**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