**1.** To find owner’s equity, we must construct a balance sheet as follows:

 Balance Sheet

 CA $5,100 CL $4,300

 NFA 23,800 LTD 7,400

 OE ??

 TA $28,900 TL & OE $28,900

 We know that total liabilities and owner’s equity (TL & OE) must equal total assets of $28,900. We also know that TL & OE is equal to current liabilities plus long-term debt plus owner’s equity, so owner’s equity is:

 OE = $28,900 – 7,400 – 4,300 = $17,200

 NWC = CA – CL = $5,100 – 4,300 = $800

**2.** The income statement for the company is:

 Income Statement

 Sales $586,000

 Costs 247,000

 Depreciation 43,000

 EBIT $296,000

 Interest 32,000

 EBT $264,000

 Taxes(35%) 92,400

 Net income $171,600

**3.** One equation for net income is:

Net income = Dividends + Addition to retained earnings

Rearranging, we get:

Addition to retained earnings = Net income – Dividends = $171,600 – 73,000 = $98,600

**4.** EPS = Net income / Shares = $171,600 / 85,000 = $2.02 per share

 DPS = Dividends / Shares = $73,000 / 85,000 = $0.86 per share

**5.** To find the book value of current assets, we use: NWC = CA – CL. Rearranging to solve for current assets, we get:

CA = NWC + CL = $380,000 + 1,100,000 = $1,480,000

 The market value of current assets and fixed assets is given, so:

 Book value CA = $1,480,000 Market value CA = $1,600,000

 Book value NFA = $3,700,000 Market value NFA = $4,900,000

 Book value assets = $5,180,000 Market value assets = $6,500,000

**6.** Taxes = 0.15($50K) + 0.25($25K) + 0.34($25K) + 0.39($236K – 100K) = $75,290

**7.** The average tax rate is the total tax paid divided by net income, so:

Average tax rate = $75,290 / $236,000 = 31.90%

The marginal tax rate is the tax rate on the next $1 of earnings, so the marginal tax rate = 39%.

**8.** To calculate OCF, we first need the income statement:

Income Statement

 Sales $27,500

 Costs 13,280

 Depreciation 2,300

 EBIT $11,920

 Interest 1,105

 Taxable income $10,815

 Taxes (35%) 3,785

 Net income $ 7,030

 OCF = EBIT + Depreciation – Taxes = $11,920 + 2,300 – 3,785 = $10,435

**9.** Net capital spending = NFAend – NFAbeg + Depreciation

Net capital spending = $4,200,000 – 3,400,000 + 385,000

Net capital spending = $1,185,000

**10.** Change in NWC = NWCend – NWCbeg

 Change in NWC = (CAend – CLend) – (CAbeg – CLbeg)

 Change in NWC = ($2,250 – 1,710) – ($2,100 – 1,380)

 Change in NWC = $540 – 720 = –$180

**11.** Cash flow to creditors = Interest paid – Net new borrowing

 Cash flow to creditors = Interest paid – (LTDend – LTDbeg)

 Cash flow to creditors = $170,000 – ($2,900,000 – 2,600,000)

 Cash flow to creditors = –$130,000

**12.** Cash flow to stockholders = Dividends paid – Net new equity

 Cash flow to stockholders = Dividends paid – [(Commonend + APISend) – (Commonbeg + APISbeg)]

 Cash flow to stockholders = $490,000 – [($815,000 + 5,500,000) – ($740,000 + 5,200,000)]

 Cash flow to stockholders = $115,000

 Note, APIS is the additional paid-in surplus.

**13.** Cash flow from assets = Cash flow to creditors + Cash flow to stockholders = –$130,000 + 115,000 = –$15,000

 Cash flow from assets = –$15,000 = OCF – Change in NWC – Net capital spending

 = –$15,000 = OCF – (–$85,000) – 940,000

Operating cash flow = –$15,000 – 85,000 + 940,000

Operating cash flow = $840,000

**14.** To find the OCF, we first calculate net income.

 Income Statement

 Sales $196,000

 Costs 104,000

 Other expenses 6,800

 Depreciation 9,100

 EBIT $76,100

 Interest 14,800

 Taxable income $61,300

 Taxes 21,455

 Net income $39,845

 Dividends $10,400

 Additions to RE $29,445

*a.* OCF = EBIT + Depreciation – Taxes = $76,100 + 9,100 – 21,455 = $63,745

 *b.* CFC = Interest – Net new LTD = $14,800 – (–7,300) = $22,100

 Note that the net new long-term debt is negative because the company repaid part of its long-

 term debt.

*c.* CFS = Dividends – Net new equity = $10,400 – 5,700 = $4,700

*d.* We know that CFA = CFC + CFS, so:

 CFA = $22,100 + 4,700 = $26,800

CFA is also equal to OCF – Net capital spending – Change in NWC. We already know OCF. Net capital spending is equal to:

 Net capital spending = Increase in NFA + Depreciation = $27,000 + 9,100 = $36,100

 Now we can use:

 CFA = OCF – Net capital spending – Change in NWC

 $26,800 = $63,745 – 36,100 – Change in NWC

 Solving for the change in NWC gives $845, meaning the company increased its NWC by $845.

**15.** The solution to this question works the income statement backwards. Starting at the bottom:

Net income = Dividends + Addition to ret. earnings = $1,500 + 5,100 = $6,600

Now, looking at the income statement:

EBT – EBT × Tax rate = Net income

Recognize that EBT × Tax rate is simply the calculation for taxes. Solving this for EBT yields:

EBT = NI / (1– tax rate) = $6,600 / (1 – 0.35) = $10,154

Now you can calculate:

EBIT = EBT + Interest = $10,154 + 4,500 = $14,654

The last step is to use:

EBIT = Sales – Costs – Depreciation

$14,654 = $41,000 – 19,500 – Depreciation

Solving for depreciation, we find that depreciation = $6,846

**16.** The balance sheet for the company looks like this:

 Balance Sheet

 Cash $195,000 Accounts payable $405,000

 Accounts receivable 137,000 Notes payable 160,000

 Inventory 264,000 Current liabilities $565,000

 Current assets $596,000 Long-term debt 1,195,300

 Total liabilities $1,760,300 Tangible net fixed assets 2,800,000

 Intangible net fixed assets 780,000 Common stock ??

 Accumulated ret. earnings 1,934,000

 Total assets $4,176,000 Total liab. & owners’ equity $4,176,000

 Total liabilities and owners’ equity is:

 TL & OE = CL + LTD + Common stock + Retained earnings

 Solving for this equation for equity gives us:

 Common stock = $4,176,000 – 1,934,000 – 1,760,300 = $481,700

**17.** The market value of shareholders’ equity cannot be negative. A negative market value in this case would imply that the company would pay you to own the stock. The market value of shareholders’ equity can be stated as: Shareholders’ equity = Max [(TA – TL), 0]. So, if TA is $8,400, equity is equal to $1,100, and if TA is $6,700, equity is equal to $0. We should note here that the book value of shareholders’ equity can be negative.

**18.** *a.* Taxes Growth = 0.15($50,000) + 0.25($25,000) + 0.34($13,000) = $18,170

 Taxes Income = 0.15($50,000) + 0.25($25,000) + 0.34($25,000) + 0.39($235,000)

 + 0.34($8,465,000)

 = $2,992,000

*b.* Each firm has a marginal tax rate of 34% on the next $10,000 of taxable income, despite their

 different average tax rates, so both firms will pay an additional $3,400 in taxes.

**19.** Income Statement

 Sales $730,000

 COGS 580,000

 A&S expenses 105,000

 Depreciation 135,000

 EBIT –$90,000

 Interest 75,000

 Taxable income –$165,000

 Taxes (35%) 0

 *a.* Net income –$165,000

 *b.* OCF = EBIT + Depreciation – Taxes = –$90,000 + 135,000 – 0 = $45,000

 *c.* Net income was negative because of the tax deductibility of depreciation and interest expense. However, the actual cash flow from operations was positive because depreciation is a non-cash expense and interest is a financing expense, not an operating expense.

**20.** A firm can still pay out dividends if net income is negative; it just has to be sure there is sufficient cash flow to make the dividend payments.

 Change in NWC = Net capital spending = Net new equity = 0. (Given)

 Cash flow from assets = OCF – Change in NWC – Net capital spending

 Cash flow from assets = $45,000 – 0 – 0 = $45,000

 Cash flow to stockholders = Dividends – Net new equity = $25,000 – 0 = $25,000

 Cash flow to creditors = Cash flow from assets – Cash flow to stockholders

 Cash flow to creditors = $45,000 – 25,000 = $20,000

 Cash flow to creditors = Interest – Net new LTD

 Net new LTD = Interest – Cash flow to creditors = $75,000 – 20,000 = $55,000

**21.** *a.*

|  |  |  |
| --- | --- | --- |
|   |  | Income Statement |
|  |  | Sales  | $22,800 |
|  |  | Cost of goods sold | 16,050 |
|  |  | Depreciation |  4,050 |
|  |  | EBIT | $ 2,700 |
|  |  | Interest |  1,830 |
|  |  | Taxable income | $ 870 |
|  |  | Taxes (34%) |  296 |
|  |  | Net income | $ 574 |

 *b.* OCF = EBIT + Depreciation – Taxes

 = $2,700 + 4,050 – 296 = $6,454

*c.* Change in NWC = NWCend – NWCbeg

 = (CAend – CLend) – (CAbeg – CLbeg)

 = ($5,930 – 3,150) – ($4,800 – 2,700)

 = $2,780 – 2,100 = $680

 Net capital spending = NFAend – NFAbeg + Depreciation

 = $16,800 – 13,650 + 4,050 = $7,200

 CFA = OCF – Change in NWC – Net capital spending

 = $6,454 – 680 – 7,200 = –$1,426

 The cash flow from assets can be positive or negative, since it represents whether the firm raised funds or distributed funds on a net basis. In this problem, even though net income and OCF are positive, the firm invested heavily in both fixed assets and net working capital; it had to raise a net $1,426 in funds from its stockholders and creditors to make these investments.

*d.* Cash flow to creditors = Interest – Net new LTD = $1,830 – 0 = $1,830

 Cash flow to stockholders = Cash flow from assets – Cash flow to creditors

 = –$1,426 – 1,830 = –$3,256

 We can also calculate the cash flow to stockholders as:

 Cash flow to stockholders = Dividends – Net new equity

 Solving for net new equity, we get:

 Net new equity = $1,300 – (–3,256) = $4,556

 The firm had positive earnings in an accounting sense (NI > 0) and had positive cash flow from operations. The firm invested $680 in new net working capital and $7,200 in new fixed assets. The firm had to raise $1,426 from its stakeholders to support this new investment. It accomplished this by raising $4,556 in the form of new equity. After paying out $1,300 of this in the form of dividends to shareholders and $1,830 in the form of interest to creditors, $1,426 was left to meet the firm’s cash flow needs for investment.

**22.** *a.* Total assets 2008 = $653 + 2,691 = $3,344

 Total liabilities 2008 = $261 + 1,422 = $1,683

 Owners’ equity 2008 = $3,344 – 1,683 = $1,661

 Total assets 2009 = $707 + 3,240 = $3,947

 Total liabilities 2009 = $293 + 1,512 = $1,805

 Owners’ equity 2009 = $3,947 – 1,805 = $2,142

 *b.* NWC 2008 = CA08 – CL08 = $653 – 261 = $392

 NWC 2009 = CA09 – CL09 = $707 – 293 = $414

 Change in NWC = NWC09 – NWC08 = $414 – 392 = $22

 *c.* We can calculate net capital spending as:

 Net capital spending = Net fixed assets 2009 – Net fixed assets 2008 + Depreciation

 Net capital spending = $3,240 – 2,691 + 738 = $1,287

So, the company had a net capital spending cash flow of $1,287. We also know that net capital spending is:

 Net capital spending = Fixed assets bought – Fixed assets sold

 $1,287 = $1,350 – Fixed assets sold

 Fixed assets sold = $1,350 – 1,287 = $63

To calculate the cash flow from assets, we must first calculate the operating cash flow. The income statement is:

|  |  |
| --- | --- |
|   | *Income Statement* |
|   | Sales |  $ 8,280.00  |
|   | Costs |  3,861.00  |
|   | Depreciation expense |  738 .00 |
|   | EBIT | $3,681.00  |
|   | Interest expense |  211 .00 |
|   | EBT |  $3,470.00  |
|   | Taxes (35%) | 1,215.50  |
|   | Net income |  $2,256.50  |

So, the operating cash flow is:

 OCF = EBIT + Depreciation – Taxes = $3,681 + 738 – 1,214.50 = $3,204.50

 And the cash flow from assets is:

 Cash flow from assets = OCF – Change in NWC – Net capital spending.

 = $3,204.50 – 22 – 1,287 = $1,895.50

 *d.* Net new borrowing = LTD09 – LTD08 = $1,512 – 1,422 = $90

 Cash flow to creditors = Interest – Net new LTD = $211 – 90 = $121

 Net new borrowing = $90 = Debt issued – Debt retired

 Debt retired = $270 – 90 = $180

 *Challenge*

**23.** Net capital spending = NFAend – NFAbeg + Depreciation

 = (NFAend – NFAbeg) + (Depreciation + ADbeg) – ADbeg

 = (NFAend – NFAbeg)+ ADend – ADbeg

 = (NFAend + ADend) – (NFAbeg + ADbeg) = FAend – FAbeg

**24.** *a.* The tax bubble causes average tax rates to catch up to marginal tax rates, thus eliminating the tax advantage of low marginal rates for high income corporations.

 *b.* Taxes = 0.15($50,000) + 0.25($25,000) + 0.34($25,000) + 0.39($235,000) = $113,900

 Average tax rate = $113,900 / $335,000 = 34%

 The marginal tax rate on the next dollar of income is 34 percent.

 For corporate taxable income levels of $335,000 to $10 million, average tax rates are equal to marginal tax rates.

 Taxes = 0.34($10,000,000) + 0.35($5,000,000) + 0.38($3,333,333)= $6,416,667

 Average tax rate = $6,416,667 / $18,333,334 = 35%

 The marginal tax rate on the next dollar of income is 35 percent. For corporate taxable income levels over $18,333,334, average tax rates are again equal to marginal tax rates.

 *c.* Taxes = 0.34($200,000) = $68,000

 $68,000 = 0.15($50,000) + 0.25($25,000) + 0.34($25,000) + X($100,000);

 X($100,000) = $68,000 – 22,250

 X = $45,750 / $100,000

 X = 45.75%

**25.**

|  |  |
| --- | --- |
|   | Balance sheet as of Dec. 31, 2008 |
|   | Cash | $3,792 |   |   |   |  Accounts payable  | $3,984 |
|   | Accounts receivable | 5,021 |   |   |   |  Notes payable  | 732 |
|   | Inventory | 8,927 |   |   |   |  Current liabilities  | $4,716 |
|   | Current assets | $17,740 |   |   |   |   |  |
|   |   |  |   |   |   |  Long-term debt  | $12,700 |
|   | Net fixed assets | $31,805 |   |   |   |  Owners' equity  | 32,129 |
|   | Total assets | $49,545 |   |   |   |  Total liab. & equity  | $49,545 |

|  |  |
| --- | --- |
|   | Balance sheet as of Dec. 31, 2009 |
|   | Cash | $4,041 |   |   |   |  Accounts payable  | $4,025 |
|   | Accounts receivable | 5,892 |   |   |   |  Notes payable  | 717 |
|   | Inventory | 9,555 |   |   |   |  Current liabilities  | $4,742 |
|   | Current assets | $19,488 |   |   |   |   |  |
|   |   |  |   |   |   |  Long-term debt  | $15,435 |
|   | Net fixed assets | $33,921 |   |   |   |  Owners' equity  | 33,232 |
|   | Total assets | $53,409 |   |   |   |  Total liab. & equity  | $53,409 |

 2008 Income Statement 2009 Income Statement

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Sales | $7,233.00 |  | Sales | $8,085.00 |
|  | COGS | 2,487.00 |  | COGS | 2,942.00 |
|  | Other expenses | 591.00 |  | Other expenses | 515.00 |
|  | Depreciation | 1,038.00 |  | Depreciation | 1,085.00 |
|  | EBIT | $3,117.00 |  | EBIT | $3,543.00 |
|  | Interest | 485.00 |  | Interest | 579.00 |
|  | EBT | $2,632.00 |  | EBT | $2,964.00 |
|  | Taxes (34%) | 894.88 |  | Taxes (34%) | 1,007.76 |
|  | Net income | $1,737.12 |  | Net income | $1,956.24 |
|  |  |  |  |  |  |
|  | Dividends | $882.00 |  | Dividends | $1,011.00 |
|  | Additions to RE | 855.12 |  | Additions to RE | 945.24 |

**26.** OCF = EBIT + Depreciation – Taxes = $3,543 + 1,085 – 1,007.76 = $3,620.24

 Change in NWC = NWCend – NWCbeg = (CA – CL) end – (CA – CL) beg

 = ($19,488 – 4,742) – ($17,740 – 4,716)

 = $1,722

 Net capital spending = NFAend – NFAbeg + Depreciation

 = $33,921 – 31,805 + 1,085 = $3,201

 Cash flow from assets = OCF – Change in NWC – Net capital spending

 = $3,620.24 – 1,722 – 3,201 = –$1,302.76

 Cash flow to creditors = Interest – Net new LTD

 Net new LTD = LTDend – LTDbeg

 Cash flow to creditors = $579 – ($15,435 – 12,700) = –$2,156

 Net new equity = Common stockend – Common stockbeg

 Common stock + Retained earnings = Total owners’ equity

 Net new equity = (OE – RE) end – (OE – RE) beg

 = OEend – OEbeg + REbeg – REend

 REend= REbeg+ Additions to RE08

1. Net new equity = OEend – OEbeg+ REbeg – (REbeg + Additions to RE08)

 = OEend – OEbeg – Additions to RE

Net new equity = $33,232 – 32,129 – 945.24 = $157.76

 CFS = Dividends – Net new equity

 CFS = $1,011 – 157.76 = $853.24

 As a check, cash flow from assets is –$1,302.76.

 CFA = Cash flow from creditors + Cash flow to stockholders

 CFA = –$2,156 + 853.24 = –$1,302.76