1. The balance sheet shows the position of the firm at one point in time. It shows the amounts of assets and liabilities at that particular time. In this sense it is like a snapshot. The income statement shows the effect of business activities over the entire year. Since it captures events over an extended period, it is more like a video. The statement of cash flow is like the income statement in that it summarizes activity over the full year, also like a video.

Est time: 01–05
Financial Statements

2.

a. Cash and marketable securities
b. Accounts receivable
c. Inventories
d. Total current assets
e. Net fixed assets
f. Debt due for repayment
g. Accounts payable
h. Total current liabilities
i. Long-term debt
j. Equity

Est time: 01–05
Balance Sheet

3.

Sophie's Sofas

Assets		Liabilities & Shareholders' Equity	
Cash	10,000	Accounts payable	17,000
Accounts receivable	22,000	Long term debt	170,000
Inventory	200,000	**Shareholders' equity**	**145,000**
Store & property	100,000		
Total assets	332,000	Total Liabilities & Shareholders' Equity	332,000

Est time: 01–05
Balance Sheet

4.

a. If the firm paid income taxes of $2,000, and the average tax rate was 20%, then taxable income must have been: $2,000/0.20 = $10,000.
Therefore: Net income = taxable income – taxes = $8,000

b.

	Revenues	$???
–	Cost of goods sold	8,000
–	Administrative expenses	3,000
–	Depreciation expense	1,000
–	Interest expense	1,000
	Taxable income	$10,000 (from Part [a])

We conclude that revenues were $23,000.

c.

	Revenues	$23,000
–	Cost of goods sold	8,000
–	Administrative expenses	3,000
–	Depreciation expense	1,000
	EBIT	$11,000

Est time: 06–10
Income Statement

5. Net income = increase in retained earnings + dividends
$900,000 = ($3,700,000 – $3,400,000) + dividends ⇒ dividends = $600,000
Est time: 01–05
Financial Statements

6.

a.

Shareholders' equity = total assets – total liabilities

2018: Shareholders' equity = $890 – $650 = $240

b.

Shareholders' equity = total assets – total liabilities

2019: Shareholders' equity = $1,040 – $810 = $230

c.

Net working capital = current assets – current liabilities

2018: Net working capital = $90 – $50 = $40

d.

Net working capital = current assets – current liabilities

2019: Net working capital = $140 – $60 = $80

e.

Taxable income = $1,950 – $1,030 – $350 – $240 = $330

Taxes paid = 0.21 × $330 = $69.30

Net income = $260.70

f.

Net income	$260.70
Depreciation	350.00
Decrease (increase) in current assets	(50.00)
Increase in current liabilities	10.00
Cash provided by operations	$570.70

g.

Gross investment = increase in net fixed assets + depreciation
= $100 + $350 = $450

h. Current liabilities increased by $10. Therefore, current liabilities other than accounts payable must have increased by $45.

Est time: 11–15
Financial statement analysis

7.

Assets			Liabilities & Shareholders' Equity		
	2021	*2022*		*2021*	*2022*
Current assets	310	420	Current liabilities	210	240
Net fixed assets	1,200	1,420	Long-term debt	830	920
Total assets	1,510	1,840	Total liabilities	1,040	1,160
			Owners' equity	470	680
			Total	1,510	1,840

a. Owners' equity = total assets – total liabilities
470 = 1,510 – 1,040

b. Owners' equity = total assets – total liabilities
680 = 1,840 – 1,160

c. If the firm issued no stock, the increase in owners' equity must be due entirely to retained earnings. Since owners' equity increased by $210 and dividends were $100, net income must have been $310.

d. Since net fixed assets increased by $220, and the firm purchased $300 of new fixed assets, the depreciation charge must have been $80.

e. Net working capital increased by $80, from ($310 – $210) = $100 in 2021 to ($420 – $240) = $180 in 2022.

f. Since long-term debt increased by $90, and the firm issued $200 of new long-term debt, $110 of outstanding debt must have been paid off.

Est time: 11–15
Financial Statement Analysis

8. See answers in financial statements.

Balance Sheet			
Assets		Liabilities & Shareholders'' Equity Shareholders' Equity	
Cash	15	Debt due for repayment	25
Receivables	35	Payables	35
Inventories	50	Total current liabilities	60
Total current assets	100		
		Long-term debt	350
Property, plant and equipment	520	Total liabilities	410
Less accumulated depreciation	120	Shareholders' equity	90
Net fixed assets	400		
Total assets	500	Total liabilities and shareholders' equity	500

Income Statement	
Net sales	700
Cost of goods sold	580
Selling, G & A expenses	38
Depreciation	12
EBIT	70
Interest expense	25
Taxable income	45
Taxes	15
Net Income	30

Est time: 11–15
Financial Statements

9.

a. Book value equals the $200,000 the founder of the firm has contributed in tangible assets.

b. Market value equals the value of his patent plus the value of the production plant: $50,000,000 + $200,000 = $50,200,000.

c. Book value per share = $200,000/2 million shares = $0.10

d. Price per share = $50.2 million/2 million shares = $25.10

Est time: 01–05
Balance Sheet

10.

a. Increase, because the announcement is likely to increase the market value of the firm.

b. Increase, because an increase in the depreciation provision will decrease the value of the assets. This will be reflected in a lower book value of equity.

c. Increase, because an increase in inflation is likely to cause an increase in the market value of its assets.

Est time: 01–05
Market and Book Values

11.

a. In late 2020, investors saw the value of assets on the books of Citigroup as worth less than the value recorded, which may be historical value. Loans are the primary assets for Citigroup, and investors perceived a high likelihood that the loans it made would default. If so, it would need to write down its values, reducing income available to shareholders.

b. In contrast to the banks, investors perceived the assets of this company to be worth more than the historical value presented on the company's book. Consistent with the analysis in Part (a), shareholders in this company are expecting to have higher income in future periods, and the value of the company's assets are expected to grow.

Est time: 01–05
Market and Book Values

12. Accounting revenues and expenses can differ from cash flows because some items included in the computation of revenues and expenses do not entail immediate cash flows. For example, sales made on credit are considered revenue even though cash is not collected until the customer makes a payment. Also, depreciation expense reduces net income, but does not entail a cash outflow. Conversely, some cash flows are not included in revenues or expenses. For example, collection of accounts receivable results in a cash inflow but is not revenue. Purchases of inventory require cash outlays but are treated as investments in working capital, not as expenses.

Est time: 01–05
Noncash Items

13.

a. Cash will increase as one current asset (inventory) is exchanged for another (cash).

b. Cash will increase. The machine will bring in cash when it is sold, but the lease payments will be made over several years.

c. The firm will use cash to buy back the shares from existing shareholders. Cash balance will decrease.

Est time: 01–05
Cash Flows

14. a.

Sales (mil)	$14.00
– Cost of goods sold	8.00
– Interest expense	1.00
– Depreciation expense	2.00
Taxable income	3.00
– Taxes (21%)	0.63
Net income	$2.37 million

b. Net Cash flow = net income + depreciation expense = $4.37 million

c. If depreciation expense were increased by $1 million, net income would be *reduced* by $0.79 million. Cash flow (= net income + depreciation) would be *increased* by –$0.79 million + $1 million = $0.21 million.

Cash flow increases because depreciation expense is not a cash outflow, but increasing the depreciation expense for tax purposes reduces taxes paid by $0.21 million.

d. The impact on stock price is likely to be positive. Cash available to the firm would increase. The reduction in net income would be recognized as resulting entirely from accounting changes, not as a consequence of any changes in the underlying profitability of the firm.

e. The net income would not change. The taxable income would remain the same, as would net income.

f. If interest expense was $1 million higher and the depreciation was $1 million lower, the taxes will be the same, but the drop in depreciation would cause a decrease in cash flow by $1 million.

Est time: 11–15
Cash Flows

15. Working capital ought to be increasing. The firm will be building up stocks of inventory as it ramps up production. In addition, as sales increase, accounts receivable will increase rapidly. While accounts payable will probably also increase, the increase in accounts receivable will tend to dominate since sales prices exceed input costs.

Est time: 01–05
Change in Net Working Capital

16.

Sales	$10,000
Cost of goods sold	6,500
General & administrative expenses	1,000
Depreciation expense	1,000
EBIT	1,500
Interest expense	500
Taxable income	1,000
Taxes (21%)	210
Net income	$ 790

Cash flow from operations = net income + depreciation expense = $1,790

Est time: 06–10
Income Statement

17.

a. The fact that start-up firms typically have negative net cash flows for several years does not mean they are failing. Start-up firms invest in inventories and other assets designed to produce income in later periods. Growth is costly, and particularly fast growing firms consume capital in hopes of future gains.

b. Accounting profits for start-up businesses are also commonly negative because these firms incur costs, such as advertising, that cannot be recorded on the balance sheet. These costs are selling and general administrative expenses the firm incurs in each period, not investments like those in inventories that are built up for future sales.

Est time: 06–10
Cash Flows

18. Yes, in both cases. Cash flow from operations can be positive even if net income is negative. For example, if depreciation expenses are large, then negative net income might correspond to positive cash flow because depreciation is treated as an expense in calculating net income but does not represent a cash outflow.

    Conversely, if net income is positive, but a large portion of sales are made on credit, cash flow can be negative since the sales are revenue but do not yet generate cash.

Est time: 01–05
Operating Cash Flow

19. An increase in accounts receivable reduces cash flow by $10,000. An increase in accounts payable increases cash flow by $5,000. A decrease in inventory increases cash flow by $2,000. The total impact is a reduction in cash flow by $3,000.

Est time: 01–05
Operating Cash Flow

20. In months with no sales, we record no COGS and no increase in *A/R*. Our real gains come over time.

Candy Canes, Inc.						
Month	**Sales**	**COGS**	**Δ ↑*A/R***	**Δ↑ Inventory**	**Cash flow***	**Net income****
April	0	0	0	100,000	−100,000	0
May	150,000	100,000	150,000	−100,000	0	50,000
June	0	0	−150,000	0	150,000	0
***Cash flow = sales – COGS – increase in *A/R* – increase in inventory**						
** Net income = sales – COGS**						

Est time: 06–10
Operating Cash Flow

21. The calculations are presented in the following table. Sales occur in Quarters 2 and 3, so this is when the cost of goods sold is recognized. Therefore, net income is zero in Quarters 1 and 4. In Quarter 1, the production of the kits is treated as an investment in inventories. The level of inventories then falls as goods are sold in Quarters 2 and 3. Accounts receivable in Quarters 2 and 3 equal the sales in those quarters since it takes one quarter for receivables to be collected. Notice that cash flow in Quarter 1 equals the cost of producing the kits and that in Quarters 3 and 4 cash flow equals cash received for the kits previously sold.

a.	Quarter 1	Quarter 2	Quarter 3	Quarter 4
Sales	$0	$550	$600	$ 0
Cost of goods sold	0	500	500	0
Net income	$0	$ 50	$100	$ 0
b., c.				
Inventories	$1,000	$ 500	$ 0	$0
Accounts receivable	0	550	600	0
Net working capital	$1,000	$1,050	$600	$0
Cash flow	–$1,000	$0	$550	$600

d. Cash flow = net income – change in net working capital

Est time: 11–15
Operating Cash Flow

22. The table below shows the firm's net income and investment in net working capital for each month from January to April. Sales revenue and production costs are recognized at the time of sale in February. Since the firm neither pays for goods nor receives cash for sales, cash flow is zero in January and February. Cash flow occurs in March and April, when cash is actually being exchanged. The sow years are paid for in March and cash is received for the purses in April.

Value Added Inc. (in 000s)

	January	February	March	April
Sales	$0	$2,000	$0	$0
Cost of goods sold	0	$1,000	0	0
Net income	$0	$1,000	$0	$0
Inventories	$1,000	$ 0	$ 0	$0
Accounts receivable	0	2,000	2,000	0
Accounts payable	$1,000	$1,000	0	0
Net working capital	0	$1,000	$2,000	$0
Cash flow	$0	$0	–$1,000	$2,000

Cash flow = net income – increase in net working capital

Est time: 11–15
Operating Cash Flow

23. In Section 3.3, the free cash flow is calculated at $4,650 million. Total cash distributed to shareholders was $2,745 million. Of this, $1,330 million was paid as a dividend and $1,415 million was paid to shareholders to repurchase stock. The Statement of Cash Flows shows an additional $1,739 million in long-term debt was added and $2,069 million in short-term debt was reduced. The numbers do not add up exactly because Target had many other minor transactions which impacted the cash flows of the company.

Est time: 11–15
Operating Cash Flow

24. All answers in millions

a. Cash flow from operations = net income + interest + depreciation – additions to net working capital

Free cash flow = cash flow from operations – capital expenditures

Additions to net working capital = ($3,403 − 3,143) − (1,375 − 1,335) − (122 − 117) − (1,089 − 616) = −$258
Cash flow from operations = $5,465 + 517 + 1,402 − 258 = $7,126
Capital expenditures = $3,049
Free cash flow = $7,126 − 3,049 = $4,077

b. Tax increase due to $517 million more in taxable income: $108.57 = ($517 × .21)

c. Additions to net working capital = ($3,403 − 3,143) − (1,375 − 1,335) − (122 − 117) − (1,089 − 616) = −$258

Cash flow from operations = $5,801 + 0 + 1,402 − 258 = $6,945
Free cash flow = $6,945 − 3,049 = $3,896

Est time: 11–15
Operating Cash Flow

25.

Income = $90,000	Marginal	Average
Married	22%	12.64%
Unmarried	24%	17.42%

$$t_{\text{Married}} = \frac{0.10 \times \$19,750 + 0.12 \times (80,250 - 19,750) + 0.22 \times (90,000 - 80,250)}{\$90,000}$$

$$= 12.64\%$$

$$t_{\text{Unmarried}} = \frac{0.10 \times \$9,875 + 0.12 \times (40,125 - 9,875) + 0.22 \times (85,525 - 40,125) + 0.24 \times (90,000 - 85,52}{\$90,000}$$

$$= 17.42\%$$

Est time: 06–10
Taxes

26.

Income	Marginal	Average
a. $20,000	12%	11.01%
b. $50,000	22%	13.58%
c. $300,000	35%	26.60%
d. $3,000,000	37%	35.81%

$$t_{\text{avg a.}} = \frac{0.10 \times \$9,875 + 0.12 \times (20,000 - 9,875)}{\$20,000}$$

$$= 11.01\%$$

$$t_{\text{avg b.}} = \frac{\$987.50 + 0.12 \times (40,125 - 9,875) + 0.22 \times (50,000 - 40,125)}{\$50,000}$$

$$= 13.58\%$$

$$t_{\text{avg c.}} = \frac{\$987.50 + 3,630 + 0.22 \times (85,525 - 40,125) + 0.24 \times (163,300 - 85,525) + 0.32 \times (207,350 - 163,300) + 0.35 \times (300,}{\$300,000}$$

$$= 26.60\%$$

$$t_{\text{avg d.}} = \frac{\$987.50 + 3,630 + 9,988 + 18,666 + 14,096 + 108,867.50 + 0.37 \times (3,000,000 - 518,400)}{\$3,000,000}$$

$$= 35.81\%$$

Est time: 06–10
Taxes

27.

Income = $95,000	Taxes Paid	Marginal	Average
Married	$12,480	22%	13.14%

$$\text{Taxes Paid} = 0.10 \times \$19,750 + 0.12 \times (80,250 - 19,750) + 0.22 \times (95,000 - 80,250)$$

$$= \$12,480$$

$$t_{\text{Married}} = \frac{0.10 \times \$19,750 + 0.12 \times (80,250 - 19,750) + 0.22 \times (95,000 - 80,250)}{\$95,000}$$

$$= 13.14\%$$

Est time: 06–10
Taxes

28. Taxes = $100,000 × 0.21 = $21,000
Average tax rate = $21,000/$100,000 = 0.2100 = 21%
Marginal tax rate = 21%

Est time: 01–05
Taxes

29.

a. Personal Taxes = $9,875 × 0.10 + (40,125 – 9,875) × 0.12 + (80,000 – 40,125) × 0.22 = $13,390

Taxes on corporate income = $30,000 × 0.21 = $6,300

Total taxes = $13,390 + $6,300 = $19,690

b. Personal Taxes = ($9,875 × 0.10) + ($40,125 – $9,875) x 0.12 + (50,000 – $40,125) x 0.22 = $6,790

Taxes on corporate income = 0.21 × $60,000 = $12,600

Total taxes = $6,790 + $12,600 = $19,390

Total taxes are reduced by $19,690 – $19,390 = $300

c. Any personal income above $40,125 will be taxed at a higher marginal personal rate (22%) than the flat corporate rate of 21%. Personal income below that rate will be charged at the lower marginal applicable personal rate of 12%. Therefore, you will minimize the total tax bill by paying yourself $40,125, leaving the balance of $69,875 as corporate profit.

Est time: 06–10
Taxes

30. a. Answers will vary

b. The difference between average tax rates and the top marginal tax rate becomes very small as income becomes large.

Est time: 06–10
Taxes

31.

Assets	*2021*	*2022*	*Liabilities and Shareholders' Equity*	*2021*	*2022*
Cash & marketable securities	$ 800	$ 300	Accounts payable	$ 300	$ 350
Inventories	300	350	Notes payable	1,000	600
Accounts receivable	400	450	Long-term debt	2,000	2,400
Net fixed assets	5,000	5,800	Total liabilities	3,300	3,350
			Shareholders' equity	3,200	3,550
Total assets	$6,500	$6,900	Total liabilities plus shareholders' equity	$6,500	$6,900

Est time: 06–10
Financial Statements

32.

Net working capital (2021) = ($800 + $300 + $400) – ($300 + $1,000) = $200

Net working capital (2022) = ($300 + $350 + $450) – ($350 + $600) = $150

Net working capital decreased by $50.

Est time: 01–05
Net Working Capital

33.

	2021	*2022*
Revenue	$4,000	$4,100
Cost of goods sold	1,600	1,700
Administrative expenses	500	550
Depreciation expense	500	520
Interest expense	150	150
Taxable income	1,250	1,180
Federal & state income taxes	400	420
Net income	$ 850	$ 760

Increase in retained earnings in 2022 = net income – dividends = $760 – $410 = $350.

In 2019, shareholders' equity increased by the amount of the increase in retained earnings.

Est time: 06–10
Income Statement

34. Earnings per share in 2021 = $850,000/500,000 shares = $1.70
Earnings per share in 2022 = $760,000/500,000 shares = $1.52

Est time: 01–05
Income Statement

35. Net fixed assets increased by $800,000 during 2022, while depreciation expense in 2022 was $520,000. Therefore, gross investment in plant and equipment was $1,320,000.

Est time: 01–05
Financial Statements

36.

Market Value Balance Sheet, 2022
(figures in thousands of dollars)

Assets		Liabilities & Shareholders' Equity	
Cash	$ 300	Accounts payable	$ 350
Inventories	350	Notes payable	600
Accounts receivable	450	Long-term debt	2,200
Employee skills	2,900	Total liabilities	3,350
Net fixed assets	6,000	Shareholders' equity*	6,850
Total assets	$10,000	Total liabilities & shareholders' equity	$10,000

* Shareholders' equity = total assets – total liabilities

Price per share = $6,850,000/500,000 shares = $13.70

Est time: 06–10
Market and Book Values

37.

Cash provided by operations	
Net income (from Question #33)	$ 760
Noncash expenses	
Depreciation expense	520
Changes in working capital	
Decrease (increase) in accounts receivable	(50)
Decrease (increase) in inventories	(50)
Increase (decrease) in accounts payable	50
Total change in working capital	(50)
Cash provided by operations	$1,230
Cash flows from investments (from Question #35)	
Cash provided by (used for) disposal of (additions to) property, plant & equipment	(1,320)
Cash provided by (used for) investments	(1,320)
Cash provided by (used for) financing activities	
Additions to (reductions in) notes payable	(400)
Additions to (reductions in) long-term debt	400
Dividends paid	(410)
Cash provided by (used for) financing activities	(410)
Net increase (decrease) in cash and cash equivalents	($500)

Est time: 06–10
Operating Cash Flow

38. Average tax rate in 2021 = taxes/taxable income = $400/$1,250 = 0.320 = 32.00%
Average tax rate in 2022 = $420/$1,180 = 0.356 = 35.59%

To determine the firm's marginal tax bracket, one would need information regarding tax rates applicable for both federal and state income taxes.

Est time: 01–05
Taxes