**Solutions Manual**

***Essentials of Corporate Finance***

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**9thedition**

**01/03/2016**

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***CHAPTER 1***

**INTRODUCTION TO CORPORATE FINANCE**

**Answers to Concepts Review and Critical Thinking Questions**

**1.** Capital budgeting (deciding on whether to expand a manufacturing plant), capital structure (deciding whether to issue new equity and use the proceeds to retire outstanding debt), and working capital management (modifying the firm’s credit collection policy with its customers).

**2.** Disadvantages: unlimited liability, limited life, difficulty in transferring ownership, hard to raise capital funds. Some advantages: simpler, less regulation, the owners are also the managers, sometimes personal tax rates are better than corporate tax rates.

**3.** The primary disadvantage of the corporate form is the double taxation to shareholders of distributed earnings and dividends. Some advantages include: limited liability, ease of transferability, ability to raise capital, and unlimited life.

**4.** The treasurer’s office and the controller’s office are the two primary organizational groups that report directly to the chief financial officer. The controller’s office handles cost and financial accounting, tax management, and management information systems. The treasurer’s office is responsible for cash and credit management, capital budgeting, and financial planning. Therefore, the study of corporate finance is concentrated within the functions of the treasurer’s office.

**5.** To maximize the current market value (share price) of the equity of the firm (whether it’s publicly traded or not).

**6.** In the corporate form of ownership, the shareholders are the owners of the firm. The shareholders elect the directors of the corporation, who in turn appoint the firm’s management. This separation of ownership from control in the corporate form of organization is what causes agency problems to exist. Management may act in its own or someone else’s best interests, rather than those of the shareholders. If such events occur, they may contradict the goal of maximizing the share price of the equity of the firm.

**7.** A primary market transaction.

**8.** In auction markets like the NYSE, brokers and agents meet at a physical location (the exchange) to buy and sell their assets. Dealer markets like NASDAQ represent dealers operating in dispersed locales who buy and sell assets themselves, usually communicating with other dealers electronically or literally over the counter.

**9.** Since such organizations frequently pursue social or political missions, many different goals are conceivable. One goal that is often cited is revenue minimization; i.e., providing their goods and services to society at the lowest possible cost. Another approach might be to observe that even a not-for-profit business has equity. Thus, an appropriate goal would be to maximize the value of the equity.

**10.** An argument can be made either way. At one extreme, we could argue that in a market economy, all of these things are priced. This implies an optimal level of ethical and/or illegal behavior and the framework of stock valuation explicitly includes these. At the other extreme, we could argue that these are non-economic phenomena and are best handled through the political process. The following is a classic (and highly relevant) thought question that illustrates this debate: “A firm has estimated that the cost of improving the safety of one of its products is $30 million. However, the firm believes that improving the safety of the product will only save $20 million in product liability claims. What should the firm do?”

**11.** The goal will be the same, but the best course of action toward that goal may require adjustments due to different social, political, and economic climates.

**12.** The goal of management should be to maximize the share price for the current shareholders. If management believes that it can improve the profitability of the firm so that the share price will exceed $35, then they should fight the offer from the outside company. If management believes that this bidder or other unidentified bidders will actually pay more than $35 per share to acquire the company, then they should still fight the offer. However, if the current management cannot increase the value of the firm beyond the bid price, and no other higher bids come in, then management is not acting in the interests of the shareholders by fighting the offer. Since current managers often lose their jobs when the corporation is acquired, poorly monitored managers have an incentive to fight corporate takeovers in situations such as this.

**13.** We would expect agency problems to be less severe in other countries, primarily due to the relatively small percentage of individual ownership. Fewer individual owners should reduce the number of diverse opinions concerning corporate goals. The high percentage of institutional ownership might lead to a higher degree of agreement between owners and managers on decisions concerning risky projects. In addition, institutions may be able to implement more effective monitoring mechanisms than can individual owners, giveninstitutions’ deeper resources and experiences with their own management. The increase in institutional ownership of stock in the United States and the growing activism of these large shareholder groups may lead to a reduction in agency problems for U.S. corporations and a more efficient market for corporate control.

**14.** How much is too much? Who is worth more, Michael Fries or LeBron James? The simplest answer is that there is a market for executives just as there is for all types of labor. Executive compensation is the price that clears the market. The same is true for athletes and performers. Having said that, one aspect of executive compensation deserves comment. A primary reason executive compensation has grown so dramatically is that companies have increasingly moved to stock-based compensation. Such movement is obviously consistent with the attempt to better align stockholder and management interests. In recent years, stock prices have soared, so management has cleaned up. It is sometimes argued that much of this reward is simply due to rising stock prices in general, not managerial performance. Perhaps in the future, executive compensation will be designed to reward only differential performance, i.e., stock price increases in excess of general market increases.

**15.** The biggest reason that a company would “go dark” is because of the increased audit costs associated with Sarbanes-Oxley compliance. A company should always do a cost-benefit analysis, and it may be the case that the costs of complying with Sarbox outweigh the benefits. Of course, the company could always be trying to hide financial issues of the company! This is also one of the costs of going dark: Investors surely believe that some companies are going dark to avoid the increased scrutiny from Sarbox. This taints other companies that go dark just to avoid compliance costs. This is similar to the lemon problem with used automobiles: Buyers tend to underpay because they know a certain percentage of used cars are lemons. So, investors will tend to pay less for the company stock than they otherwise would. It is important to note that even if the company delists, its stock is still likely traded, but on the over-the-counter market pink sheets rather than on an organized exchange. This adds another cost since the stock is likely to be less liquid now. All else the same, investors pay less for an asset with less liquidity. Overall, the cost to the company is likely a reduced market value. Whether delisting is good or bad for investors depends on the individual circumstances of the company. It is also important to remember that there are already many small companies that file only limited financial information.

**CHAPTER 2**

***WORKING WITH FINANCIAL STATEMENTS***

**Answers to Concepts Review and Critical Thinking Questions**

**1.** Liquidity measures how quickly and easily an asset can be converted to cash without significant loss in value. It’s desirable for firms to have high liquidity so that they can more safely meet short-term creditor demands. However, liquidity also has an opportunity cost. Firms generally reap higher returns by investing in illiquid, productive assets. It’s up to the firm’s financial management staff to find a reasonable compromise between these opposing needs.

**2.** The recognition and matching principles in financial accounting call for revenues, and the costs associated with producing those revenues, to be “booked” when the revenue process is essentially complete, not necessarily when the cash is collected or bills are paid. Note that this way is not necessarily correct; it’s the way accountants have chosen to do it.

**3.** Historical costs can be objectively and precisely measured, whereas market values can be difficult to estimate, and different analysts would come up with different numbers. Thus, there is a tradeoff between relevance (market values) and objectivity (book values).

**4.** Depreciation is a non-cash deduction that reflects adjustments made in asset book values in accordance with the matching principle in financial accounting. Interest expense is a cash outlay, but it’s a financing cost, not an operating cost.

**5.** Market values can never be negative. Imagine a share of stock selling for –$20. This would mean that if you placed an order for 100 shares, you would get the stock along with a check for $2,000. How many shares do you want to buy? More generally, because of corporate and individual bankruptcy laws, net worth for a person or a corporation cannot be negative, implying that liabilities cannot exceed assets in market value.

**6.** For a successful company that is rapidly expanding, capital outlays would typically be large, possibly leading to negative cash flow from assets. In general, what matters is whether the money is spent wisely, not whether cash flow from assets is positive or negative.

**7.** It’s probably not a good sign for an established company, but it would be fairly ordinary for a start-up, so it depends.

1. For example, if a company were to become more efficient in inventory management, the amount of inventory needed would decline. The same might be true if it becomes better at collecting its receivables. In general, anything that leads to a decline in ending NWC relative to beginning NWC would have this effect. Negative net capital spending would mean more long-lived assets were liquidated than purchased.

**9.** If a company raises more money from selling stock than it pays in dividends in a particular period, its cash flow to stockholders will be negative. If a company borrows more than it pays in interest, its cash flow to creditors will be negative.

**10.** The adjustments discussed were purely accounting changes; they had no cash flow or market value consequences unless the new accounting information caused stockholders to revalue the company.

**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.** The balance sheet for the company will look like this:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Balance sheet | | | | |
|  | Current assets | $2,030 |  | Current liabilities | $1,640 |
|  | Net fixed assets | 9,780 |  | Long-term debt | 4,490 |
|  |  |  |  | Owners’ equity | 5,680 |
|  |  |  |  |  |  |
|  | Total assets | $11,810 |  | Total liabilities and owners’ equity | $11,810 |

The owners’ equity is a plug variable. We know that total assets must equal total liabilities and owners’ equity. Total liabilities and owners’ equity is the sum of all debt and equity, so if we subtract debt from total liabilities and owners’ equity, the remainder must be the equity balance, so:

Owners’ equity = Total liabilities and owners’ equity – Current liabilities – Long-term debt

Owners’ equity = $11,810 – 1,640 – 4,490

Owners’ equity = $5,680

Net working capital is current assets minus current liabilities, so:

NWC = Current assets – Current liabilities

NWC = $2,030 – 1,640

NWC = $390

**2.** The income statement starts with revenues and subtracts costs to arrive at EBIT. We then subtract out interest to get taxable income, and then subtract taxes to arrive at net income. Doing so, we get:

Income Statement

Sales $634,000

Costs 328,000

Depreciation 73,000

EBIT $233,000

Interest 38,000

Taxable income $195,000

Taxes 68,250

Net income $126,750

**3.** The dividends paid plus the addition to retained earnings must equal net income, so:

Net income = Dividends + Addition to retained earnings

Addition to retained earnings = $126,750 – 43,000

Addition to retained earnings = $83,750

**4.** Earnings per share is the net income divided by the shares outstanding, so:

EPS = Net income / Shares outstanding

EPS = $126,750 / 35,000

EPS = $3.62 per share

And dividends per share are the total dividends paid divided by the shares outstanding, so:

DPS = Dividends / Shares outstanding

DPS = $43,000 / 35,000

DPS = $1.23 per share

**5.** Using Table 2.3, we can see the marginal tax schedule. The first $50,000 of income is taxed at 15 percent, the next $25,000 is taxed at 25 percent, the next $25,000 is taxed at 34 percent, and the next $143,000 is taxed at 39 percent. So, the total taxes for the company will be:

Taxes = .15($50,000) + .25($25,000) + .34($25,000) + .39($243,000 – 100,000)

Taxes = $78,020

**6.** The average tax rate is the total taxes paid divided by taxable income, so:

Average tax rate = Total tax / Taxable income

Average tax rate = $78,020 / $243,000

Average tax rate = .3211, or 32.11%

The marginal tax rate is the tax rate on the next dollar of income. The company has net income of $243,000 and the 39 percent tax bracket is applicable to a net income up to $335,000, so the marginal tax rate is 39 percent.

**7.** To calculate the OCF, we first need to construct an income statement. The income statement starts with revenues and subtracts costs to arrive at EBIT. We then subtract out interest to get taxable income, and then subtract taxes to arrive at net income. Doing so, we get:

Income Statement

Sales $38,530

Costs 12,750

Depreciation 2,550

EBIT $23,230

Interest 1,850

Taxable income $21,380

Taxes (35%) 7,483

Net income $13.897

Now we can calculate the OCF, which is:

OCF = EBIT + Depreciation – Taxes

OCF = $23,230 + 2,550 – 7,483

OCF = $18,297

**8.** Net capital spending is the increase in fixed assets, plus depreciation. Using this relationship, we find:

Net capital spending = NFAend– NFAbeg + Depreciation

Net capital spending = $2,134,000 – 1,975,000 + 325,000

Net capital spending = $484,000

**9.** The change in net working capital is the end of period net working capital minus the beginning of period net working capital, so:

Change in NWC = NWCend – NWCbeg

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

Change in NWC = ($1,685 – 1,305) – (1,530 – 1,270)

Change in NWC = $120

**10.** The cash flow to creditors is the interest paid, minus any net new borrowing, so:

Cash flow to creditors = Interest paid – Net new borrowing

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

Cash flow to creditors = $102,800 – ($1,551,000 – 1,410,000)

Cash flow to creditors = –$38,200

**11.** The cash flow to stockholders is the dividends paid minus any new equity raised. So, the cash flow to stockholders is: (Note that APIS is the additional paid-in surplus.)

Cash flow to stockholders = Dividends paid – Net new equity

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

Cash flow to stockholders = $148,500 – [($148,000 + 2,618,000) – ($130,000 + 2,332,000)]

Cash flow to stockholders = –$155,500

**12.** We know that cash flow from assets is equal to cash flow to creditors plus cash flow to stockholders. So, cash flow from assets is:

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

Cash flow from assets = –$38,200 – 155,500

Cash flow from assets = –$193,700

We also know that cash flow from assets is equal to the operating cash flow minus the change in net working capital and the net capital spending. We can use this relationship to find the operating cash flow. Doing so, we find:

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

–$193,700 = OCF – (–$115,000) – (705,000)

OCF = –$193,700 – 115,000 + 705,000

OCF = $396,300

*Intermediate*

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

CA = NWC + CL = $220,000 + 850,000 = $1,070,000

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

Book value CA = $1,070,000 NWC = $1,050,000

Book value NFA = $3,300,000 Market value NFA = $4,800,000

Book value assets = $4,370,000 Total = $5,850,000

**14.** *a.* To calculate the OCF, we first need to construct an income statement. The income statement starts with revenues and subtracts costs to arrive at EBIT. We then subtract out interest to get taxable income, and then subtract taxes to arrive at net income. Doing so, we get:

Income Statement

Sales $173,000

Costs 91,400

Other Expenses 5,100

Depreciation 12,100

EBIT $64,400

Interest 8,900

Taxable income $55,500

Taxes 21,090

Net income $34,410

Dividends $9,700

Addition to retained earnings 24,710

Dividends paid plus addition to retained earnings must equal net income, so:

Net income = Dividends + Addition to retained earnings

Addition to retained earnings = $34,410 – 9,700

Addition to retained earnings = $24,710

So, the operating cash flow is:

OCF = EBIT + Depreciation – Taxes

OCF = $64,400 + 12,100 – 21,090

OCF = $55,410

*b.* The cash flow to creditors is the interest paid, minus any new borrowing. Since the company redeemed long-term debt, the net new borrowing is negative. So, the cash flow to creditors is:

Cash flow to creditors = Interest paid – Net new borrowing

Cash flow to creditors = $8,900 – (–$4,000)

Cash flow to creditors = $12,900

*c.* The cash flow to stockholders is the dividends paid minus any new equity. So, the cash flow to stockholders is:

Cash flow to stockholders = Dividends paid – Net new equity

Cash flow to stockholders = $9,700 – 2,900

Cash flow to stockholders = $6,800

*d.* In this case, to find the addition to NWC, we need to find the cash flow from assets. We can then use the cash flow from assets equation to find the change in NWC. We know that cash flow from assets is equal to cash flow to creditors plus cash flow to stockholders. So, cash flow from assets is:

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

Cash flow from assets = $12,900 + 6,800

Cash flow from assets = $19,700

Net capital spending is equal to depreciation plus the increase in fixed assets, so:

Net capital spending = Depreciation + Increase in fixed assets

Net capital spending = $12,100 + 23,140

Net capital spending = $35,240

Now we can use the cash flow from assets equation to find the change in NWC. Doing so, we find:

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

$19,700 = $55,410 – Change in NWC – $35,240

Change in NWC = $470

**15.** Here we need to work the income statement backward. Starting with net income, we know that net income is:

Net income = Dividends + Addition to retained earnings

Net income = $2,170 + 3,500

Net income = $5,670

Net income is also the taxable income, minus the taxable income times the tax rate, or:

Net income = Taxable income – (Taxable income)(Tax rate)

Net income = Taxable income(1 – Tax rate)

We can rearrange this equation and solve for the taxable income as:

Taxable income = Net income / (1 – Tax rate)

Taxable income = $5,670 / (1 – .40)

Taxable income = $9,450

EBIT minus interest equals taxable income, so rearranging this relationship, we find:

EBIT = Taxable income + Interest

EBIT = $9,450 + 1,980

EBIT = $11,430

Now that we have the EBIT, we know that sales minus costs minus depreciation equals EBIT. Solving this equation for EBIT, we find:

EBIT = Sales – Costs – Depreciation

$11,430 = $67,000 – 49,200 – Depreciation

Depreciation = $6,370

**16.** We can fill in the balance sheet with the numbers we are given. The balance sheet will be:

Balance Sheet

Cash $197,000 Accounts payable $288,000

Accounts receivable 265,000 Notes payable 194,000

Inventory 563,000 Current liabilities $482,000

Current assets $1,025,000 Long-term debt 1,490,000

Total liabilities $2,072,000

Tangible net fixed assets $5,150,000

Intangible net fixed assets 863,000 Common stock ??

Accumulated retained earnings 4,586,000

Total assets $7,038,000 Total liabilities & owners’ equity $7,038,000

Total liabilities and owners’ equity is:

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

Solving for this equation for common stock gives us:

Common stock =$7,038,000 – 4,586,000 – 2,072,000

Common stock = $380,000

**17.** Owners’ equity is the maximum of total assets minus total liabilities, or zero. Although the book value of owners’ equity can be negative, the market value of owners’ equity cannot be negative, so:

Owners’ equity = Max [(TA – TL), 0]

*a.* If total assets are $9,300, the owners’ equity is:

Owners’ equity = Max[($9,300 – 8,400), 0]

Owners’ equity = $900

*b.* If total assets are $6,900, the owners’ equity is:

Owners’ equity = Max[($6,900 – 8,400), 0]

Owners’ equity = $0

**18.** *a.* Using Table 2.3, we can see the marginal tax schedule. For Corporation Growth, the first $50,000 of income is taxed at 15 percent, the next $25,000 is taxed at 25 percent, and the next $1,500 is taxed at 34 percent. So, the total taxes for the company will be:

TaxesGrowth = .15($50,000) + .25($25,000) + .34($1,500)

TaxesGrowth = $14,260

For Corporation Income, the first $50,000 of income is taxed at 15 percent, the next $25,000 is taxed at 25 percent, the next $25,000 is taxed at 34 percent, the next $235,000 is taxed at 39 percent, and the next $7,315,000 is taxed at 34 percent. So, the total taxes for the company will be:

TaxesIncome = .15($50,000) + .25($25,000) + .34($25,000) + .39($235,000)

+ .34($7,315,000)

TaxesIncome = $2,601,000

*b.* The marginal tax rate is the tax rate on the next $1 of earnings. 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.** *a.* The income statement starts with revenues and subtracts costs to arrive at EBIT. We then subtract interest to get taxable income, and then subtract taxes to arrive at net income. Doing so, we get:

Income Statement

Sales $2,350,000

Cost of goods sold 1,925,000

Admin expenses 530,000

Depreciation 420,000

EBIT $ 105,000

Interest 245,000

Taxable income –$140,000

Taxes (35%) 0

Net income –$140,000

The taxes are zero since we are ignoring any carryback or carryforward provisions.

*b.* The operating cash flow for the year was:

OCF = EBIT + Depreciation – Taxes

OCF = $105,000 + 420,000 – 0

OCF = $525,000

*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, 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. The assumptions made in the question are:

Change in NWC = Net capital spending = Net new equity = 0

To find the new long-term debt, we first need to find the cash flow from assets. The cash flow from assets is:

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

Cash flow from assets = $525,000 – 0 – 0

Cash flow from assets = $525,000

We can also find the cash flow to stockholders, which is:

Cash flow to stockholders = Dividends – Net new equity

Cash flow to stockholders = $395,000 – 0

Cash flow to stockholders = $395,000

Now we can use the cash flow from assets equation to find the cash flow to creditors. Doing so, we get:

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

$525,000 = Cash flow to creditors + $395,000

Cash flow to creditors = $130,000

Now we can use the cash flow to creditors equation to find:

Cash flow to creditors = Interest – Net new long-term debt

$130,000 = $245,000 – Net new long-term debt

Net new long-term debt = $115,000

**21.** *a.* To calculate the OCF, we first need to construct an income statement. The income statement starts with revenues and subtracts costs to arrive at EBIT. We then subtract out interest to get taxable income, and then subtract taxes to arrive at net income. Doing so, we get:

Income Statement

Sales $28,476

Cost of goods sold 20,136

Depreciation 3,408

EBIT $ 4,932

Interest 497

Taxable income $ 4,435

Taxes (40%) 1,774

Net income $ 2,661

*b.* The operating cash flow for the year was:

OCF = EBIT + Depreciation – Taxes

OCF = $4,932 + 3,408 – 1,774

OCF = $6,566

*c.* To calculate the cash flow from assets, we also need the change in net working capital and net capital spending. The change in net working capital was:

Change in NWC = NWCend – NWCbeg

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

Change in NWC = ($4,234 – 2,981) – ($3,528 – 3,110)

Change in NWC = $835

And the net capital spending was:

Net capital spending = NFAend – NFAbeg + Depreciation

Net capital spending = $22,608 – 19,872 + 3,408

Net capital spending = $6,144

So, the cash flow from assets was:

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

Cash flow from assets = $6,566 – 835 – 6,144

Cash flow from assets = –$413

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 fixed assets and net working capital; it had to raise a net $413 in funds from its stockholders and creditors to make these investments.

*d.* The cash flow to creditors was:

Cash flow to creditors = Interest – Net new LTD

Cash flow to creditors = $497 – 0

Cash flow to creditors = $497

Rearranging the cash flow from assets equation, we can calculate the cash flow to stockholders as:

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

–$413 = Cash flow to stockholders + $497

Cash flow to stockholders = –$910

Now we can use the cash flow to stockholders equation to find the net new equity as:

Cash flow to stockholders = Dividends – Net new equity

–$910 = $739 – Net new equity

Net new equity = $1,649

The firm had positive earnings in an accounting sense (NI > 0) and had positive cash flow from operations. The firm invested $835 in new net working capital and $6,144 in new fixed assets. The firm had to raise $413 from its stakeholders to support this new investment. It accomplished this by raising $1,649 in the form of new equity. After paying out $739 in the form of dividends to shareholders and $497 in the form of interest to creditors, $413 was left to just meet the firm’s cash flow needs for investment.

**22.** *a.* To calculate owners’ equity, we first need total liabilities and owners’ equity. From the balance sheet relationship we know that this is equal to total assets. We are given the necessary information to calculate total assets. Total assets are current assets plus fixed assets, so:

Total assets = Current assets + Fixed assets = Total liabilities and owners’ equity

For 2015, we get:

Total assets = $2,718 + 12,602

Total assets = $15,320

Now, we can solve for owners’ equity as:

Total liabilities and owners’ equity = Current liabilities + Long-term debt + Owners’ equity

$15,320 = $1,174 + 6,873 + Owners’ equity

Owners’ equity = $7,273

For 2016, we get:

Total assets = $2,881 + 13,175

Total assets = $16,056

Now we can solve for owners’ equity as:

Total liabilities and owners’ equity = Current liabilities + Long-term debt + Owners’ equity

$16,056 = $1,726 + 8,019 + Owners’ equity

Owners’ equity = $6,311

*b.* The change in net working capital was:

Change in NWC = NWCend – NWCbeg

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

Change in NWC = ($2,881 – 1,726) – ($2,718 – 1,174)

Change in NWC = –$389

*c.* To find the amount of fixed assets the company sold, we need to find the net capital spending. The net capital spending was:

Net capital spending = NFAend – NFAbeg + Depreciation

Net capital spending = $13,175 – 12,602 + 3,434

Net capital spending = $4,007

To find the fixed assets sold, we can also calculate net capital spending as:

Net capital spending = Fixed assets bought – Fixed assets sold

$4,007 = $7,160 – Fixed assets sold

Fixed assets sold = $3,153

To calculate the cash flow from assets, we first need to calculate the operating cash flow. For the operating cash flow, we need the income statement. So, the income statement for the year is:

Income Statement

Sales $40,664

Costs 20,393

Depreciation 3,434

EBIT $16,837

Interest 638

Taxable income $16,199

Taxes (40%) 6,480

Net income $ 9,719

Now we can calculate the operating cash flow, which is:

OCF = EBIT + Depreciation – Taxes

OCF = $16,837 + 3,434 – 6,480

OCF = $13,791

And the cash flow from assets is:

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

Cash flow from assets = $13,791 – (–$389) – 4,007

Cash flow from assets = $10,173

*d.* To find the cash flow to creditors, we first need to find the net new borrowing. The net new borrowing is the difference between the ending long-term debt and the beginning long-term debt, so:

Net new borrowing = LTDEnding – LTDBeginnning

Net new borrowing = $8,019 – 6,873

Net new borrowing = $1,146

So, the cash flow to creditors is:

Cash flow to creditors = Interest – Net new borrowing

Cash flow to creditors = $638 – 1,146

Cash flow to creditors = –$508

The net new borrowing is also the difference between the debt issued and the debt retired. We know the amount the company issued during the year, so we can find the amount the company retired. The amount of debt retired was:

Net new borrowing = Debt issued – Debt retired

$1,146 = $2,155 – Debt retired

Debt retired = $1,009

**23.** To construct the cash flow identity, we will begin with cash flow from assets. Cash flow from assets is:

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

So, the operating cash flow is:

OCF = EBIT + Depreciation – Taxes

OCF = $103,562 + 69,038 – 27,703

OCF = $144,897

Next, we will calculate the change in net working capital, which is:

Change in NWC = NWCend – NWCbeg

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

Change in NWC = ($73,571 – 34,127) – ($58,325 – 30,352)

Change in NWC = $11,471

Now, we can calculate the capital spending. The capital spending is:

Net capital spending = NFAend – NFAbeg + Depreciation

Net capital spending = $513,980 – 435,670 + 69,038

Net capital spending = $147,348

Now, we have the cash flow from assets, which is:

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

Cash flow from assets = $144,897 – 11,471 – 147,348

Cash flow from assets = –$13,922

The company’s assets generated an outflow of $13,922. The cash flow from operations was $144,897, and the company spent $11,471 on net working capital and $147,348 on fixed assets.

The cash flow to creditors is:

Cash flow to creditors = Interest paid – New long-term debt

Cash flow to creditors = Interest paid – (Long-term debtend – Long-term debtbeg)

Cash flow to creditors = $24,410 – ($192,300 – 173,100)

Cash flow to creditors = $5,210

The cash flow to stockholders is a little trickier in this problem. First, we need to calculate the new equity sold. The equity balance increased during the year. The only way to increase the equity balance is retained earnings or sell equity. To calculate the new equity sold, we can use the following equation:

New equity = Ending equity – Beginning equity – Addition to retained earnings

New equity = $361,124 – 290,543 – 35,249

New equity = $35,332

What happened was the equity account increased by $70,581. Of this increase, $35,249 came from addition to retained earnings, so the remainder must have been the sale of new equity. Now we can calculate the cash flow to stockholders as:

Cash flow to stockholders = Dividends paid – Net new equity

Cash flow to stockholders = $16,200 – 35,332

Cash flow to stockholders = –$19,132

The company paid $5,210 to creditors and raised $19,132 from stockholders.

Finally, the cash flow identity is:

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

–$13,922 = $5,210 + –$19,132

The cash flow identity balances, which is what we expect.

*Challenge*

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

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

= (NFAend – NFAbeg)+ ADend – ADbeg

= (NFAend + ADend) – (NFAbeg + ADbeg)

= FAend– FAbeg

**25.** *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 = .15($50K) + .25($25K) + .34($25K) + .39($235K) = $113.9K

Average tax rate = $113.9K / $335K = 34%

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

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

Taxes = .34($10M) + .35($5M) + .38($3.333M) = $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.* At the end of the “tax bubble”, the marginal tax rate on the next dollar should equal the average tax rate on all preceding dollars. Since the upper threshold of the bubble bracket is now $200,000, the marginal tax rate on dollar $200,001 should be 34 percent, and the total tax paid on the first $200,000 should be $200,000(.34). So, we get:

Taxes = .34($200K) = $68K = .15($50K) + .25($25K) + .34($25K) + X($100K)

X($100K) = $68K – 22.25K = $45.75K

X = $45.75K / $100K

X = 45.75%