**1.** Using the formula for NWC, we get:

NWC = CA – CL

CA = CL + NWC = $3,720 + 1,370 = $5,090

So, the current ratio is:

Current ratio = CA / CL = $5,090/$3,720 = 1.37 times

And the quick ratio is:

Quick ratio = (CA – Inventory) / CL = ($5,090 – 1,950) / $3,720 = 0.84 times

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

ROA = Net income / TA = $2,320,000 / $17,500,000 = .1326 or 13.26%

TE = $17,500,000 – 6,300,000 = $11,200,000

ROE = Net income / TE = 2,320,000 / $11,200,000 = .2071 or 20.71%

**3.**

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

**4.** On average, a unit of inventory sat on the shelf 36.23 days before it was sold.

**5.** 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 = .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 = .1827 = (.068)(1.95)(EM)

EM = .1827 / (.068)(1.95) = 1.38

D/E = EM – 1 = 1.38 – 1 = 0.38

**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.**  Days’ sales in payables = 365 / 4.72 = 77.28 days

The company left its bills to suppliers outstanding for 77.25 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:

Net investment in FA = (NFAend – NFAbeg) + Depreciation

Net investment in FA = $835 + 148 = $983

The company bought $983 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:

ROE = NI / TE

So, net income is:

NI = ROE(TE)

NI = (.1403)($540,000) = $75,735

**13.** through **15**:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2008** | **#13** |  | **2009** | **#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 2008 is:

$8,436 / $295,432 = .0286 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 2009 by the same category value for 2008. For example, the cash common-base year number is found by:

$10,157 / $8,436 = 1.2040

This means the cash balance in 2009 is 1.2040 times as large as the cash balance in 2008.

The common-size, common-base year answers for Question 15 are found by dividing the common-size percentage for 2009 by the common-size percentage for 2008. 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.** | 2008 |  | Sources/Uses |  |  | 2008 |
| 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 | $68,726 |  | $7,487 | U |  | $76,213 |
| Fixed assets |  |  |  |  |  |  |
| Net plant and equipment | $226,706 |  | $21,600 | U |  | $248,306 |
| Total assets | $295,432 |  | $29,087 | U |  | $324,519 |
|  |  |  |  |  |  |  |
| Liabilities and Owners’ Equity |  |  |  |  |  |  |
| Current liabilities |  |  |  |  |  |  |
| Accounts payable | $43,050 |  | 3,771 | S |  | $46,821 |
| Notes payable | 18,384 |  | –1,002 | U |  | 17,382 |
| 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 | 168,998 |  | 19,318 | S |  | 188,316 |
| Total | $208,998 |  | $19,318 | S |  | $228,316 |
| Total liabilities and owners' equity | $295,432 |  | $29,087 | S |  | $324,519 |

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 2008 = $68,726 / $61,434 = 1.12 times

Current ratio 2009 = $76,213 / $64,203 = 1.19 times

*b.* Quick ratio = (Current assets – Inventory) / Current liabilities

Quick ratio 2008 = ($67,726 – 38,760) / $61,434 = 0.49 times

Quick ratio 2009 = ($76,213 – 42,650) / $64,203 = 0.52 times

*c.* Cash ratio = Cash / Current liabilities

Cash ratio 2008 = $8,436 / $61,434 = 0.14 times

Cash ratio 2009 = $10,157 / $64,203 = 0.16 times

*d.* NWC ratio = NWC / Total assets

NWC ratio 2008 = ($68,726 – 61,434) / $295,432 = 2.47%

NWC ratio 2009 = ($76,213 – 64,203) / $324,519 = 3.70%

*e.* Debt-equity ratio = Total debt / Total equity

Debt-equity ratio 2008 = ($61,434 + 25,000) / $208,998 = 0.41 times

Debt-equity ratio 2009 = ($64,206 + 32,000) / $228,316 = 0.42 times

Equity multiplier = 1 + D/E

Equity multiplier 2008 = 1 + 0.41 = 1.41

Equity multiplier 2009 = 1 + 0.42 = 1.42

*f.* Total debt ratio = (Total assets – Total equity) / Total assets

Total debt ratio 2008 = ($295,432 – 208,998) / $295,432 = 0.29

Total debt ratio 2009 = ($324,519 – 228,316) / $324,519 = 0.30

Long-term debt ratio = Long-term debt / (Long-term debt + Total equity)

Long-term debt ratio 2008 = $25,000 / ($25,000 + 208,998) = 0.11

Long-term debt ratio 2009 = $32,000 / ($32,000 + 228,316) = 0.12

**18.**

ROE = 0.15 = (PM)(TAT)(EM) = (PM)(S / TA)(1 + D/E)

Solving the DuPont Identity for profit margin, we get:

PM = [(ROE)(TA)] / [(1 + D/E)(S)]

PM = [(0.15)($3,105)] / [(1 + 1.4)( $5,726)] = .0339

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

PM = .0339 = NI / S

NI = .0339($5,726) = $194.06

**19.** PM = 0.087 = NI / Sales = $218,000 / Sales; Sales = $2,505,747

Credit sales are 70 percent of total sales, so:

Credit sales = $2,515,747(0.70) = $1,754,023

Now we can find receivables turnover by:

Receivables turnover = Credit sales / Accounts receivable = $1,754,023 / $132,850 = 13.20 times

Days’ sales in receivables = 365 days / Receivables turnover = 365 / 13.20 = 27.65 days

**20.**

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 / Sales

NI = PM(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:

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%

ROE = NI / TE = NI / (TA – TD)

ROE = $22,500,000 / ($420,000,000 – 280,000,000) = .1607 or 16.07%

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

Firm A Firm B

D / TA = .35 D / TA = .30

(TA – E) / TA = .35 (TA – E) / TA = .30

(TA / TA) – (E / TA) = .35 (TA / TA) – (E / TA) = .30

1 – (E / TA) = .35 1 – (E / TA) = .30

E / TA = .65 E / TA = .30

E = .65(TA) E = .70 (TA)

Rearranging ROA, we find:

NI / TA = .12 NI / TA = .11

NI = .12(TA) NI = .11(TA)

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

ROE = .12(TA) / .65(TA) = .12 / .65 = 18.46% ROE = .11(TA) / .70 (TA) = .11 / .70 = 15.71%

**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 + 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:

EBITD = EBIT + Depreciation = $23,556.52 + 2,382 = $25,938.52

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

Cash coverage ratio = EBITD / Interest = $25,938.52 / $3,605 = 7.20 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:

Current ratio = 1.40 = CA / CL = CA / $365,000

CA = $511,000

Using the quick ratio, we solve for inventory:

Quick ratio = 0.85 = (CA – Inventory) / CL = ($511,000 – Inventory) / $365,000

Inventory = CA – (Quick ratio × CL)

Inventory = $511,000 – (0.85 × $365,000)

Inventory = $200,750

Inventory turnover = 5.82 = COGS / Inventory = COGS / $200,750

COGS = $1,164,350

**25.** PM = NI / S = –£13,482,000 / £138,793 = –0.0971 or –9.71%

NI = PM × Sales

NI = –0.0971($274,213,000) = –$26,636,355

**26.** *Short-term solvency ratios:*

Current ratio = Current assets / Current liabilities

Current ratio 2008 = $56,260 / $38,963 = 1.44 times

Current ratio 2009 = $60,550 / $43,235 = 1.40 times

Quick ratio = (Current assets – Inventory) / Current liabilities

Quick ratio 2008 = ($56,260 – 23,084) / $38,963 = 0.85 times

Quick ratio 2009 = ($60,550 – 24,650) / $43,235 = 0.83 times

Cash ratio = Cash / Current liabilities

Cash ratio 2008 = $21,860 / $38,963 = 0.56 times

Cash ratio 2009 = $22,050 / $43,235 = 0.51 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 2008 = ($290,328 – 176,365) / $290,328 = 0.39

Total debt ratio 2009 = ($321,075 – 192,840) / $321,075 = 0.40

Debt-equity ratio = Total debt / Total equity

Debt-equity ratio 2008 = ($38,963 + 75,000) / $176,365 = 0.65

Debt-equity ratio 2009 = ($43,235 + 85,000) / $192,840 = 0.66

Equity multiplier = 1 + D/E

Equity multiplier 2008 = 1 + 0.65 = 1.65

Equity multiplier 2009 = 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:

ROE = (PM)(TAT)(EM)

ROE = (0.1193)(0.95)(1.66) = 0.1891 or 18.91%

**28.** SMOLIRA GOLF CORP.

Statement of Cash Flows

For 2009

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Cash, beginning of the year** | | | | | | $ 21,860 |
|  |  |  |  |  |  |  |  |  |
|  |  | *Operating activities* | | | | |  |  |
|  |  |  | 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) |
|  |  |  |  |  |  |  |  |  |
|  |  | *Net cash from operating activities* | | | | | | $ 64,497 |
|  |  |  |  |  |  |  |  |  |
|  |  | *Investment activities* | | | | |  |  |
|  |  |  | Fixed asset acquisition | | | | | $(53,307) |
|  |  | *Net cash from investment activities* | | | | | | $(53,307) |
|  |  |  |  |  |  |  |  |  |
|  |  | *Financing activities* | | | | |  |  |
|  |  |  | Increase in notes payable | | | | | $ (1,000) |
|  |  |  | Dividends paid | | | |  | (20,000) |
|  |  |  | Increase in long-term debt | | | | | 10,000 |
|  |  | *Net cash from financing activities* | | | | | | $(11,000) |
|  |  |  |  |  |  |  |  |  |
|  |  | *Net increase in cash* | | | | |  | $ 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

Market-to-book ratio = Share price / Book value per share

Market-to-book ratio = $43 / $7.71 = 5.57 times

PEG ratio = P/E ratio / Growth rate

PEG ratio = 29.47 / 9 = 3.27 times

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

Market value of equity = Shares × Share price

Market value of equity = 25,000($43) = $1,075,000

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

Total debt = Current liabilities + Long-term debt

Total debt = $43,235 + 85,000 = $128,235

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

Tobin’s Q = (Market value of equity + Book value of debt) / Book value of assets

Tobin’s Q = ($1,075,000 + 128,235) / $321,075

Tobin’s Q = 3.75