulting in more volatile cash flow.
- Although the software industry has potentially high profits and investment return performance, it also has a large amount of uncertainty associated with the profits. Also, by placing all of the money in one stock, the benefits of reduced risk associated with diversification are lost.

P3-13. Liquidity management

LG 3; Basic

a.

	2009	2010	2011	2012
Current ratio	1.88	1.74	1.79	1.55
Quick ratio	1.22	1.19	1.24	1.14
Net working capital	\$7,950	\$9,300	\$9,900	\$9,600

- b. The pattern indicates a deteriorating liquidity position. The decline is most pronounced for the current ratio which includes inventory.
- c. The low inventory turnover suggests that liquidity is even worse than the declining liquidity measures indicate. Slow inventory turnover may indicate obsolete inventory.

P3-14. Personal finance: Liquidity ratio

LG 3; Basic

a. Liquity ratio = $\frac{\text{Total liquid assets}}{\text{Total current debts}} = \frac{\$3,200 + \$1,000 + \$800}{\$1,200 + \$900} = \frac{\$5,000}{\$2,100} = 2.38$

- b. Since Josh's liquidity ratio exceeds 1.8, Josh has more liquidity than his benchmark friends.

P3-15. Inventory management

LG 3; Basic

a. Sales	\$4,000,000	100%
Less: Gross profit	<u>\$1,600,000</u>	<u>40%</u>
Cost of goods sold	\$2,400,000	60%

$$\text{Average inventory} = \frac{\$400,000 + \$800,000 + \$1,200,000 + \$200,000}{4} = \$650,000$$

$$\text{Inventory turnover} = \frac{\text{Cost of goods sold}}{\text{Average inventory}} = \frac{\$2,400,000}{\$650,000} = 3.69 \text{ times}$$

$$\text{Average age of inventory} = \frac{365}{3.69} = 98.9 \text{ days}$$

- b. The Wilkins Manufacturing inventory turnover ratio significantly exceeds the industry. Although this may represent efficient inventory management, it may also represent low inventory levels resulting in stockouts.

P3-16. Accounts receivable management

LG 3; Basic

- a. Average collection period = accounts receivable ÷ average sales per day

$$\text{Average collection period} = \frac{\$300,000}{\frac{\$2,400,000}{365}} = \frac{\$300,000}{6,575.34} = 45.62 \text{ days}$$

Since the average age of receivables is over 15 days beyond the net date, attention should be directed to accounts receivable management.

- b. This may explain the lower turnover and higher average collection period. The December accounts receivable balance of \$300,000 may not be a good measure of the average accounts receivable, thereby causing the calculated average collection period to be overstated. It also suggests the November figure (0–30 days overdue) is not a cause for great concern. However, 13% of all accounts receivable (those arising in July, August, and September) are 60 days or more overdue and may be a sign of poor receivables management.

P3-17. Interpreting liquidity and activity ratios

LG 3; Intermediate

- a. Bluegrass appears to be holding excess inventory relative to the industry. This fact is supported by the low inventory turnover and the low quick ratio, even though the current ratio is above the industry average. This excess inventory could be due to slow sales relative to production or possibly from carrying obsolete inventory.
- b. The accounts receivable of Bluegrass appears to be high due to the large number of days of sales outstanding (73 vs. the industry average of 52 days). An important question for internal management is whether the company's credit policy is too lenient or customers are just paying slowly—or potentially not paying at all.
- c. Since the firm is paying its accounts payable in 31 days vs. the industry norm of 40 days, Bluegrass may not be taking full advantage of credit terms extended to them by their suppliers. By having the receivables collection period over twice as long as the payables payment period, the firm is financing a significant amount of current assets, possibly from long-term sources.
- d. The desire is that management will be able to curtail the level of inventory either by reducing production or encouraging additional sales through a stronger sales program or discounts. If the inventory is obsolete, then it must be written off to gain the income tax benefit. The firm must also push to try to get their customers to pay earlier. Payment timing can be increased by shortening credit terms or providing a discount for earlier payment. Slowing down the payment of accounts payable would also reduce financing costs.
- Carrying out these recommendations may be difficult because of the potential loss of customers due to stricter credit terms. The firm would also not want to increase their costs of purchases by delaying payment beyond any discount period given by their suppliers.

P3-18. Debt analysis

LG 4; Basic

Ratio	Definition	Calculation	Creek	Industry
Debt	Debt	\$36,500,000	0.73	0.51
	Total assets	\$50,000,000		
Times	EBIT	\$3,000,000	3.00	7.30
Interest earned	Interest	\$1,000,000		
Fixed Payment Coverage				
	EBIT + Lease payment	\$3,000,000 + \$200,000	1.19	1.85
	Interest + Lease payments	\$1,000,000 + \$200,000		
	+ {[(principal + preferred stock Dividends)] × [1 ÷ (1 – t)]}	+ {[((\$800,000 + \$100,000)] × [1 ÷ (1 – 0.4)]}		

Because Creek Enterprises has a much higher degree of indebtedness and much lower ability to service debt than the average firm in the industry, the loan should be rejected.

P3-19. Common-size statement analysis

LG 5; Intermediate

Creek Enterprises				
Common-Size Income Statement				
for the Years Ended December 31, 2011 and 2012				
	2012		2011	
Sales revenue		100.0%		100.0%
Less: Cost of goods sold		70.0%		65.9%
Gross profits		30.0%		34.1%
Less: Operating expenses:				
Selling	10.0%		12.7%	
General	6.0%		6.3%	
Lease expense	0.7%		0.6%	
Depreciation	<u>3.3%</u>	<u>20.0%</u>	<u>3.6%</u>	<u>23.2%</u>
Operating profits		10.0%		10.9%
Less: Interest expense		<u>3.3%</u>		<u>1.5%</u>
Net Profits before taxes		6.7%		9.4%
Less: Taxes		<u>2.7%</u>		<u>3.8%</u>
Net profits after taxes		<u>4.0%</u>		<u>5.6%</u>

Sales have declined and cost of goods sold has increased as a percentage of sales, probably due to a loss of productive efficiency. Operating expenses have decreased as a percent of sales; this appears favorable unless this decline has contributed toward the fall in sales. The level of interest as a percentage of sales has increased significantly; this is verified by the high debt measures in Problem 15, and suggests that the firm has too much debt.

Further analysis should be directed at the increased cost of goods sold and the high debt level.

P3-20. The relationship between financial leverage and profitability

LG 4, 5; Challenge

a. (1) Debt ratio = $\frac{\text{total liabilities}}{\text{total assets}}$

$$\text{Debt ratio}_{\text{Pelican}} = \frac{\$1,000,000}{\$10,000,000} = 0.10 = 10\%$$

$$\text{Debt ratio}_{\text{Timberland}} = \frac{\$5,000,000}{\$10,000,000} = 0.50 = 50\%$$

(2) Times interest earned = $\frac{\text{earning before interest and taxes}}{\text{interest}}$

$$\text{Times interest earned}_{\text{Pelican}} = \frac{\$6,250,000}{\$100,000} = 62.5$$

$$\text{Times interest earned}_{\text{Timberland}} = \frac{\$6,250,000}{\$500,000} = 12.5$$

Timberland has a much higher degree of financial leverage than does Pelican. As a result, Timberland's earnings will be more volatile, causing the common stock owners to face greater risk. This additional risk is supported by the significantly lower times interest earned ratio of Timberland. Pelican can face a very large reduction in net income and still be able to cover its interest expense.

$$b. (1) \text{ Operating profit margin} = \frac{\text{operating profit}}{\text{sales}}$$

$$\text{Operating profit margin}_{\text{Pelican}} = \frac{\$6,250,000}{\$25,000,000} = 0.25 = 25\%$$

$$\text{Operating profit margin}_{\text{Timberland}} = \frac{\$6,250,000}{\$25,000,000} = 0.25 = 25\%$$

$$(2) \text{ Net profit margin} = \frac{\text{Earnings available for common stockholders}}{\text{sales}}$$

$$\text{Net profit margin}_{\text{Pelican}} = \frac{\$3,690,000}{\$25,000,000} = 0.1476 = 14.76\%$$

$$\text{Net profit margin}_{\text{Timberland}} = \frac{\$3,450,000}{\$25,000,000} = 0.138 = 13.80\%$$

$$(3) \text{ Return on total assets} = \frac{\text{Earnings available for common stockholders}}{\text{total assets}}$$

$$\text{Return on total assets}_{\text{Pelican}} = \frac{\$3,690,000}{\$10,000,000} = 0.369 = 36.9\%$$

$$\text{Return on total assets}_{\text{Timberland}} = \frac{\$3,450,000}{\$10,000,000} = 0.345 = 34.5\%$$

$$(4) \text{ Return on common equity} = \frac{\text{Earnings available for common stockholders}}{\text{Common stock equity}}$$

$$\text{Return on common equity}_{\text{Pelican}} = \frac{\$3,690,000}{\$9,000,000} = 0.41 = 41.0\%$$

$$\text{Return on common equity}_{\text{Timberland}} = \frac{\$3,450,000}{\$5,000,000} = 0.69 = 69.0\%$$

Pelican is more profitable than Timberland, as shown by the higher operating profit margin, net profit margin, and return on assets. However, the return on equity for Timberland is higher than that of Pelican.

- c. Even though Pelican is more profitable, Timberland has a higher ROE than Pelican due to the additional financial leverage risk. The lower profits of Timberland are due to the fact that interest expense is deducted from EBIT. Timberland has \$500,000 of interest expense to Pelican's \$100,000. Even after the tax shield from the interest tax deduction ($\$500,000 \times 0.40 = \$200,000$), Timberland's profits are less than Pelican's by \$240,000. Since Timberland has a higher relative amount of debt, the stockholders' equity is proportionally reduced resulting in the higher return to equity than that obtained by Pelican. The higher ROE brings with it higher levels of financial risk for Timberland equity holders.

P3-21. Ratio proficiency

LG 6; Basic

- a. Gross profit = sales \times gross profit margin
Gross profit = $\$40,000,000 \times 0.8 = \$32,000,000$
- b. Cost of goods sold = sales – gross profit
Cost of goods sold = $\$40,000,000 - \$32,000,000 = \$8,000,000$
- c. Operating profit = sales \times operating profit margin
Operating profit = $\$40,000,000 \times 0.35 = \$14,000,000$
- d. Operating expenses = gross profit – operating profit
Operating expenses = $\$32,000,000 - \$14,000,000 = \$18,000,000$
- e. Earnings available for common shareholders
= sales \times net profit margin = $\$40,000,000 \times 0.08 = \$3,200,000$
- f. Total assets = $\frac{\text{sales}}{\text{total asset turnover}} = \frac{\$40,000,000}{2} = \$20,000,000$
- g. Total common equity = $\frac{\text{earnings available for common shareholders}}{\text{ROE}}$
Total common equity = $\frac{\$3,200,000}{0.20} = \$16,000,000$
- h. Accounts receivable = average collection period $\times \frac{\text{sales}}{365}$
Accounts receivable = $62.2 \text{ days} \times \frac{\$40,000,000}{365} = 62.2 \times \$109,589.041 = \$6,816,438.36$

P3-22. Cross-sectional ratio analysis

LG 6; Intermediate

a.

Fox Manufacturing Company Ratio Analysis		
	Industry Average 2012	Actual 2012
Current ratio	2.35	1.84
Quick ratio	0.87	0.75
Inventory turnover	4.55 times	5.61 times
Average collection period	35.8 days	20.5 days
Total asset turnover	1.09	1.47
Debt ratio	0.30	0.55
Times interest earned	12.3	8.0
Gross profit margin	0.202	0.233
Operating profit margin	0.135	0.133
Net profit margin	0.091	0.072
Return on total assets	0.099	0.105
Return on common equity	0.167	0.234
Earnings per share	\$3.10	\$2.15

Liquidity: The current and quick ratios show a weaker position relative to the industry average.

Activity: All activity ratios indicate a faster turnover of assets compared to the industry.

Further analysis is necessary to determine whether the firm is in a weaker or stronger position than the industry. A higher inventory turnover ratio may indicate low inventory, resulting in stockouts and lost sales. A shorter average collection period may indicate extremely efficient receivables management, an overly zealous credit department, or credit terms that prohibit growth in sales.

Debt: The firm uses more debt than the average firm, resulting in higher interest obligations that could reduce its ability to meet other financial obligations.

Profitability: The firm has a higher gross profit margin than the industry, indicating either a higher sales price or a lower cost of goods sold. The operating profit margin is in line with the industry, but the net profit margin is lower than industry, an indication that expenses other than cost of goods sold are higher than the industry. Most likely, the damaging factor is high interest expenses due to a greater than average amount of debt. The increased leverage, however, magnifies the return the owners receive, as evidenced by the superior ROE.

- b. Fox Manufacturing Company needs improvement in its liquidity ratios and possibly a reduction in its total liabilities. The firm is more highly leveraged than the average firm in its industry and therefore has more financial risk. The profitability of the firm is lower than average but is enhanced by the use of debt in the capital structure, resulting in a superior ROE.

P3-23. Financial statement analysis

LG 6; Intermediate

a.

Zach Industries Ratio Analysis			
	Industry Average	Actual 2011	Actual 2012
Current ratio	1.80	1.84	1.04
Quick ratio	0.70	0.78	0.38
Inventory turnover	2.50	2.59	2.33
Average collection period	37.5 days	36.5 days	57 days
Debt ratio	65%	67%	61.3%
Times interest earned	3.8	4.0	2.8
Gross profit margin	38%	40%	34%
Net profit margin	3.5%	3.6%	4.1%
Return on total assets	4.0%	4.0%	4.4%
Return on common equity	9.5%	8.0%	11.3%
Market/book ratio	1.1	1.2	1.3

- b. **Liquidity:** Zach Industries' liquidity position has deteriorated from 2011 to 2012 and is inferior to the industry average. The firm may not be able to satisfy short-term obligations as they come due.

Activity: Zach Industries' ability to convert assets into cash has deteriorated from 2011 to 2012. Examination into the cause of the 20.5-day increase in the average collection period is warranted. Inventory turnover has also decreased for the period under review and is fair compared to industry. The firm may be holding slightly excessive inventory.

Debt: Zach Industries' debt position has improved since 2011 and is below average. Zach Industries' ability to service interest payments has deteriorated and is below the industry average.

Profitability: Although Zach Industries' gross profit margin is below its industry average, indicating high cost of goods sold, the firm has a superior net profit margin in comparison to average. The firm has lower than average operating expenses. The firm has a superior return on investment and return on equity in comparison to the industry and shows an upward trend.

Market: Zach Industries' increase in their market price relative to their book value per share indicates that the firm's performance has been interpreted as more positive in 2012 than in 2011 and it is a little higher than the industry.

Overall, the firm maintains superior profitability at the risk of illiquidity. Investigation into the management of accounts receivable and inventory is warranted.

P3-24. PROBLEM SET-1 ASSIGNMENT QUESTION

market seems to have some lack of confidence in the stability of Sterling's future.

P3-25. DuPont system of analysis

LG 6; Intermediate

a.

	Margin(%)	×	Turnover	=	ROA(%)	×	FL Multiple	=	ROE(%)
2012									
Johnson	4.9	×	2.34	=	11.47	×	1.85	=	21.21
Industry	4.1	×	2.15	=	8.82	×	1.64	=	14.46
2011									
Johnson	5.8	×	2.18	=	12.64	×	1.75	=	22.13
Industry	4.7	×	2.13	=	10.01	×	1.69	=	16.92
2010									
Johnson	5.9	×	2.11	=	12.45	×	1.75	=	21.79
Industry	5.4	×	2.05	=	11.07	×	1.67	=	18.49

- b. **Profitability:** Industry net profit margins are decreasing; Johnson's net profit margins have fallen less.

Efficiency: Both industry's and Johnson's asset turnover have increased.

Leverage: Only Johnson shows an increase in leverage from 2011 to 2012, while the industry has had less stability. Between 2010 and 2011, leverage for the industry increased, while it decreased between 2011 and 2012.

As a result of these changes, the ROE has fallen for both Johnson and the industry, but Johnson has experienced a much smaller decline in its ROE.

- c. Areas that require further analysis are profitability and debt. Since the total asset turnover is increasing and is superior to that of the industry, Johnson is generating an appropriate sales level for the given level of assets. But why is the net profit margin falling for both industry and Johnson? Has there been increased competition causing downward pressure on prices? Is the cost of raw materials, labor, or other expenses rising? A common-size income statement could be useful in determining the cause of the falling net profit margin.

Note: Some management teams attempt to magnify returns through the use of leverage to offset declining margins. This strategy is effective only within a narrow range. A high leverage strategy may actually result in a decline in stock price due to the increased risk.

P3-26: PROBLEM SET-1 ASSIGNMENT QUESTION

P3-27. Ethics problem

LG 1; Intermediate

Answers will vary by article chosen, but in general students will report that financial statements are more trustworthy if company financial executives implement the provisions of SOX.