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Solutions Manual

Essentials of Corporate Finance

Ross, Westerfield, and Jordan
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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, given institutions' 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.

8. 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 = $NFA_{end} – NFA_{beg}$ + 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 = $NWC_{end} – NWC_{beg}$
Change in NWC = $(CA_{end} – CL_{end}) – (CA_{beg} – CL_{beg})$
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 – $(LTD_{end} – LTD_{beg})$
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 – $[(Common_{end} + APIS_{end}) – (Common_{beg} + APIS_{beg})]$
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:

$\text{Taxes}_{\text{Growth}}$ = .15($50,000) + .25($25,000) + .34($1,500)
$\text{Taxes}_{\text{Growth}}$ = $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:

$\text{Taxes}_{\text{Income}}$ = .15($50,000) + .25($25,000) + .34($25,000) + .39($235,000)
+ .34($7,315,000)
$\text{Taxes}_{\text{Income}}$ = $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 = $NWC_{end} - NWC_{beg}$
Change in NWC = $(CA_{end} - CL_{end}) - (CA_{beg} - CL_{beg})$
Change in NWC = ($4,234 – 2,981) – ($3,528 – 3,110)
Change in NWC = $835

And the net capital spending was:

Net capital spending = $NFA_{end} - NFA_{beg}$ + 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 = $NWC_{end} - NWC_{beg}$
Change in NWC = $(CA_{end} - CL_{end}) - (CA_{beg} - CL_{beg})$
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 = $NFA_{end} - NFA_{beg}$ + 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 = $LTD_{Ending} - LTD_{Beginnning}$
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 = $NWC_{end} - NWC_{beg}$
Change in NWC = $(CA_{end} - CL_{end}) - (CA_{beg} - CL_{beg})$
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 = $NFA_{end} - NFA_{beg}$ + 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 debt$_{end}$ – Long-term debt$_{beg}$)
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 = $NFA_{end} – NFA_{beg}$ + Depreciation
$= (NFA_{end} – NFA_{beg}) + (Depreciation + AD_{beg}) – AD_{beg}$
$= (NFA_{end} – NFA_{beg}) + AD_{end} – AD_{beg}$
$= (NFA_{end} + AD_{end}) – (NFA_{beg} + AD_{beg})$
$= FA_{end} – FA_{beg}$

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%

Chapter 2
FINANCIAL STATEMENTS, TAXES, AND CASH FLOW

Financial Statements, Taxes, and Cash Flows			
2	**Chapter Organization**	**Slide Number**	**Slide Title**
	Introduction	2.2	Key Concepts and Skills
		2.3	Chapter Outline
2.1	**The Balance Sheet**		
	Assets: The Left-Hand Side Liabilities and Owner's Equity: The Right-Hand Side Balance Sheet Identity	2.4	The Balance Sheet
		2.5	The Balance Sheet: Figure 2.1
	Net Working Capital Liquidity Debt versus Equity	2.6	The Balance Sheet
		2.7	U.S. Corporation Balance Sheet: Table 2.1
	Market Value versus Book Value	2.8	Market Value versus Book Value
		2.9	Klingon Corporation: Example 2.2
2.2	**The Income Statement**		
		2.10	Income Statement
		2.11	U.S Corporation Income Statement: Table 2.2
	GAAP and the Income Statement Noncash Items	2.12	Financial Statements
	Time and Costs Earnings Management	2.13	Financial Statements
		2.14	Example: Work the Web
2.3	**Taxes**		
	Corporate Tax Rates	2.15	Taxes
		2.16	Corporate Tax Rates: Table 2.3
	Average versus Marginal Tax Rates	2.17	Example: Marginal versus Average Rates
		2.18	Tax on $4 Million
		2.19	Average Tax Rates: Tables 2.4 & 2.5
2.4	**Cash Flow**		
		2.20	The Concept of Cash Flow
	Cash Flow from Assets Cash Flow to Creditors and Stockholders	2.21	Cash Flow from Assets
		2.22	Example: U.S. Corporation
		2.23	Example: U.S. Corporation
	Conclusion	2.24	Formula Summary: Table 2.6
		2.25	Quick Quiz
		2.26	Quick Quiz
		2.27	Comprehensive Problem—Dole Cola I/S
		2.28	Comprehensive Problem—Dole Cola OCF
		2.29	Comprehensive Problem—Dole Cola NCS & ΔNWC
		2.30	Comprehensive Problem—Dole Cola CFFA
		2.31	Comprehensive Problem—Dole Cola CFFA Option 2
		2.32	Comprehensive Problem—Dole Cola Cash Flows
		2.33	Comprehensive Problem—Dole Cola CF to Creditors

CHAPTER WEBSITES
Websites may be referenced more than once in a chapter. This table just includes the section for the first reference.

Chapter Section	Web Address
2.1	finance.yahoo.com
	money.cnn.com
	www.thewaltdisneycompany.com
	www.sec.gov
	www.fasb.org
	www.ifrs.org
2.3	www.irs.gov
What's On the Web?	www.alcoa.com
	www.coca-cola.com
	www.dukeenergy.com
	www.coopertires.com

Lecture Notes:
Chapters 2 and 3 are primarily accounting review. This chapter covers the balance sheet and income statement, which should be very familiar to students. The approach to calculating cash flow from assets may be a new concept as they have probably been introduced to the standard accounting statement of cash flows.

ANNOTATED CHAPTER OUTLINE

Slide 2.2 Key Concepts and Skills

Slide 2.3 Chapter Outline

Slide 2.4 The Balance Sheet

- Current Assets are listed first on the right-hand side because they are the most liquid. Fixed assets can include both tangible and intangible assets and generally are not very liquid.
- Liabilities and equity (or ownership) components of the firm are listed on the right-hand side and indicate how the assets are paid for.
- The Balance Sheet Identity: Assets = Liabilities + Shareholders' equity

Slide 2.5 The Balance Sheet - Figure 2.1

All finance decisions are either investment decisions or financing decisions.

- Investment decisions involve the purchase and sale of any assets (not just financial assets) and show up on the left-hand side of the balance sheet.

- Financing decisions involve the choice of whether to borrow money to buy the assets or to issue new ownership shares and show up on the right-hand side of the balance sheet.

Shareholders' equity consists of the common stock account, paid in surplus, retained earnings and treasury stock.

- The firm's net income belongs to the owners. It can either be paid out in dividends or reinvested in the firm. When it is reinvested in the firm, it becomes additional equity investment and shows up in the retained earnings account.

Slide 2.6 The Balance Sheet

- Net Working Capital = Current assets – Current liabilities

- Liquidity has two components: how long it takes to convert to cash *and* the value that must be relinquished to convert to cash quickly. Any asset can be converted to cash quickly if you are willing to lower the price enough.

  Liquid assets provide lower returns so too much liquidity can be just as detrimental to shareholder wealth maximization as too little liquidity.

- Debt versus Equity
  Interest and principal payments on debt have to be paid before cash may be paid to stockholders.

  The company's gains and losses are magnified as the company increases the amount of debt in the capital structure, which is why the use of debt is called financial "leverage."

Slide 2.7 U.S. Corporation Balance Sheet (Table 2.1)

This is an example of a simplified balance sheet. If possible, bring in some annual reports and let the students see the differences between the simplified statements they see in textbooks and the real thing or use "Work the Web" (Slide 2.14) to show real financial statements.

Slide 2.8 Market versus Book Value

Current assets and current liabilities generally have book values and market values that are very close. Assets are listed at historical cost less accumulated depreciation. "Total Assets" on the balance sheet is generally not a very good estimate of what the assets of the firm are actually worth.

Liabilities are listed at face value. When interest rates or the risk of the firm changes, the value of those liabilities change as well, especially longer-term liabilities.

Equity is the ownership interest in the firm. The market value of equity (stock price times number of shares) depends on the future growth prospects of the firm and on the market's estimation of the current value of ALL of the assets of the firm.

The best estimate of the market value of the firm's assets is market value of Liabilities + Market value of equity.

Accounting, or historical costs, are not very important to financial managers, while market values, which represent the cash price people are willing and able to pay, are very important.

Slide 2.9 Klingon Corporation (Example 2.2)

Shareholders benefit from increases in the market value of a firm's assets and they also bear the losses of a decrease in market value.

GAAP does provide for some assets to be marked-to-market, primarily those assets for which current market values are readily available due to trading in liquid markets. However, it does not generally apply to long-term assets, where market values and book values are likely to differ the most. Thus, it is unlikely that the aggregate balance sheet values provided by the firm will accurately reflect market values.

Slide 2.10 Income Statement

Earnings before interest and taxes (EBIT) is often called "operating income."

COGS would include both the fixed costs and the variable costs needed to generate the revenues.

The Income Statement Equation: Net Income = Revenue – Expenses

Analysts often look at EBITDA (earnings before interest, taxes, depreciation, and amortization) as a measure of the operating cash flow of the firm. It is not true in the strictest sense because taxes are an operating cash flow as well, but it does provide a reasonable estimate for analysis purposes.

Slide 2.11 U.S. Corporation Income Statement (Table 2.2)

Previously, it was noted that investment decisions are reflected on the left-hand side of the balance sheet and financing decisions are reflected on the right-hand side.

The income statement reflects investment decisions in the "top half," from sales to EBIT. Financing decisions are reflected in the "bottom half," from EBIT to net income and earnings per share.

Slide 2.12 Financial Statements

GAAP Matching Principle

GAAP require that revenue be recognized when it is earned, not when the cash is received, and costs are matched to revenues. This introduces noncash deductions such as depreciation and amortization. Consequently, net income is NOT the same as cash flow.

Noncash Items

The largest noncash deduction for most firms is depreciation. It reduces a firm's taxes and its net income. Noncash deductions are part of the reason that net income

is not equivalent to cash flow.

Slide 2.13 Financial Statements (Web link)

www: *Click on the Web Surfer icon to go to the IFRS website for information on GAAP versus international accounting standards.*

Time and Costs

In the short run, some costs are fixed regardless of output, and other costs are variable, meaning they vary with the level of output. In the long run, all costs are variable.

GAAP allows sufficient management discretion that firms routinely "manage earnings" to present the best results to stockholders and analysts.

Slide 2.14 Example: Work the Web (Web link)

www: *Click on the Web Surfer icon to go to the SEC "Search the EDGAR Database" website.*

An excellent opportunity to show the actual financial statements of a selected company using the SEC EDGAR website or Yahoo! Finance.

Slide 2.15 Taxes

www: *Click on the Web Surfer icon to go to the IRS website for the most up-to-date tax information.*

- For purposes of computing a company's total tax liability, the average tax rate is the correct rate to apply to before-tax profits.
- In evaluating the cash flows expected from a new investment, the marginal tax rate is the appropriate rate to use, because the new investment will generate cash flows that will be taxed in addition to the company's existing profit.

Slide 2.16 Corporate Tax Rates (Table 2.3)

It is helpful for students to explain how income is segmented into the tax brackets.

Slide 2.17 Example: Marginal versus Average Rates

Slide 2.18 Example: Marginal versus Average Rates (Excel link)

Tax liability:
.15(50,000) + .25(75,000 – 50,000) + .34(100,000 – 75,000) + .39(335,000 – 100,000) + .34(4,000,000 – 335,000) = $1,360,000

Average rate: $1,360,000 / $4,000,000 = .34 or 34%

The marginal tax rate comes from the table. It is 34%.

Slide 2.19 Average Tax Rates (Tables 2.4 and 2.5)

Table 2.4 is useful for comparing actual marginal rates with average rates. Table 2.5 compares average tax rates across various industries.

Slide 2.20 The Concept of Cash Flow

This is NOT the standard accounting Statement of Cash Flows.

Slide 2.21 Cash Flow from Assets

- The first equation shows the cash flow that the firm receives from its assets.
  CFFA = Operating cash flow – Net capital spending – Δ in net working capital

  Operating cash flow = EBIT + depreciation – taxes
  Net capital spending = ending fixed assets – beginning fixed assets + depreciation
  Changes in NWC = ending NWC – beginning NWC

- The second equation shows how the cash flow from the firm is divided among the investors who financed the assets.
  Cash flow from assets = Cash flow to creditors + Cash flow to stockholders

  Cash flow to creditors = interest paid – net new borrowing
  = interest paid – (ending long-term debt – beginning long-term debt)
  Cash flow to stockholders = dividends paid – net new equity raised
  = dividends paid – (ending common stock, APIC, & Treasury stock – beginning common stock, APIC, & Treasury stock)
  Where APIC = additional paid in capital or paid in surplus

Slide 2.22 Example; U.S. Corporation

- CFFA = OCF – NCS – ΔNWC
  OCF = EBIT + depreciation – taxes
  = $694 + 65 – 212 = $547
  NCS = ending net FA – beginning net FA + depreciation
  = $1709 – 1644 + 65 = $130
  ΔNWC = ending NWC – beginning NWC
  = ($1403 – 389) – ($1112 – 428) = $330
- CFFA = 547 – 130 – 330 = $87

Slide 2.23 Example: U.S. Corporation

- CFFA = CF/CR + CF/SH
  CF/CR = interest paid – net new borrowing
  = $70 – ($454 – 408) = $24
  CF/SH = dividends paid – net new equity
  = $103 – ($640 – 600) = $63
- CFFA = $24 + $63 = $87

Slide 2.24 Table 2.6

Slide 2.25 Quick Quiz—Part I

Slide 2.26 Quick Quiz—Part II

Comprehensive Problem—Dole Cola

This problem covers calculating CFFA using both formulas given on slide 2.21.

Slide 2.27 Dole Cola Income Statement

Slide 2.28 Dole Cola Operating Cash Flow

OCF = EBIT + Depreciation – Taxes

Slide 2.29 Dole Cola Net Capital Spending and Change in NWC

NCS = Ending NFA – Beginning NFA + Depreciation

ΔNWC = [2010(CA – CL)] – [2009(CA – CL)]

Slide 2.30 Dole Cola Cash Flow from Assets (Option 1) (Excel link)

CFFA = OCF – NCS – ΔNWC

Slide 2.31 Dole Cola CFFA (Option 2)

From Slide 2-26: CFFA = ($181)

Slide 2.32 Dole Cola Cash Flow from Stockholders and Creditors

CF to Stockholders (CF/SH) = Dividends – New equity

CF to creditors (CF/CR) can be derived from the CF to stockholders and CFFA

CF/CR = CFFA – CF/SH

Slide 2.33 Dole Cola Cash Flow to Creditors (Excel link)

Net new borrowing = CF/CR – Interest paid

Chapter 2 Financial Statements, Taxes and Cash Flow

Key Concepts and Skills

Know:

- The difference between book value and market value
- The difference between accounting income and cash flow
- The difference between average and marginal tax rates
- How to determine a firm's cash flow from its financial statements

Chapter Outline

2.1 The Balance Sheet

2.2 The Income Statement

2.3 Taxes

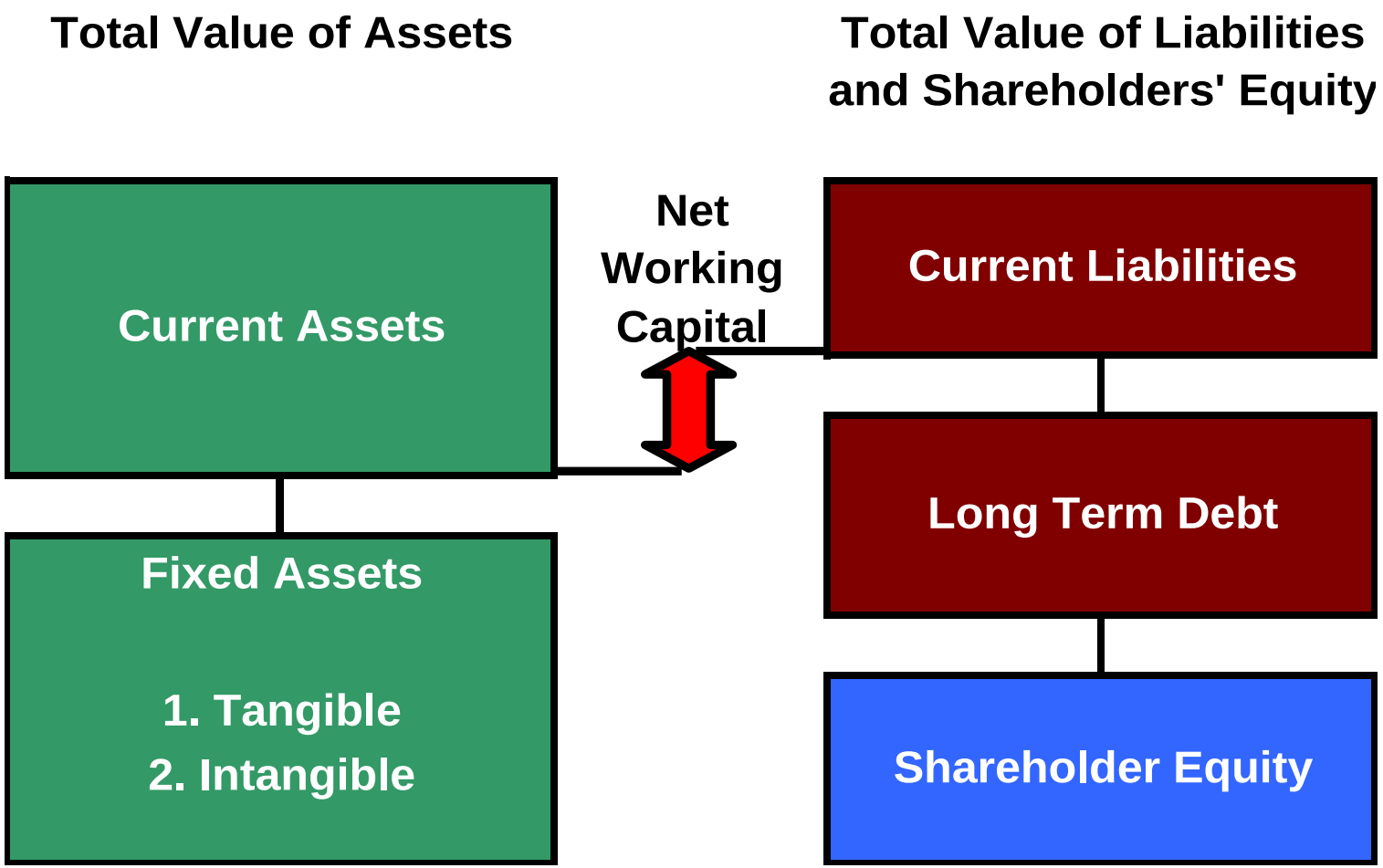
2.4 Cash Flow

The Balance Sheet

- A snapshot of the firm's assets and liabilities at a given point in time ("as of …")
- Assets
  - Left-hand side (or upper portion)
  - In order of decreasing liquidity
- Liabilities and Owners' Equity
  - Right-hand side (or lower portion)
  - In ascending order of when due to be paid
- Balance Sheet Identity
  - Assets = Liabilities + Stockholders' Equity

The Balance Sheet

Figure 2.1



The Balance Sheet

- Net working capital
  - Current Assets minus Current Liabilities
  - Usually positive for a healthy firm
- Liquidity
  - Speed and ease of conversion to cash without significant loss of value
  - Valuable in avoiding financial distress
- Debt versus Equity
  - Shareholders' equity = Assets - Liabilities

U.S. Corporation Balance Sheet Table 2.1

TABLE 2.1

Balance sheets for U.S. Corporation

U.S. CORPORATION
Balance Sheets as of December 31, 2015 and 2016
($ in Millions)

Assets	2015	2016	Liabilities and Owners' Equity	2015	2016
Current assets			Current liabilities		
Cash	$ 104	$ 160	Accounts payable	$ 232	$ 266
Accounts receivable	455	688	Notes payable	196	123
Inventory	553	555	Total	$ 428	$ 389
Total	$1,112	$1,403			
Fixed assets					
Net fixed assets	$1,644	$1,709	Long-term debt	$ 408	$ 454
			Owners' equity		
			Common stock and paid-in surplus	600	640
			Retained earnings	1,320	1,629
			Total	$1,920	$2,269
Total assets	$2,756	$3,112	Total liabilities and owners' equity	$2,756	$3,112

Market vs. Book Value

- Book value = the balance sheet value of the assets, liabilities, and equity.
- Market value = true value; the price at which the assets, liabilities, or equity can actually be bought or sold.
  - Market value and book value are often very different. Why?
  - Which is more important to the decision-making process?

Return to Quick Quiz

Klingon Corporation
Example 2.2

KLINGON CORPORATION
Balance Sheets
Market Value versus Book Value

	Book	Market		Book	Market
	Assets		**Liabilities and Shareholders' Equity**		
Current assets	$ 400	$ 600	Long-term debt	$ 500	$ 500
Net fixed assets	700	1,000	Shareholders' equity	600	1,100
	$1,100	$1,600		$1,100	$1,600

Income Statement

- The income statement measures performance over a specified period of time (period, quarter, year).
- Report revenues first and then deduct any expenses for the period
- End result = Net Income = “Bottom Line”
  - Dividends paid to shareholders
  - Addition to retained earnings
- Income Statement Equation:
  - Net Income = Revenue - Expenses

U.S. Corporation Income Statement
Table 2.2

U.S. CORPORATION 2016 Income Statement ($ in Millions)		
Net sales		$1,509
Cost of goods sold		750
Depreciation		65
Earnings before interest and taxes		$ 694
Interest paid		70
Taxable income		$ 624
Taxes		212
Net income		$ 412
Dividends	$103	
Addition to retained earnings	309	

TABLE 2.2

Income statement for U.S. Corporation

Financial Statements

- GAAP Matching Principle:
  - Recognize revenue when it is fully earned
  - Match expenses required to generate revenue to the period of recognition
- Noncash Items
  - Expenses charged against revenue that do not affect cash flow
  - Depreciation = most important

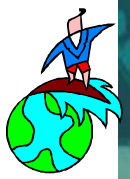
Return to Quick Quiz

Financial Statements

- Time and Costs
  - Fixed or variable costs
  - Not obvious on income statement
- Earnings Management
  - Smoothing earnings
  - GAAP leaves “wiggle room”
  - Global standardization of accounting
    - GAAP versus IFRS

Example: Work the Web

- Publicly traded companies must file regular reports with the Securities and Exchange Commission
- These reports are usually filed electronically and can be searched at the SEC public site called EDGAR
- Click on the web surfer, pick a company, and see what you can find!



Taxes

- Marginal vs. Average tax rates
  - Marginal – % tax paid on the next dollar earned
  - Average – total tax bill / taxable income
  - If considering a project that will increase taxable income by $1 million, which tax rate should you use in your analysis?

Return to Quick Quiz

Corporate Tax Rates

TABLE 2.3

Corporate tax rates

Taxable Income		Tax Rate
$ 0–	50,000	15%
50,001–	75,000	25
75,001–	100,000	34
100,001–	335,000	39
335,001–	10,000,000	34
10,000,001–	15,000,000	35
15,000,001–	18,333,333	38
18,333,334+		35

Example: Marginal vs. Average Rates

- Suppose your firm earns $4 million in taxable income.
  - What is the firm's tax liability?
  - What is the average tax rate?
  - What is the marginal tax rate?

Tax on $4 million

Tax Liability on $4,000,000

Corporate Tax Rates			Taxable	Tax
Taxable Income Levels		Tax Rate	Income	Liability
$ -	$ 50,000	15%	$ 50,000	$ 7,500
$ 50,001	$ 75,000	25%	$ 25,000	$ 6,250
$ 75,001	$ 100,000	34%	$ 25,000	$ 8,500
$ 100,001	$ 335,000	39%	$ 235,000	$ 91,650
$ 335,001	$ 10,000,000	34%	$ 3,665,000	$ 1,246,100
$ 10,000,001	$ 15,000,000	35%		
$ 15,000,001	$ 18,333,333	38%		
$ 18,333,334	-	35%		
			$ 4,000,000	$ 1,360,000

Average Rate =	34%
Marginal Rate =	34%

Average Tax Rates

TABLE 2.4

Corporate taxes and tax rates

(1) Taxable Income	(2) Marginal Tax Rate	(3) Total Tax	(3)/(1) Average Tax Rate
$ 45,000	15%	$ 6,750	15.00%
70,000	25	12,500	17.86
95,000	34	20,550	21.63
250,000	39	80,750	32.30
1,000,000	34	340,000	34.00
17,500,000	38	6,100,000	34.86
50,000,000	35	17,500,000	35.00
100,000,000	35	35,000,000	35.00

TABLE 2.5

Average tax rates for various industries

Industry	Number of Companies	Average Tax Rate
Electric utilities (Eastern U.S.)	24	33.8%
Trucking	33	32.7
Railroad	15	27.4
Securities brokerage	30	20.5
Banking	481	17.5
Medical supplies	264	11.2
Internet	239	5.9
Pharmaceutical	337	5.6
Biotechnology	121	4.5

The Concept of Cash Flow

- Cash flow = one of the most important pieces of information that can be derived from financial statements
- The accounting Statement of Cash Flows does **not** provide the same information that we are interested in here
- Our focus: how cash is generated from utilizing assets and how it is paid to those who finance the asset purchase.

Cash Flow From Assets

- Cash Flow From Assets (CFFA)
  - = Operating Cash Flow (OCF)
  - – Net Capital Spending (NCS)
  - – Changes in NWC (ΔNWC)

Return to Quick Quiz

- Cash Flow From Assets (CFFA)
  - = Cash Flow to Creditors (CF/CR)
  - + Cash Flow to Stockholders (CF/SH)

Example: U.S. Corporation

Balance Sheet					
Assets			Liabiities & Owners' Equity		
	2009	2010		2009	2010
Current Assets			Current Liabilities		
Cash	$104	$160	Accounts Payable	$232	$266
Accounts Receivable	455	688	Notes Payable	196	123
Inventory	553	555	Total	$428	$389
Total	$1,112	$1,403			
Fixed Assets					
Net Fixed assets	$1,644	$1,709	Long-term debt	$408	$454
			Owners' equity		
			Common stock and		
			paid-in surplus	600	640
			Retained earnings	1,320	1,629
			Total	$1,920	$2,269
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U.S. Corporation		
Income Statement		
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Dividends	$103	
Addition to retained earnings	$309	

- **CFFA = OCF – NCS - ΔNWC**

  OCF = EBIT + depreciation – taxes

  = $694 + 65 – 212 = **$547**

  NCS = ending net FA– beginning net FA + depreciation

  = $1709 – 1644 + 65 = **$130**

  ΔNWC = ending NWC – beginning NWC

  = ($1403 – 389) – ($1112 – 428) = **$330**

- **CFFA = 547 – 130 – 330 = $87**

Example: U.S. Corporation

U.S. Corporation					
Balance Sheet					
Assets			Liabiities & Owners' Equity		
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			Total	$1,920	$2,269
Total assets	$2,756	$3,112	Total Liabilties & Owners Equity	$2,756	$3,112

U.S. Corporation		
Income Statement		
Net sales		$1,509
Cost of goods sold		750
Depreciation		65
Earnings before interest and taxes		$694
Interest Paid		70
Taxable income		$624
Taxes		212
Net Income		$412
Dividends	$103	
Addition to retained earnings	$309	

- **CFFA** **= CF/CR + CF/SH**

  CF/CR = interest paid – net new borrowing

  = $70 – ($454 – 408) = **$24**

  CF/SH = dividends paid – net new equity

  = $103 – ($640 – 600) = **$63**

- **CFFA** **= $24 + $63 = $87**

Table 2.6

I. The cash flow identity

Cash flow from assets = Cash flow to creditors (bondholders)
+ Cash flow to stockholders (owners)

II. Cash flow from assets

Cash flow from assets = Operating cash flow
− Net capital spending
− Change in net working capital (NWC)

where

Operating cash flow = Earnings before interest and taxes (EBIT)
+ Depreciation − Taxes

Net capital spending = Ending net fixed assets − Beginning net fixed assets
+ Depreciation

Change in NWC = Ending NWC − Beginning NWC

III. Cash flow to creditors (bondholders)

Cash flow to creditors = Interest paid − Net new borrowing

IV. Cash flow to stockholders (owners)

Cash flow to stockholders = Dividends paid − Net new equity raised

Quick Quiz

- What is the difference between book value and market value? (Slide 2.8)
  - Which should we use for decision making purposes?
- What is the difference between accounting income and cash flow?
  - Which do we need to use when making decisions? (Slide 2.12)

Quick Quiz

- What is the difference between average and marginal tax rates?
  - Which should we use when making financial decisions? (Slide 2.15)
- How do we determine a firm's cash flows?
  - What are the equations and where do we find the information? (Slide 2.21)

Dole Cola Example

DOLE COLA		
2016 Income Statement		
Net sales		$ 600
Cost of goods sold		$ 300
Depreciation		$ 150
EBIT		$ 150
Interest paid		$ 30
Taxable income		$ 120
Taxes		$ 41
Net income		$ 79
Dividends	$ 30	
Addtion to retained earnings	$ 49	

Dole Cola
Operating Cash Flow

2016 Operating Cash Flow		
EBIT		$ 150
+ Depreciation		$ 150
- Taxes		$ 41
		$ 259

DOLE COLA		
2016 Net Capital Spending		
Ending Net Fixed Assets		$ 750
- Beginning Net Fixed Assets		$ 500
+ Depreciation		$ 150
		$ 400

DOLE COLA		
2016 Change in Net Working Capital		
2010 Current Assets	$2,260.0	
2010 Current Liabilities	$1,710.0	
2010 Net Working Capital		$ 550
2009 Current Assets	$2,130.0	
2009 Current Liabilities	$1,620.0	

Dole Cola

Net Capital Spending & Change in Net Working Capital

DOLE COLA		
2016 Income Statement		
Net sales		$ 600
Cost of goods sold		$ 300
Depreciation		$ 150
EBIT		$ 150
Interest paid		$ 30
Taxable income		$ 120
Taxes		$ 41
Net income		$ 79
Dividends	$ 30	
Addtion to retained earnings	$ 49	

DOLE COLA

Dole Cola
Cash Flow from Assets

DOLE COLA		
2016 Cash Flow from Assets		
Operating Cash Flow		$ 259
- Net Capital Spending		$ 400
- Change in Net Working Capital		$ 40
		$ (181)

Dole Cola
CFFA – Option 2

- Beginning Net Fixed Assets			$ 500
+ Depreciation			$ 150
			$ 400

DOLE COLA		
2016 Change in Net Working Capital		
2016 Current Assets	$ 2,260.0	
2016 Current Liabilities	$ 1,710.0	
2016 Net Working Capital		$ 550
2015 Current Assets	$ 2,130.0	
2015 Current Liabilities	$ 1,620.0	
2015 Net Working Capital		$ 510
Change in Net Working Capital		$ 40

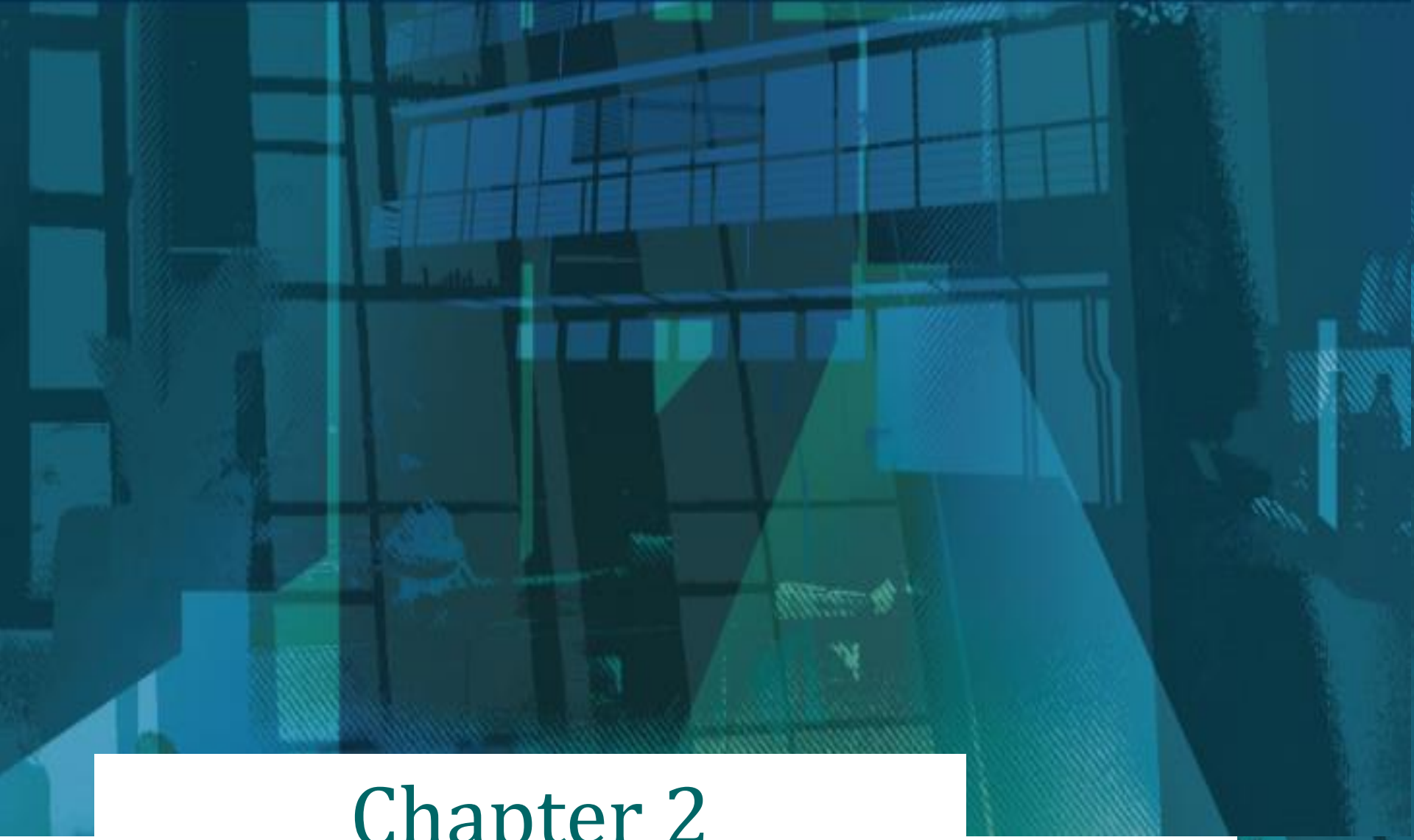
DOLE COLA	
2016 Cash Flow from Assets	
Operating Cash Flow	$ 259
- Net Capital Spending	$ 400
- Change in Net Working Capital	$ 40
	$ (181)

Dole Cola
Cash Flow to Stockholders & Creditors

DOLE COLA		
2016 Income Statement		
Net sales		$ 600
Cost of goods sold		$ 300
Depreciation		$ 150
EBIT		$ 150
Interest paid		$ 30
Taxable income		$ 120
Taxes		$ 41
Net income		$ 79

Dole Cola
Cash Flow to Creditors

DOLE COLA			
2016 Cash Flow to Creditors			
Interest Paid		**$**	**30**
- Net New Borrowing	**???**	**$**	**(241)**
		$	**(211)**



Chapter 2

END

Chapter 2

Problems 1-25

Input boxes in tan
Output boxes in yellow
Given data in blue
Calculations in red
Answers in green

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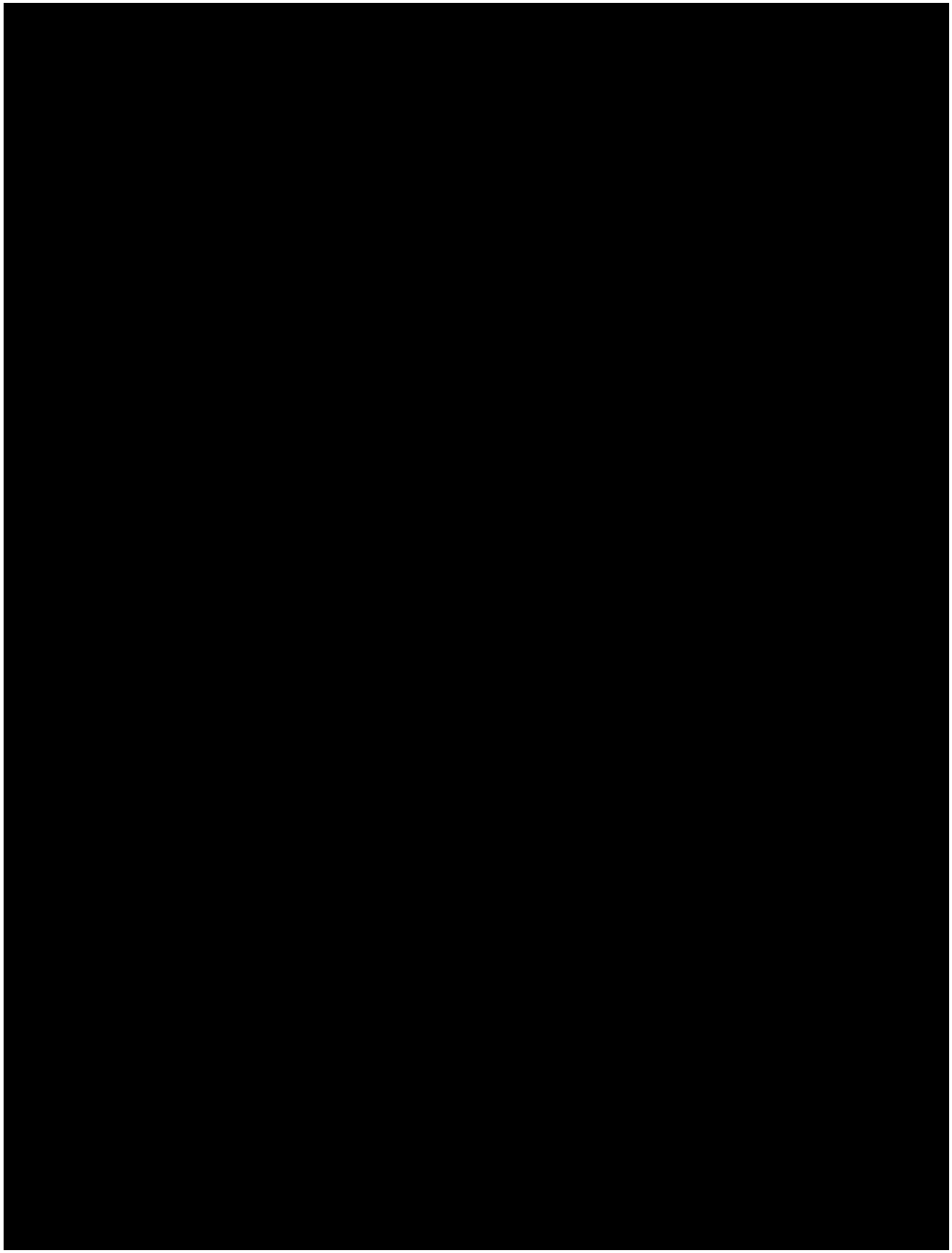

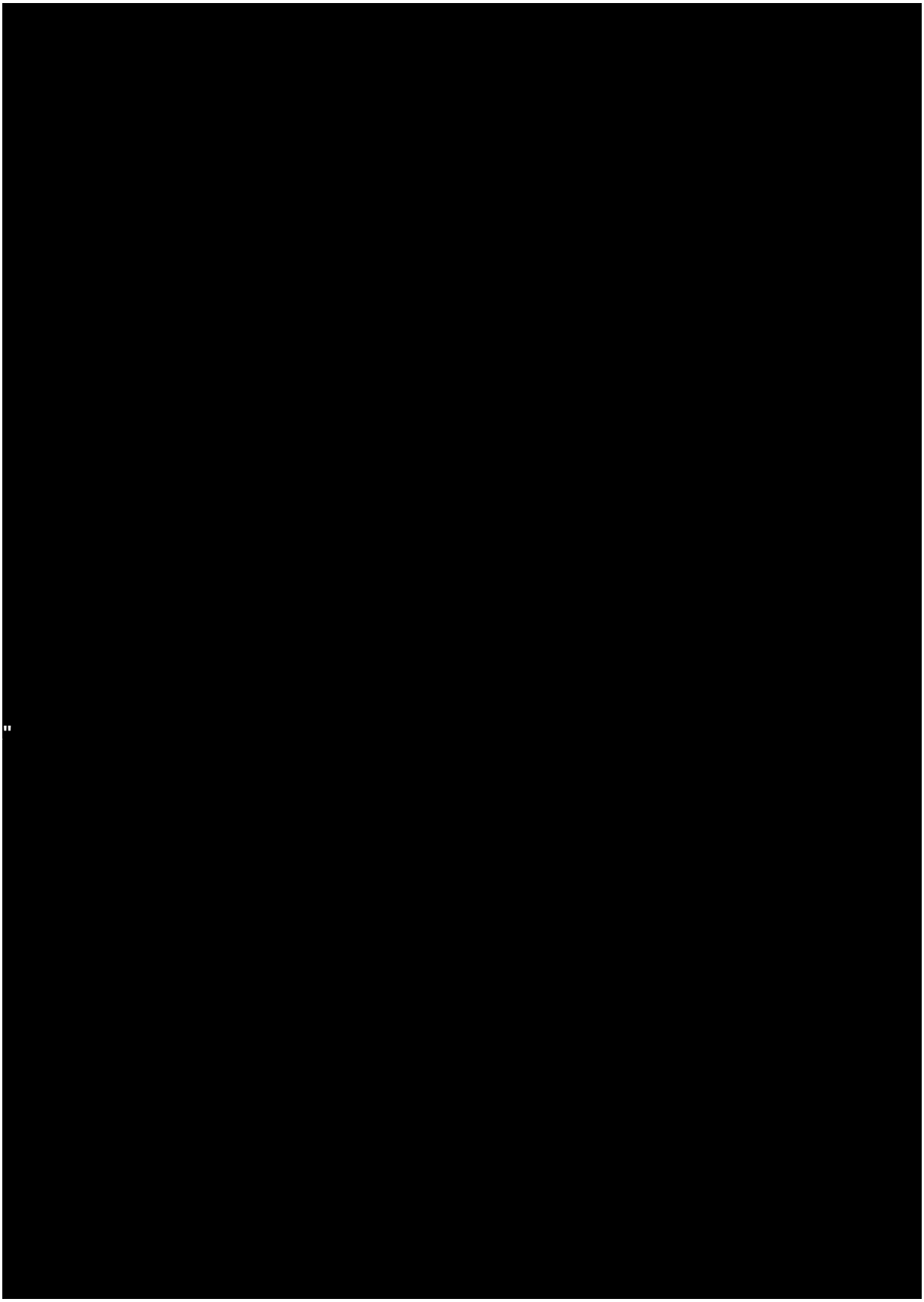

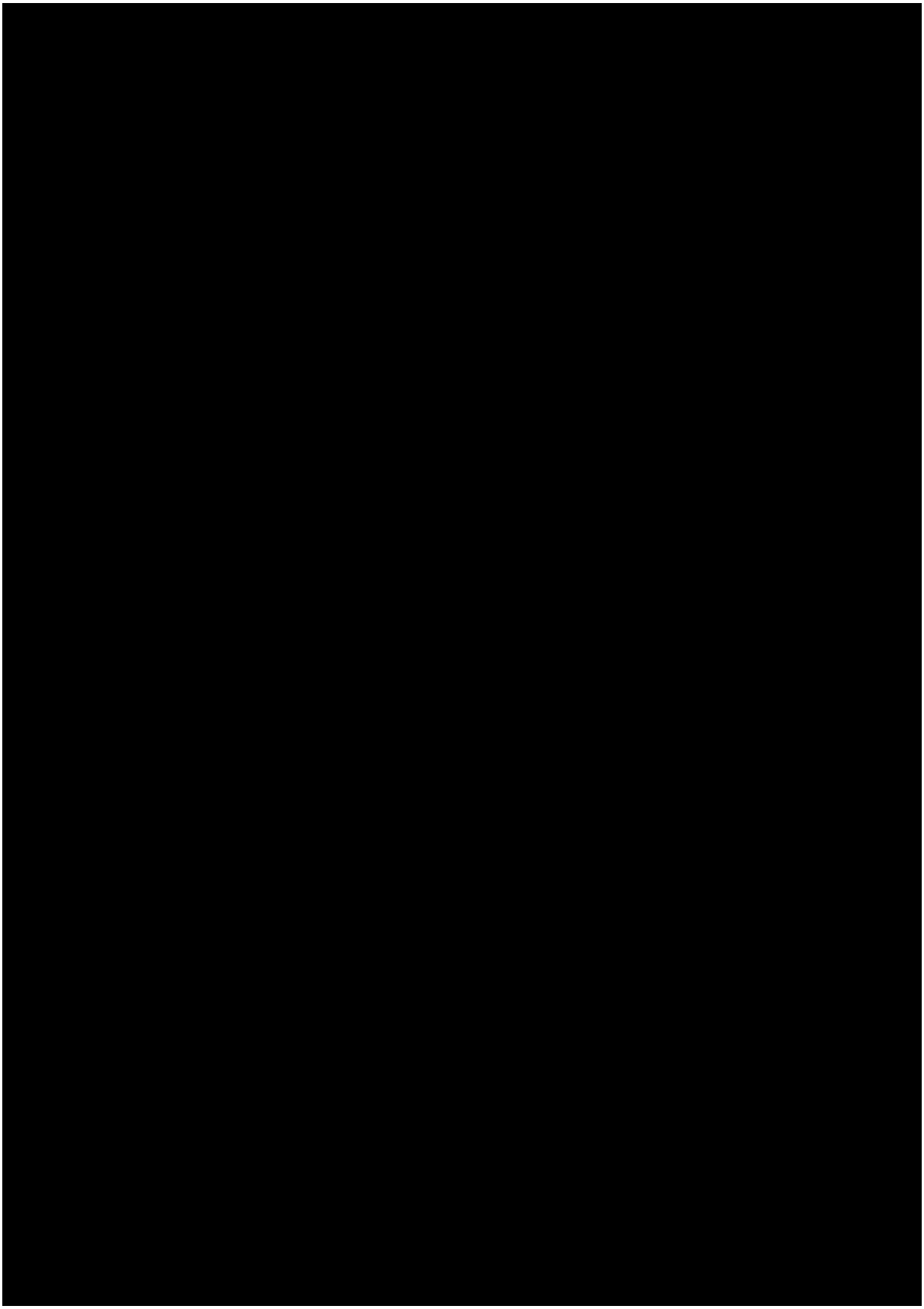

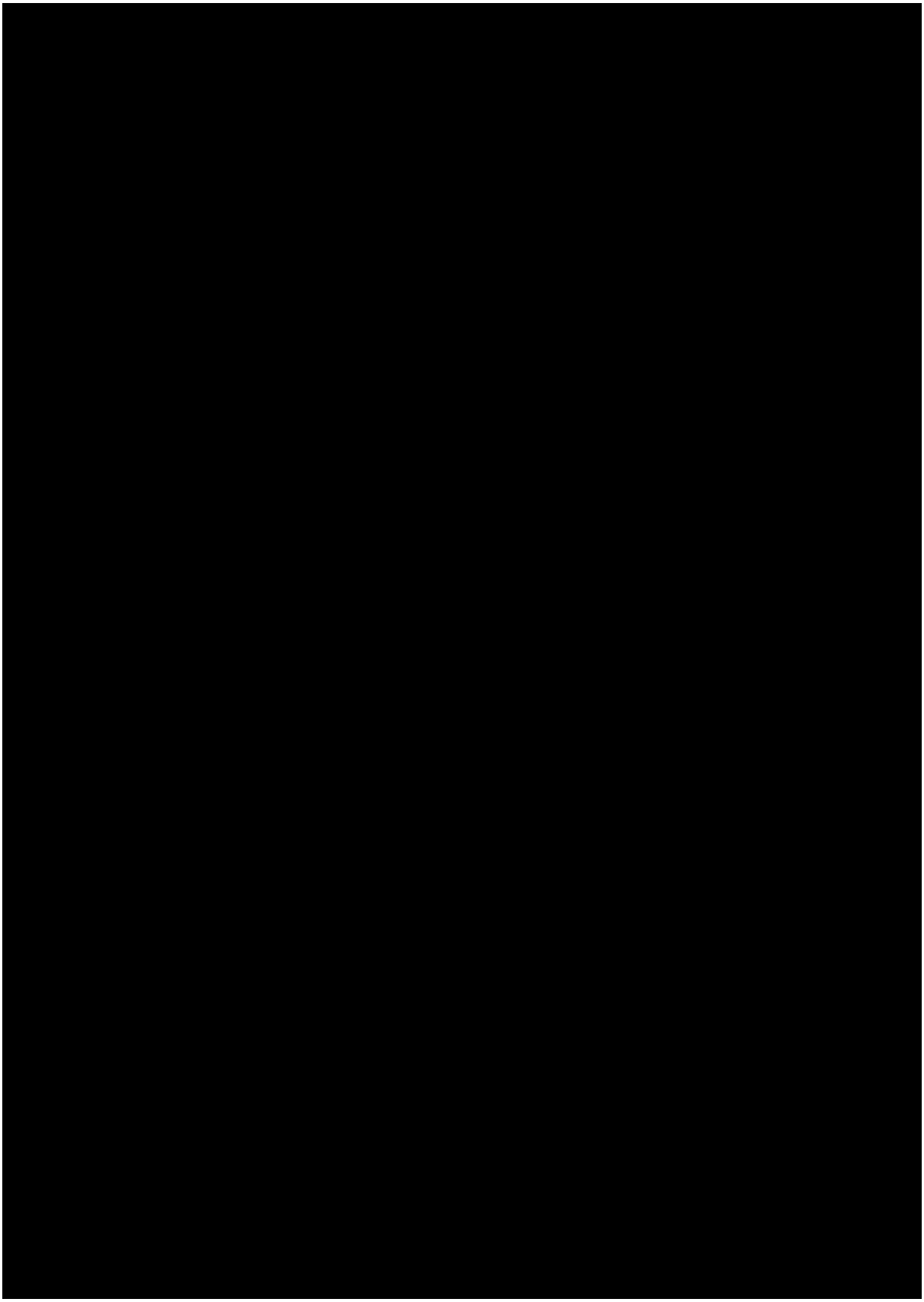

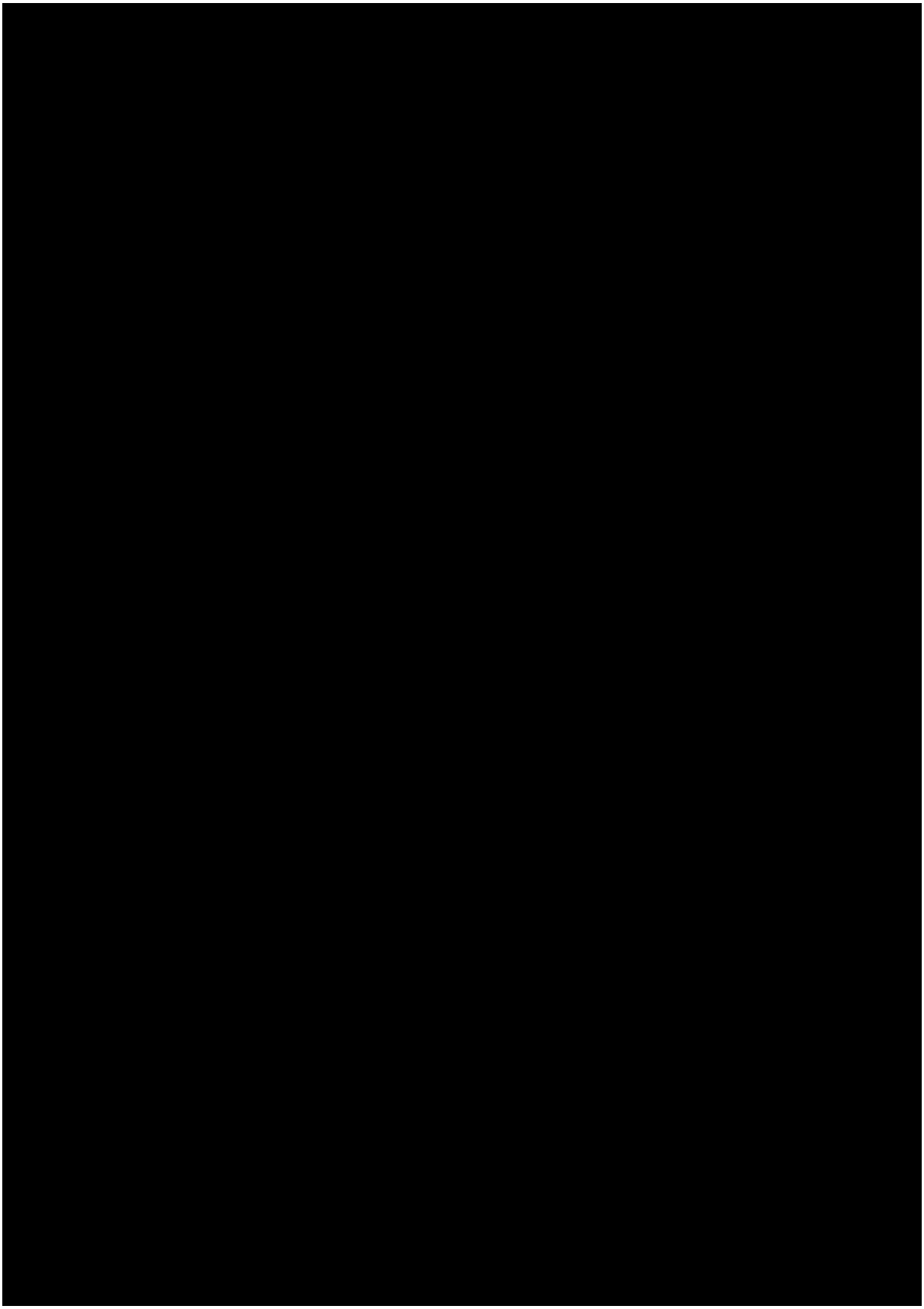

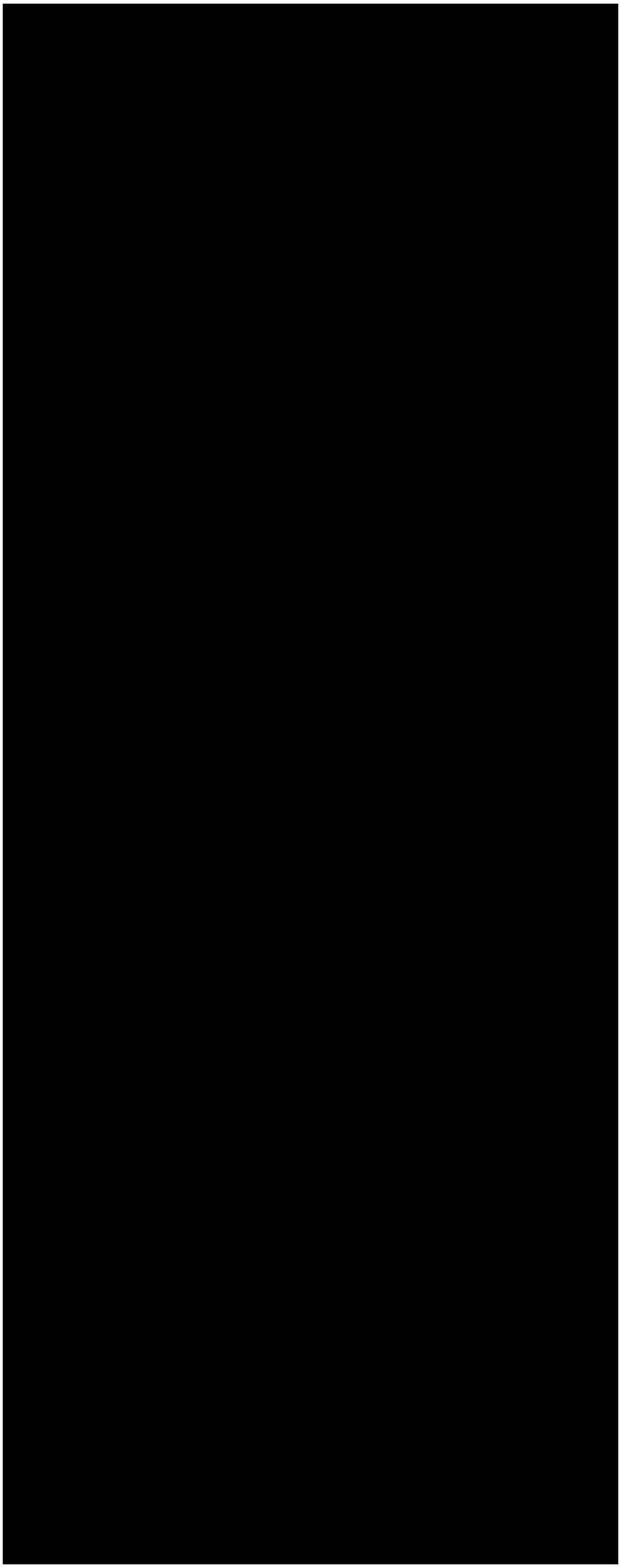

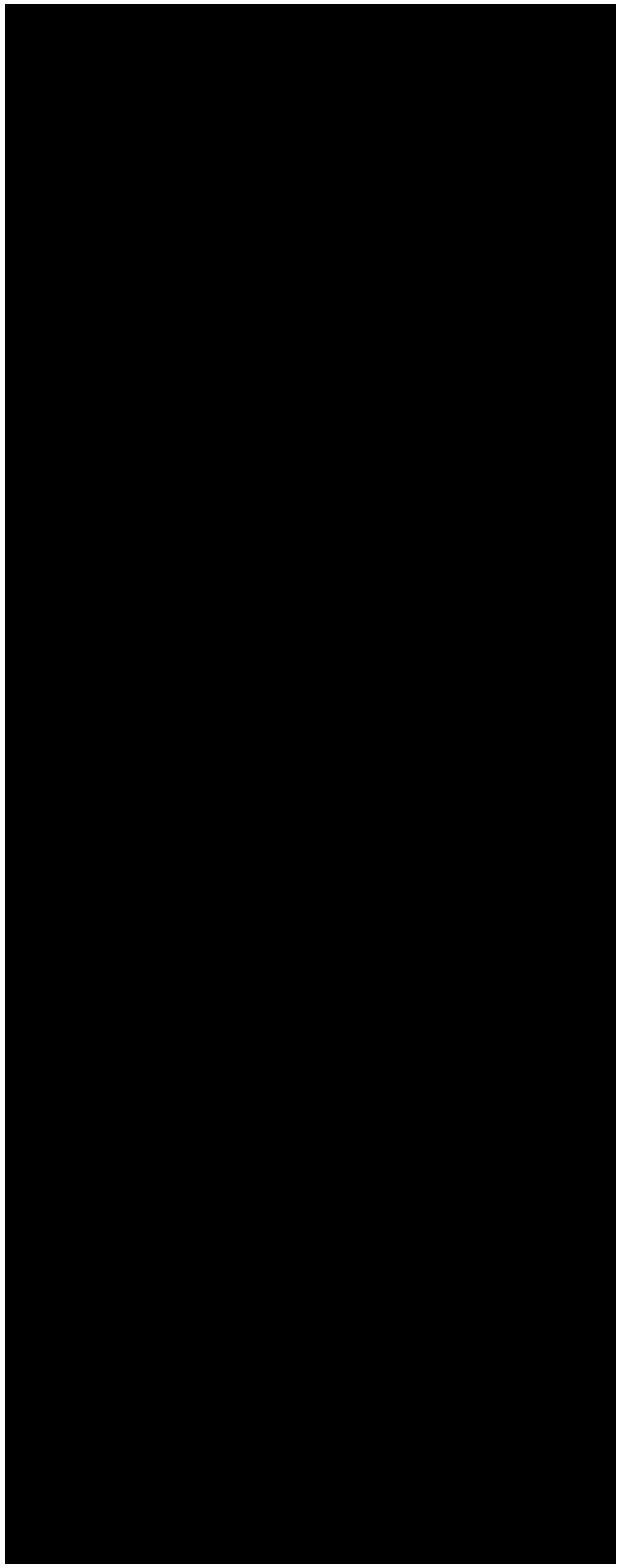

Chapter 2

Question 1

Input area:

Current assets	$	2,030
Net fixed assets		9,780
Current liabilities	$	1,640
Long-term debt		4,490

Output area:

Balance sheet

Current assets	$	2,030	Current liabilities	$	1,640
Net fixed assets		9,780	Long-term debt		4,490
			Owner's equity		5,680
			Total liabilities		
Total assets	$	11,810	and equity	$	11,810

Owner's equity	$	5,680
Net working capital	$	390

Chapter 2

Questions 2-4

Input area:

Sales	$ 634,000
Costs	328,000
Depreciation expense	73,000
Interest expense	38,000
Tax rate	35%
Cash dividends	$ 43,000
Common stock (shares)	35,000

Output area:

Income Statement

Sales	$ 634,000
Costs	328,000
Depreciation expense	73,000
EBIT	$ 233,000
Interest expense	38,000
EBT	$ 195,000
Taxes	68,250
Net income	**$ 126,750**

Addition to retained earnings	**$ 83,750**
Earnings per share	**$ 3.62**
Dividends per share	**$ 1.23**

Chapter 2

Questions 5, 6

Input area:

Taxable income	$	243,000
Taxable income		
0 - 50,000		15%
50,001 - 75,000		25%
75,001 - 100,000		34%
100,001 - 335,000		39%
335,001 - 10,000,000		34%
10,000,001 - 15,000,000		35%
15,000,001 - 18,333,333		38%
18,333,334 +		35%

Output area:

Taxes:			
15%	$	50,000	
25%		25,000	
34%		25,000	
39%		143,000	
34%		0	
35%		0	
38%		0	
35%		0	
	$	**78,020**	
Average tax rate:	$	78,020	= **32.11%**
		243,000	

The marginal tax rate is 39%.

Chapter 2

Question 7

Input area:

Sales	$	38,530
Costs	$	12,750
Depreciation expense	$	2,550
Interest expense	$	1,850
Tax rate		35%

Output area:

Income Statement	
Sales	$ 38,530.00
Costs	12,750.00
Depreciation	2,550.00
EBIT	$ 23,230.00
Interest	1,850.00
EBT	$ 21,380.00
Taxes	7,483.00
Net Income	$ 13,897.00

Operating cash flow	**$ 18,297.00**

Chapter 2

Question 8

Input area:

Dec. 31, 2015 net fixed assets	$	1,975,000
Dec. 31, 2016 net fixed assets		2,134,000
Depreciation expense	$	325,000

Output area:

Net capital spending	**$**	**484,000**

Chapter 2

Question 9

Input area:

Dec. 31, 2015 Current assets	$	1,530
Dec. 31, 2015 Current liabilities		1,270
Dec. 31, 2016 Current assets	$	1,685
Dec. 31, 2016 Current liabilities		1,305

Output area:

Change in net working capital	$	120

Chapter 2

Question 10

Input area:

Dec. 31, 2015 Long-term debt	$ 1,410,000
Dec. 31, 2016 Long-term debt	$ 1,551,000
Interest expense	$ 102,800

Output area:

Cash flow to creditors	**$ (38,200)**

Chapter 2

Question 11

Input area:

Dec. 31, 2015 Common stock	$	130,000
Dec. 31, 2015 Additional paid-in surplus		2,332,000
Dec. 31, 2016 Common stock	$	148,000
Dec. 31, 2016 Additional paid-in surplus		2,618,000
Cash dividends	$	148,500

Output area:

Cash flow to stockholders	$	**(155,500)**

Chapter 2

Question 12

Input area:

From problems 11,12:		
Cash flow to creditors	$	(38,200)
Cash flow to stockholders		(155,500)
New information:		
Net capital spending	$	705,000
Change in net working capital		(115,000)

Output area:

Cash flow from assets	$	(193,700)
Operating cash flow	**$**	**396,300**

Chapter 2

Question 13

Input area:

Market value of net fixed assets	$	4,800,000
Book value of net fixed assets	$	3,300,000
Book value of current liabilities	$	850,000
Net working capital	$	220,000
Market value of current assets	$	1,050,000

Output area:

Book value of current assets	$	1,070,000
Book value of net fixed assets		3,300,000
Book value of assets	**$**	**4,370,000**
NWC	$	1,050,000
Market value of net fixed assets		4,800,000
Total	**$**	**5,850,000**

Chapter 2

Question 14

Input area:

Sales	$ 173,000
Costs	91,400
Other expenses	5,100
Depreciation expense	12,100
Interest expense	8,900
Taxes	21,090
Dividends	9,700
New equity	$ 2,900
Net new long-term debt	(4,000)
Increase in fixed assets	23,140

Output area:

Income Statement

Sales	$ 173,000
Costs	91,400
Other expenses	5,100
Depreciation expense	12,100
EBIT	$ 64,400
Interest expense	8,900
EBT	$ 55,500
Taxes	21,090
Net income	$ 34,410
Dividends	$ 9,700
Addition to retained earnings	24,710

a.	Operating cash flow	**$ 55,410**
b.	Cash flow to creditors	**$ 12,900**
c.	Cash flow to stockholders	**$ 6,800**

d.	Cash flow from assets	$	19,700
	Net capital spending	$	35,240
	Change in NWC	$	470

Chapter 2
Question 15

Input area:

Sales	$	67,000
Costs	$	49,200
Addition to retained earnings	$	3,500
Dividends paid	$	2,170
Interest expense	$	1,980
Tax rate		40%

Output area:

Income Statement		
Sales	$	67,000
Costs		49,200
Depreciation expense	$	6,370
EBIT	$	11,430
Interest expense		1,980
EBT	$	9,450
Taxes		3,780
Net income	$	5,670
Dividends	$	2,170
Addition to retained earnings		3,500

Chapter 2

Question 16

Input area:

Cash	$	197,000
Patents and copyrights	$	863,000
Accounts payable	$	288,000
Accounts receivable	$	265,000
Tangible net fixed assets	$	5,150,000
Inventory	$	563,000
Notes payable	$	194,000
Accumulated retained earnings	$	4,586,000
Long-term debt	$	1,590,000

Output area:

	Balance sheet as o	
Cash	$	197,000
Accounts receivable		265,000
Inventory		563,000
Current assets	$	1,025,000
Tangible net fixed assets	$	5,150,000
Intangible net fixed assets		863,000
Total assets	$	7,038,000

f Dec. 31, 2016		
Accounts payable	$	288,000
Notes payable		194,000
Current liabilities	$	482,000
Long-term debt		1,590,000
Total liabilities	$	2,072,000
Common stock	**$**	**380,000**
Accumulated retained earnings		4,586,000
Total liability & owners' equity	$	7,038,000

Chapter 2

Question 17

Input area:

	Total liabilities	$	8,400
a)	Total assets	$	9,300
b)	Total assets	$	6,900

Output area:

a)	Owners' equity	$	900
b)	Owners' equity	$	-

Chapter 2

Question 18

Input area:

Corporation growth taxable income	$	76,500
Corporation income taxable income		7,650,000
Taxable income		
0 - 50,000		15%
50,001 - 75,000		25%
75,001 - 100,000		34%
100,001 - 335,000		39%
335,001 - 10,000,000		34%
10,000,001 - 15,000,000		35%
15,000,001 - 18,333,333		38%
18,333,334 +		35%

Output area:

Corporation Growth:

Taxes:		
15%	$	50,000
25%		25,000
34%		1,500
39%		0
34%		0
35%		0
38%		0
35%		0
	$	**14,260**

With a marginal tax rate of 34%, the tax on an additional $10,000 would be **$3,400**.

Corporation Income:

Taxes:

15%	$ 50,000
25%	25,000
34%	25,000
39%	235,000
34%	7,315,000
35%	0
38%	0
35%	0
	$ 2,601,000

With a marginal tax rate of 34%, the tax on an additional $10,000 would be **$3,400**.

The tax bills on an additional $10,000 are the same because each firm has a marginal tax rate of 34%, despite their different average tax rates.

Chapter 2

Question 19

Input area:

Sales	$	2,350,000
Costs of goods sold	$	1,295,000
Administrative and selling expenses	$	530,000
Depreciation expense	$	420,000
Interest expense	$	245,000
Tax rate		35%

Output area:

Income Statement

Sales	$	2,350,000
Costs		1,295,000
Administrative and selling expenses		530,000
Depreciation expense		420,000
EBIT	$	105,000
Interest expense		245,000
EBT	$	(140,000)
Taxes		0
a) Net income	$	(140,000)

b) Operating cash flow $ 525,000

c) Net income was negative because of the tax deductibility 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.

Chapter 2
Question 20

Input area:

From Problem 19:		
Operating Cash Flow	$	525,000
Interest	$	245,000
New information:		
Cash dividend	$	395,000
New investment in net fixed income		0
New investment in net working capital		0
New stock issued during year		0
Net capital spending		0
Net new equity		0

Output area:

Cash flow from assets	$	525,000
Cash flow to stockholders		395,000
Cash flow to creditors		130,000
Net new long-term debt	**$**	**115,000**

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 dividend payments.

Chapter 2

Question 21

Input area:

Sales	$	28,476
Cost of goods sold	$	20,136
Depreciation expense	$	3,408
Interest expense	$	497
Dividends paid	$	739
Beginning net fixed assets	$	19,872
Beginning current assets	$	3,528
Beginning current liabilities	$	3,110
Ending net fixed assets	$	22,608
Ending current assets	$	4,234
Ending current liabilities	$	2,981
Tax rate		40%
New debt issued	$	-

Output area:

	Income Statement		
	Sales	$	28,476
	Costs		20,136
	Depreciation expense		3,408
	EBIT	$	4,932
	Interest expense		497
	EBT	$	4,435
	Taxes		1,774
a	Net income	$	2,661
b	Operating cash flow	$	6,566
	Change in net working capital	$	835
	Net capital spending	$	6,144
c	Cash flow from assets	$	(413)
d	Cash flow to creditors	$	497

Cash flow to stockholders	$ (910)
Net new equity	$ 1,649

Chapter 2

Question 22

Input area:

Sales	$	40,664		
Costs	$	20,393		
Depreciation	$	3,434		
Interest	$	638		
		2015		2016
Current assets	$	2,718	$	2,881
Net fixed assets	$	12,602	$	13,175
2016 New fixed assets purchased	$	7,160		
Tax rate		40%		
2016 New long-term debt	$	2,155		

Output area:

Income Statement		
Sales	$	40,664
Costs		20,393
Depreciation expense		3,434
EBIT	$	16,837
Interest expense		638
EBT	$	16,199
Taxes		6,480
Net income	$	9,719

a) 2015 Total assets	$	15,320	#
2015 Total liabilities		8,047	#
2015 Owners' equity	$	7,273	
b) 2016 Net working capital	$	1,155	
2015 Net working capital		1,544	
Change in net working capital	$	(389)	
c) Net capital spending	$	4,007	

	Fixed assets sold	$ 3,153
	Operating cash flow	$ 13,791
	Cash flow from assets	$ 10,173
d)	Net new borrowing	$ 1,146
	Cash flow to creditors	$ (508)
	Debt retired	$ 1,009

	2015	2016
Current liabilities	$ 1,174	$ 1,726
Long-term debt	$ 6,873	$ 8,019

2016 Total assets	$ 16,056
2016 Total liabilities	9,745
2016 Owners' equity	**$ 6,311**

Chapter 2
Question 23

Input area:

2016 Income Statement

Sales	$	714,978
Cost of goods sold		384,591
Selling & Administrative		157,787
Depreciation		69,038
EBIT	$	103,562
Interest		24,410
EBT	$	79,152
Taxes		27,703
Net income	$	51,449
Dividends	$	16,200
Addition to retained earnings	$	35,249

Balance sheet as of Dec. 31, 2015

Cash	$	16,849	Accounts payable	$	12,115
Accounts receivable		24,027	Notes payable		18,237
Inventory		17,449	Current liabilities	$	30,352
Current assets	$	58,325			
			Long-term debt	$	173,100
Net fixed assets	$	435,670	Owners' equity	$	290,543
Total assets	$	493,995	Total liab. & equity	$	493,995

Balance sheet as of Dec. 31, 2016

Cash	$	18,098	Accounts payable	$	13,297
Accounts receivable		26,690	Notes payable		20,830
Inventory		28,783	Current liabilities	$	34,127
Current assets	$	73,571			
			Long-term debt	$	192,300
Net fixed assets	$	513,980	Owners' equity	$	361,124
Total assets	$	587,551	Total liab. & equity	$	587,551

Output area:

Operating cash flow	$	144,897

Capital Spending		
Ending net fixed assets	$	513,980
- Beginning net fixed assets		435,670
+ Depreciation		69,038
Net capital spending	$	147,348

Change in Net Working Capital		
Ending NWC	$	39,444
-Beginning NWC		27,973
Change in NWC	$	11,471

Cash Flow from Assets		
Operating cash flow	$	144,897
- Net capital spending		147,348
-Change in NWC		11,471
Cash flow from assets	$	(13,922)

Cash Flow to Creditors		
Interest paid	$	24,410
-Net New Borrowing		19,200
Cash flow to Creditors	$	5,210

Cash Flow to Stockholders		
Dividends paid	$	16,200
-Net new equity raised		35,332
Cash flow to Stockholders	$	(19,132)

Chapter 2
Questions 24

Net capital spending = $NFA_{end} - NFA_{beg} + Depreciation$

$= (NFA_{end} - NFA_{beg}) + (Depreciation + AD_{beg}) - AD_{beg}$

$= (NFA_{end} - NFA_{beg}) + AD_{end} - AD_{beg}$

$= (NFA_{end} + AD_{end}) - (NFA_{beg} + AD_{beg})$

$= FA_{end} - FA_{beg}$

Chapter 2

Questions 25

Input area:

1st Taxable income	$ 335,001
2nd Taxable income	18,333,334
Taxable income	
0 - 50,000	15%
50,001 - 75,000	25%
75,001 - 100,000	34%
100,001 - 335,000	39%
335,001 - 10,000,000	34%
10,000,001 - 15,000,000	35%
15,000,001 - 18,333,333	38%
18,333,334 +	35%

Output area:

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

b)

Taxes:				
15%	$ 50,000		$ 50,000	
25%	25,000		25,000	
34%	25,000		25,000	
39%	235,000		235,000	
34%	1	*	9,665,000	
35%	0		5,000,000	
38%	0		3,333,334	
35%	0		0	*
	$ 113,900		$ 6,416,667	
Average tax rate =	$ 113,900		$ 6,416,667	
	335,001		18,333,334	
=	34%		35%	

***** denotes marginal tax rate

c) Income		$	200,000
	15%	$	50,000
	25%		25,000
	34%		25,000
	45.75%		100,000
	34%		0
	35%		0
	38%		0
	35%		0
		$	68,000
	Taxes =	$	200,000
			34%
		$	68,000

Chapter 2

Problems 1-25

Input boxes in tan
Output boxes in yellow
Given data in blue
Calculations in red
Answers in green

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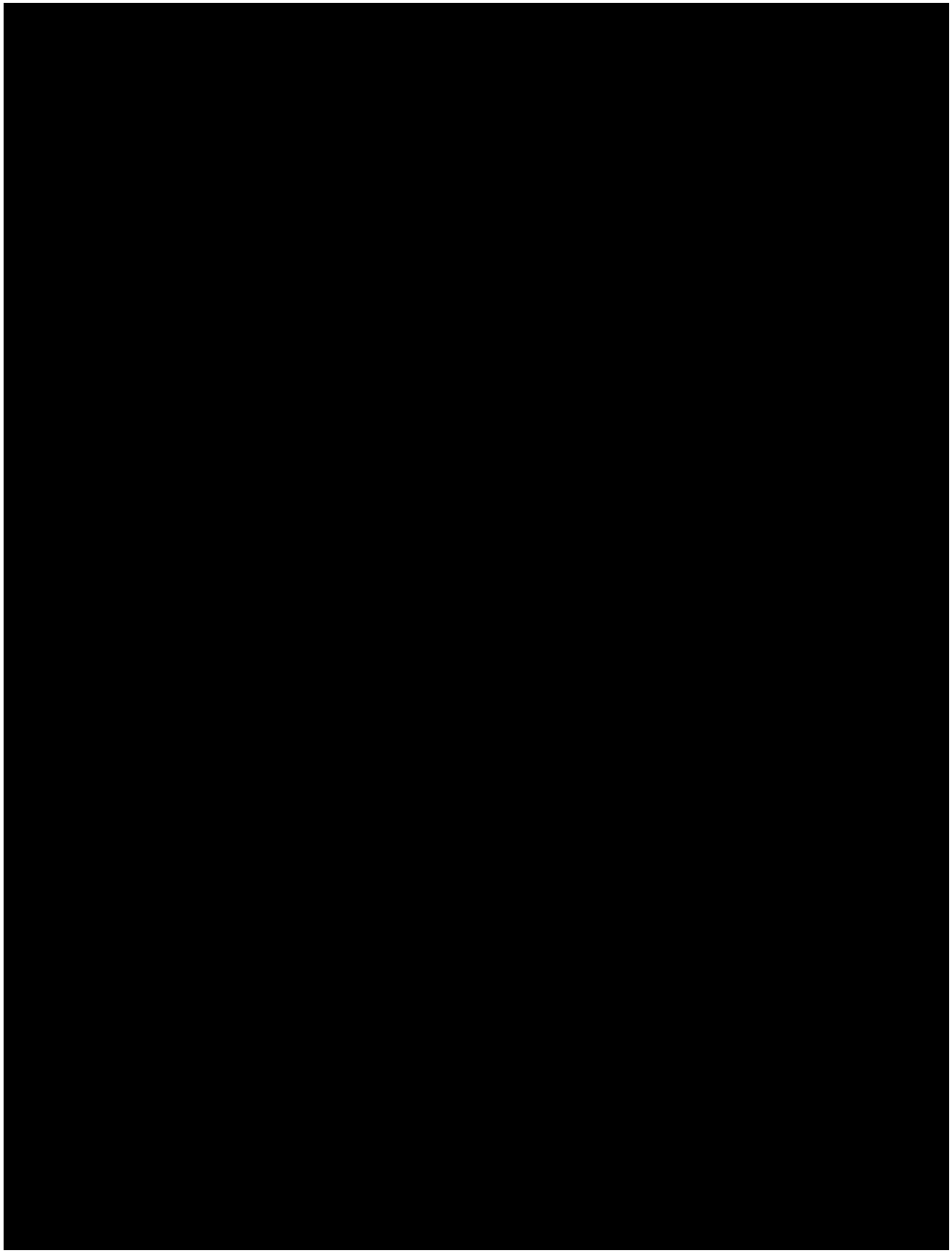
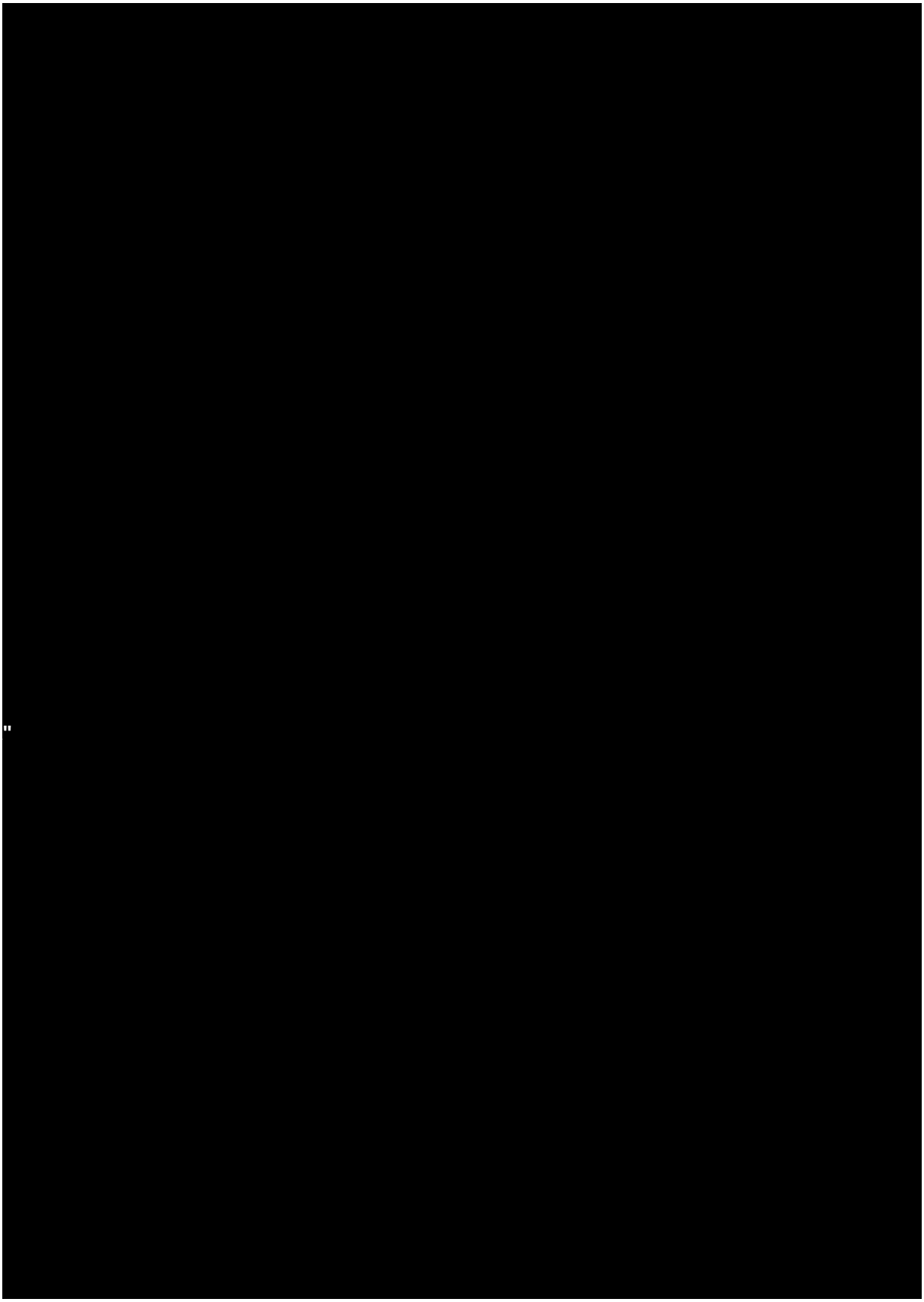
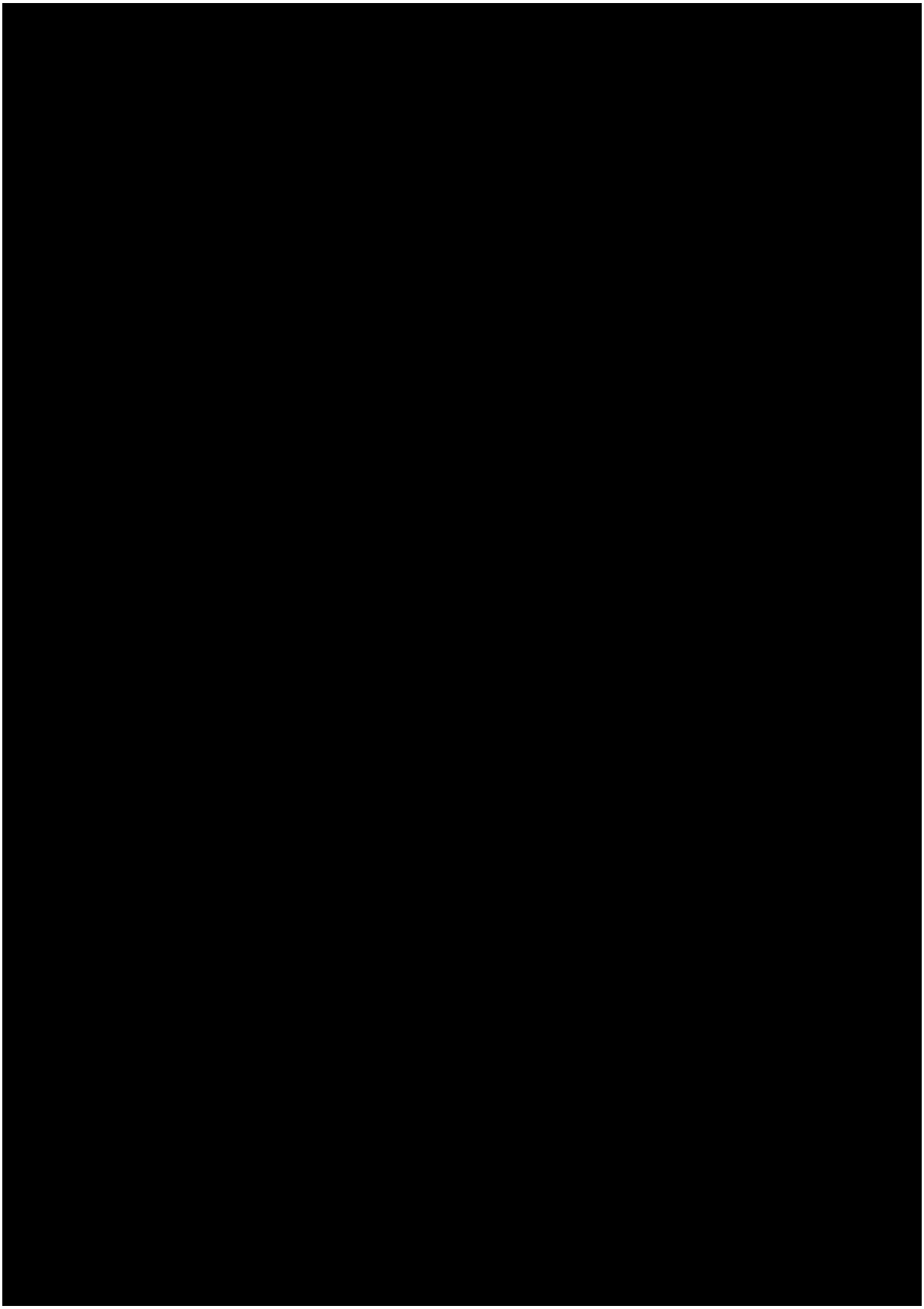
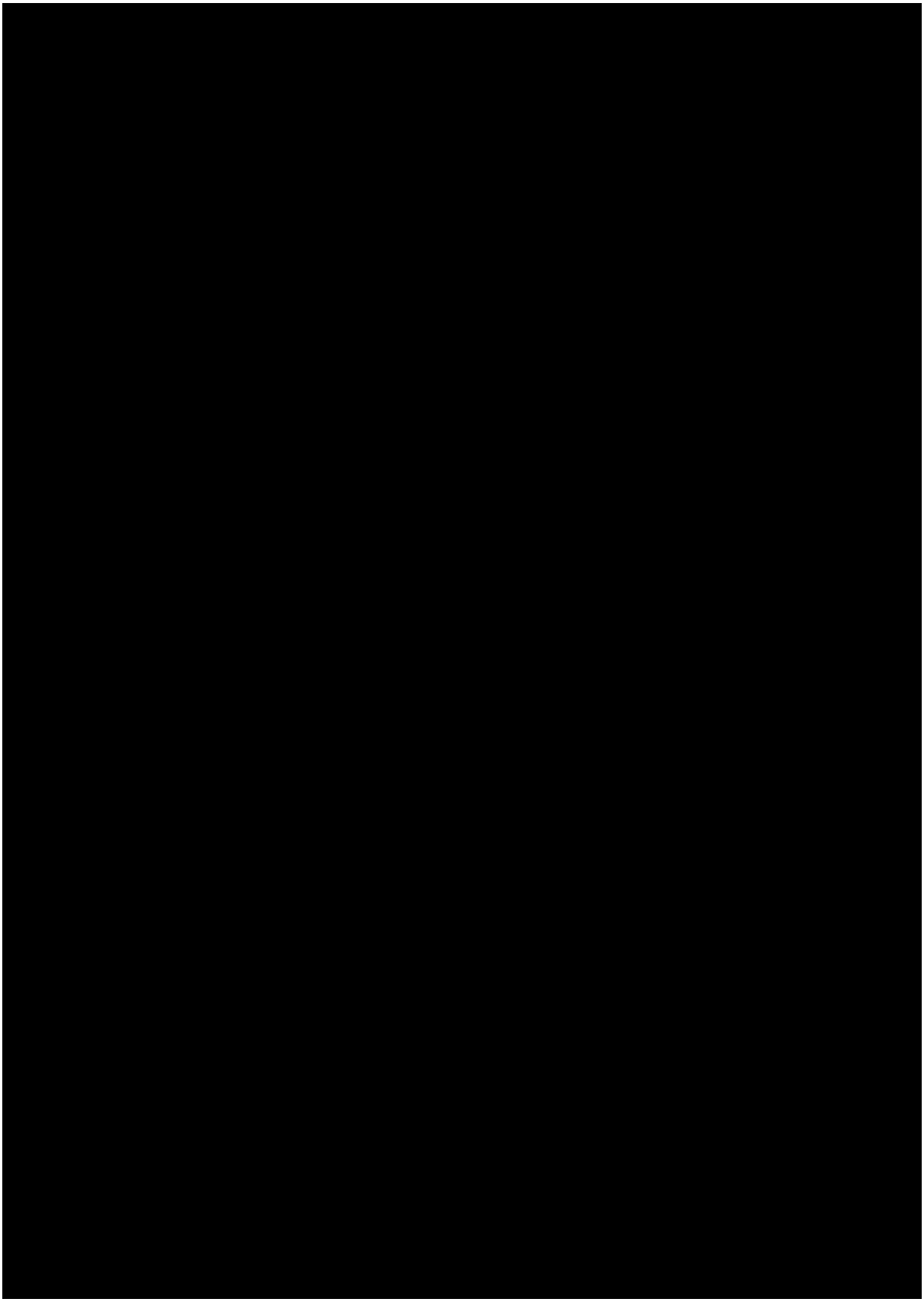
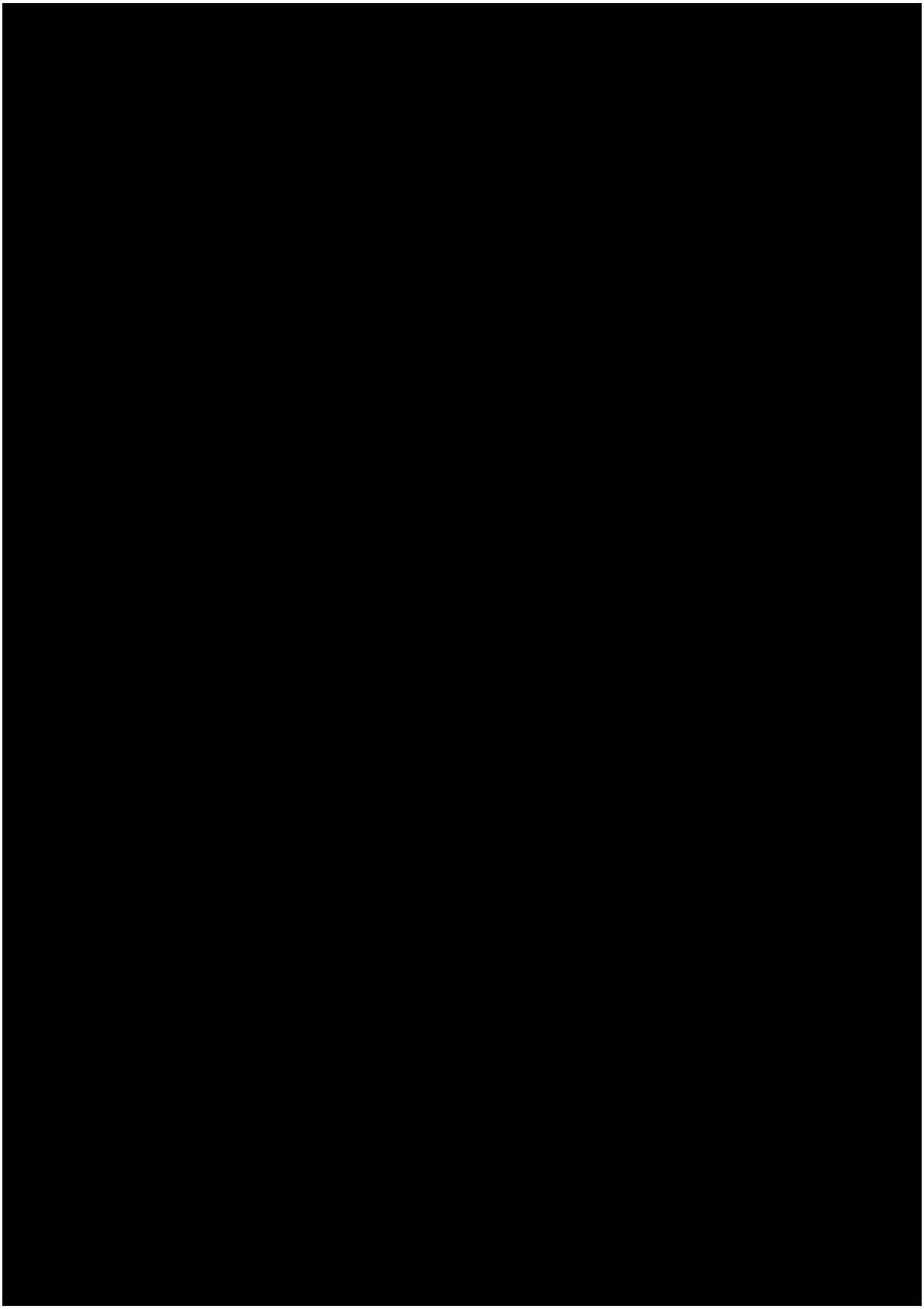
To install these, click on "Tools|Add-Ins" and select "Analysis ToolPak and "Solver Add-In."

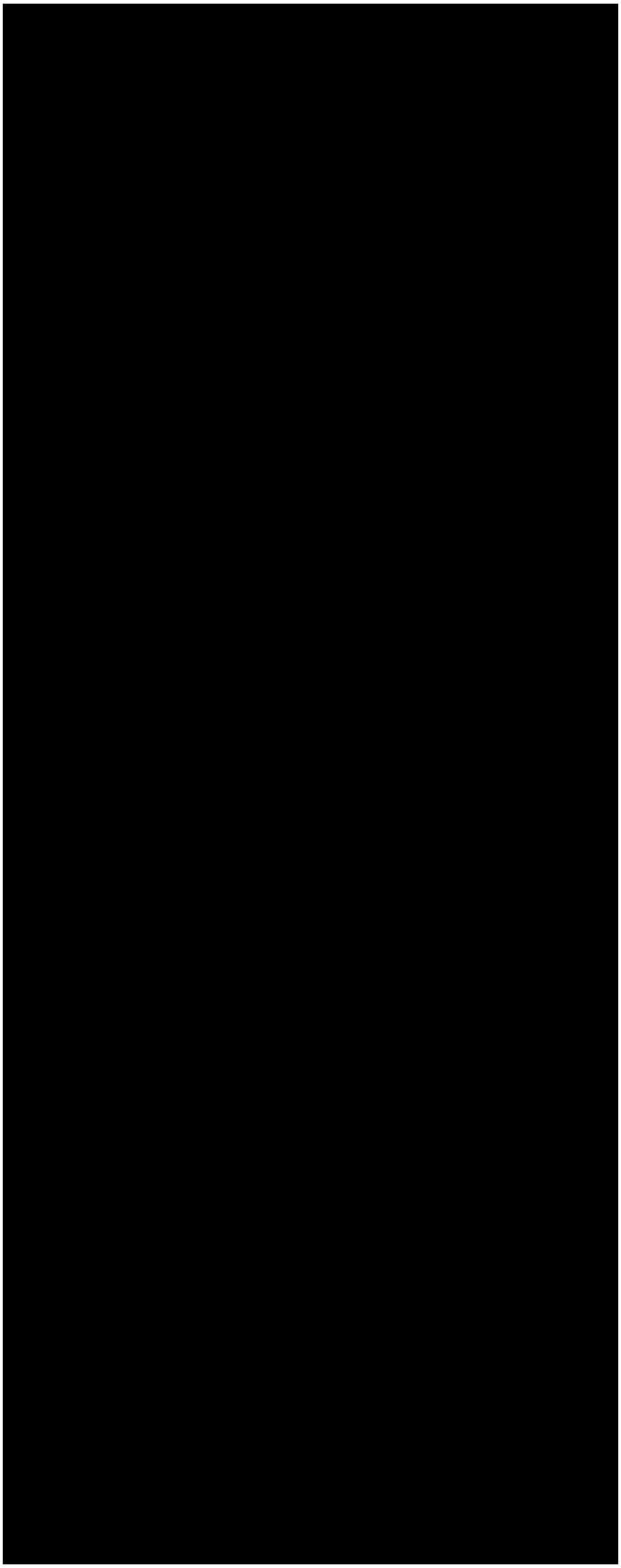


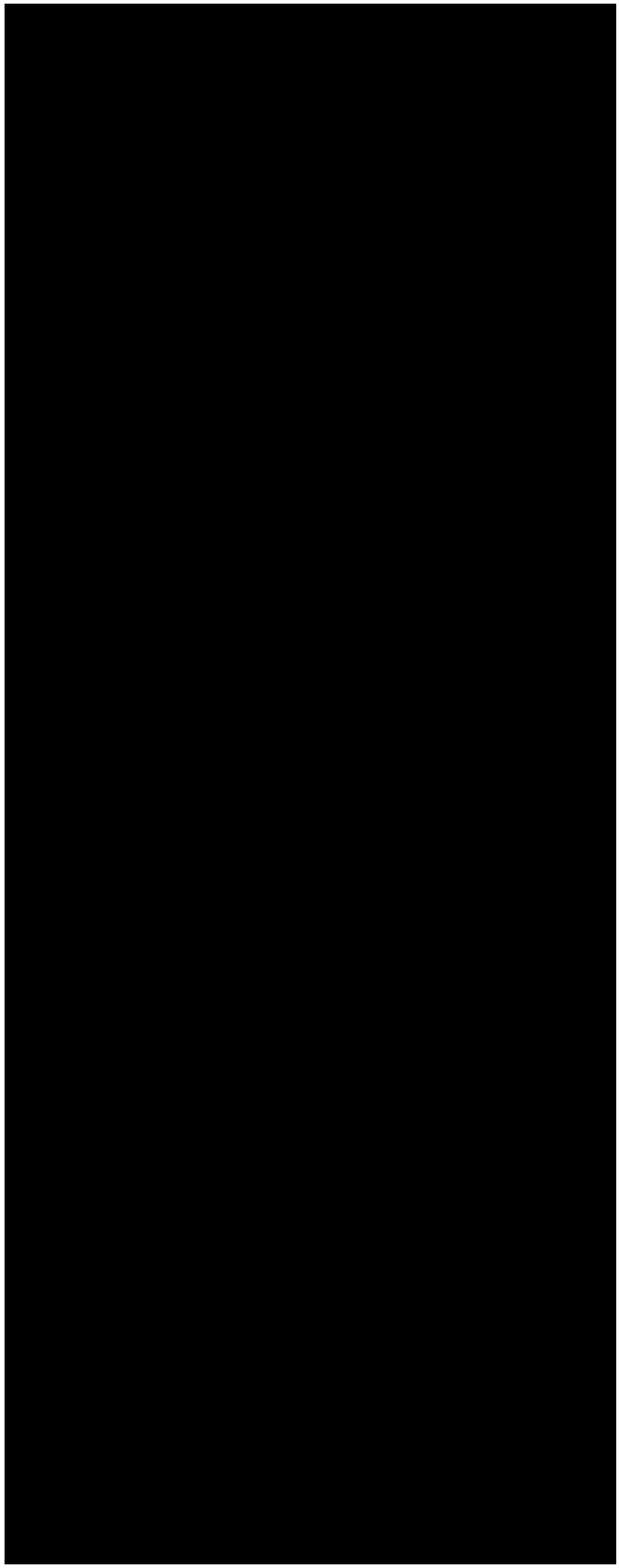












Chapter 2

Question 1

Input area:

Current assets	$	2,030
Net fixed assets		9,780
Current liabilities	$	1,640
Long-term debt		4,490

Output area:

Balance sheet

Current assets	$	2,030	Current liabilities	$	1,640
Net fixed assets		9,780	Long-term debt		4,490
			Owner's equity		5,680
			Total liabilities		
Total assets	$	11,810	and equity	$	11,810

Owner's equity	$	5,680
Net working capital	$	390

Chapter 2

Questions 2-4

Input area:

Sales	$ 634,000
Costs	328,000
Depreciation expense	73,000
Interest expense	38,000
Tax rate	35%
Cash dividends	$ 43,000
Common stock (shares)	35,000

Output area:

Income Statement

Sales	$ 634,000
Costs	328,000
Depreciation expense	73,000
EBIT	$ 233,000
Interest expense	38,000
EBT	$ 195,000
Taxes	68,250
Net income	**$ 126,750**

Addition to retained earnings	**$ 83,750**
Earnings per share	**$ 3.62**
Dividends per share	**$ 1.23**

Chapter 2

Questions 5, 6

Input area:

Taxable income	$	243,000
Taxable income		
0 - 50,000		15%
50,001 - 75,000		25%
75,001 - 100,000		34%
100,001 - 335,000		39%
335,001 - 10,000,000		34%
10,000,001 - 15,000,000		35%
15,000,001 - 18,333,333		38%
18,333,334 +		35%

Output area:

Taxes:			
15%	$	50,000	
25%		25,000	
34%		25,000	
39%		143,000	
34%		0	
35%		0	
38%		0	
35%		0	
	$	**78,020**	
Average tax rate:	$	78,020	= **32.11%**
		243,000	

The marginal tax rate is 39%.

Chapter 2

Question 7

Input area:

Sales	$	38,530
Costs	$	12,750
Depreciation expense	$	2,550
Interest expense	$	1,850
Tax rate		35%

Output area:

Income Statement	
Sales	$ 38,530.00
Costs	12,750.00
Depreciation	2,550.00
EBIT	$ 23,230.00
Interest	1,850.00
EBT	$ 21,380.00
Taxes	7,483.00
Net Income	$ 13,897.00

Operating cash flow	**$ 18,297.00**

Chapter 2

Question 8

Input area:

Dec. 31, 2015 net fixed assets	$	1,975,000
Dec. 31, 2016 net fixed assets		2,134,000
Depreciation expense	$	325,000

Output area:

Net capital spending	**$**	**484,000**

Chapter 2

Question 9

Input area:

Dec. 31, 2015 Current assets	$	1,530
Dec. 31, 2015 Current liabilities		1,270
Dec. 31, 2016 Current assets	$	1,685
Dec. 31, 2016 Current liabilities		1,305

Output area:

Change in net working capital	$	120

Chapter 2

Question 10

Input area:

Dec. 31, 2015 Long-term debt	$ 1,410,000
Dec. 31, 2016 Long-term debt	$ 1,551,000
Interest expense	$ 102,800

Output area:

Cash flow to creditors	**$ (38,200)**

Chapter 2

Question 11

Input area:

Dec. 31, 2015 Common stock	$	130,000
Dec. 31, 2015 Additional paid-in surplus		2,332,000
Dec. 31, 2016 Common stock	$	148,000
Dec. 31, 2016 Additional paid-in surplus		2,618,000
Cash dividends	$	148,500

Output area:

Cash flow to stockholders	$	**(155,500)**

Chapter 2

Question 12

Input area:

From problems 11,12:		
Cash flow to creditors	$	(38,200)
Cash flow to stockholders		(155,500)
New information:		
Net capital spending	$	705,000
Change in net working capital		(115,000)

Output area:

Cash flow from assets	$	(193,700)
Operating cash flow	**$**	**396,300**

Chapter 2

Question 13

Input area:

Market value of net fixed assets	$	4,800,000
Book value of net fixed assets	$	3,300,000
Book value of current liabilities	$	850,000
Net working capital	$	220,000
Market value of current assets	$	1,050,000

Output area:

Book value of current assets	$	1,070,000
Book value of net fixed assets		3,300,000
Book value of assets	**$**	**4,370,000**
NWC	$	1,050,000
Market value of net fixed assets		4,800,000
Total	**$**	**5,850,000**

Chapter 2

Question 14

Input area:

Sales	$ 173,000
Costs	91,400
Other expenses	5,100
Depreciation expense	12,100
Interest expense	8,900
Taxes	21,090
Dividends	9,700
New equity	$ 2,900
Net new long-term debt	(4,000)
Increase in fixed assets	23,140

Output area:

Income Statement

Sales	$ 173,000
Costs	91,400
Other expenses	5,100
Depreciation expense	12,100
EBIT	$ 64,400
Interest expense	8,900
EBT	$ 55,500
Taxes	21,090
Net income	$ 34,410
Dividends	$ 9,700
Addition to retained earnings	24,710

a.	Operating cash flow	**$ 55,410**
b.	Cash flow to creditors	**$ 12,900**
c.	Cash flow to stockholders	**$ 6,800**

d.	Cash flow from assets	$	19,700
	Net capital spending	$	35,240
	Change in NWC	$	470

Chapter 2
Question 15

Input area:

Sales	$	67,000
Costs	$	49,200
Addition to retained earnings	$	3,500
Dividends paid	$	2,170
Interest expense	$	1,980
Tax rate		40%

Output area:

Income Statement		
Sales	$	67,000
Costs		49,200
Depreciation expense	$	6,370
EBIT	$	11,430
Interest expense		1,980
EBT	$	9,450
Taxes		3,780
Net income	$	5,670
Dividends	$	2,170
Addition to retained earnings		3,500

Chapter 2

Question 16

Input area:

Cash	$	197,000
Patents and copyrights	$	863,000
Accounts payable	$	288,000
Accounts receivable	$	265,000
Tangible net fixed assets	$	5,150,000
Inventory	$	563,000
Notes payable	$	194,000
Accumulated retained earnings	$	4,586,000
Long-term debt	$	1,590,000

Output area:

	Balance sheet as o	
Cash	$	197,000
Accounts receivable		265,000
Inventory		563,000
Current assets	$	1,025,000
Tangible net fixed assets	$	5,150,000
Intangible net fixed assets		863,000
Total assets	$	7,038,000

f Dec. 31, 2016		
Accounts payable	$	288,000
Notes payable		194,000
Current liabilities	$	482,000
Long-term debt		1,590,000
Total liabilities	$	2,072,000
Common stock	**$**	**380,000**
Accumulated retained earnings		4,586,000
Total liability & owners' equity	$	7,038,000

Chapter 2

Question 17

Input area:

	Total liabilities	$	8,400
a)	Total assets	$	9,300
b)	Total assets	$	6,900

Output area:

a)	Owners' equity	$	900
b)	Owners' equity	$	-

Chapter 2

Question 18

Input area:

Corporation growth taxable income	$	76,500
Corporation income taxable income		7,650,000
Taxable income		
0 - 50,000		15%
50,001 - 75,000		25%
75,001 - 100,000		34%
100,001 - 335,000		39%
335,001 - 10,000,000		34%
10,000,001 - 15,000,000		35%
15,000,001 - 18,333,333		38%
18,333,334 +		35%

Output area:

Corporation Growth:

Taxes:		
15%	$	50,000
25%		25,000
34%		1,500
39%		0
34%		0
35%		0
38%		0
35%		0
	$	**14,260**

With a marginal tax rate of 34%, the tax on an additional $10,000 would be **$3,400**.

Corporation Income:

Taxes:

15%	$ 50,000
25%	25,000
34%	25,000
39%	235,000
34%	7,315,000
35%	0
38%	0
35%	0
	$ 2,601,000

With a marginal tax rate of 34%, the tax on an additional $10,000 would be **$3,400**.

The tax bills on an additional $10,000 are the same because each firm has a marginal tax rate of 34%, despite their different average tax rates.

Chapter 2

Question 19

Input area:

Sales	$	2,350,000
Costs of goods sold	$	1,295,000
Administrative and selling expenses	$	530,000
Depreciation expense	$	420,000
Interest expense	$	245,000
Tax rate		35%

Output area:

Income Statement

Sales	$	2,350,000
Costs		1,295,000
Administrative and selling expenses		530,000
Depreciation expense		420,000
EBIT	$	105,000
Interest expense		245,000
EBT	$	(140,000)
Taxes		0
a) Net income	$	(140,000)

b) Operating cash flow $ 525,000

c) Net income was negative because of the tax deductibility 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.

Chapter 2
Question 20

Input area:

From Problem 19:		
Operating Cash Flow	$	525,000
Interest	$	245,000
New information:		
Cash dividend	$	395,000
New investment in net fixed income		0
New investment in net working capital		0
New stock issued during year		0
Net capital spending		0
Net new equity		0

Output area:

Cash flow from assets	$	525,000
Cash flow to stockholders		395,000
Cash flow to creditors		130,000
Net new long-term debt	**$**	**115,000**

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 dividend payments.

Chapter 2

Question 21

Input area:

Sales	$	28,476
Cost of goods sold	$	20,136
Depreciation expense	$	3,408
Interest expense	$	497
Dividends paid	$	739
Beginning net fixed assets	$	19,872
Beginning current assets	$	3,528
Beginning current liabilities	$	3,110
Ending net fixed assets	$	22,608
Ending current assets	$	4,234
Ending current liabilities	$	2,981
Tax rate		40%
New debt issued	$	-

Output area:

	Income Statement		
	Sales	$	28,476
	Costs		20,136
	Depreciation expense		3,408
	EBIT	$	4,932
	Interest expense		497
	EBT	$	4,435
	Taxes		1,774
a	Net income	$	2,661
b	Operating cash flow	$	6,566
	Change in net working capital	$	835
	Net capital spending	$	6,144
c	Cash flow from assets	$	(413)
d	Cash flow to creditors	$	497

Cash flow to stockholders	$ (910)
Net new equity	$ 1,649

Chapter 2

Question 22

Input area:

Sales	$	40,664		
Costs	$	20,393		
Depreciation	$	3,434		
Interest	$	638		
		2015		2016
Current assets	$	2,718	$	2,881
Net fixed assets	$	12,602	$	13,175
2016 New fixed assets purchased	$	7,160		
Tax rate		40%		
2016 New long-term debt	$	2,155		

Output area:

Income Statement		
Sales	$	40,664
Costs		20,393
Depreciation expense		3,434
EBIT	$	16,837
Interest expense		638
EBT	$	16,199
Taxes		6,480
Net income	$	9,719

a) 2015 Total assets	$	15,320	#
2015 Total liabilities		8,047	#
2015 Owners' equity	$	7,273	
b) 2016 Net working capital	$	1,155	
2015 Net working capital		1,544	
Change in net working capital	$	(389)	
c) Net capital spending	$	4,007	

	Fixed assets sold	$ 3,153
	Operating cash flow	$ 13,791
	Cash flow from assets	$ 10,173
d)	Net new borrowing	$ 1,146
	Cash flow to creditors	$ (508)
	Debt retired	$ 1,009

	2015	2016
Current liabilities	$ 1,174	$ 1,726
Long-term debt	$ 6,873	$ 8,019

2016 Total assets	$ 16,056
2016 Total liabilities	9,745
2016 Owners' equity	**$ 6,311**

Chapter 2
Question 23

Input area:

2016 Income Statement

Sales	$	714,978
Cost of goods sold		384,591
Selling & Administrative		157,787
Depreciation		69,038
EBIT	$	103,562
Interest		24,410
EBT	$	79,152
Taxes		27,703
Net income	$	51,449
Dividends	$	16,200
Addition to retained earnings	$	35,249

Balance sheet as of Dec. 31, 2015

Cash	$	16,849	Accounts payable	$	12,115
Accounts receivable		24,027	Notes payable		18,237
Inventory		17,449	Current liabilities	$	30,352
Current assets	$	58,325			
			Long-term debt	$	173,100
Net fixed assets	$	435,670	Owners' equity	$	290,543
Total assets	$	493,995	Total liab. & equity	$	493,995

Balance sheet as of Dec. 31, 2016

Cash	$	18,098	Accounts payable	$	13,297
Accounts receivable		26,690	Notes payable		20,830
Inventory		28,783	Current liabilities	$	34,127
Current assets	$	73,571			
			Long-term debt	$	192,300
Net fixed assets	$	513,980	Owners' equity	$	361,124
Total assets	$	587,551	Total liab. & equity	$	587,551

Output area:

Operating cash flow	$	144,897

Capital Spending		
Ending net fixed assets	$	513,980
- Beginning net fixed assets		435,670
+ Depreciation		69,038
Net capital spending	$	147,348

Change in Net Working Capital		
Ending NWC	$	39,444
-Beginning NWC		27,973
Change in NWC	$	11,471

Cash Flow from Assets		
Operating cash flow	$	144,897
- Net capital spending		147,348
-Change in NWC		11,471
Cash flow from assets	$	(13,922)

Cash Flow to Creditors		
Interest paid	$	24,410
-Net New Borrowing		19,200
Cash flow to Creditors	$	5,210

Cash Flow to Stockholders		
Dividends paid	$	16,200
-Net new equity raised		35,332
Cash flow to Stockholders	$	(19,132)

Chapter 2
Questions 24

Net capital spending = $NFA_{end} - NFA_{beg} + Depreciation$

$= (NFA_{end} - NFA_{beg}) + (Depreciation + AD_{beg}) - AD_{beg}$

$= (NFA_{end} - NFA_{beg}) + AD_{end} - AD_{beg}$

$= (NFA_{end} + AD_{end}) - (NFA_{beg} + AD_{beg})$

$= FA_{end} - FA_{beg}$

Chapter 2

Questions 25

Input area:

1st Taxable income	$ 335,001
2nd Taxable income	18,333,334
Taxable income	
0 - 50,000	15%
50,001 - 75,000	25%
75,001 - 100,000	34%
100,001 - 335,000	39%
335,001 - 10,000,000	34%
10,000,001 - 15,000,000	35%
15,000,001 - 18,333,333	38%
18,333,334 +	35%

Output area:

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

b)

Taxes:				
15%	$ 50,000		$ 50,000	
25%	25,000		25,000	
34%	25,000		25,000	
39%	235,000		235,000	
34%	1	*	9,665,000	
35%	0		5,000,000	
38%	0		3,333,334	
35%	0		0	*
	$ 113,900		$ 6,416,667	
Average tax rate =	$ 113,900		$ 6,416,667	
	335,001		18,333,334	
=	34%		35%	

***** denotes marginal tax rate

c) Income		$	200,000
	15%	$	50,000
	25%		25,000
	34%		25,000
	45.75%		100,000
	34%		0
	35%		0
	38%		0
	35%		0
		$	68,000
Taxes =		$	200,000
			34%
		$	68,000