CHAPTER 2
FINANCIAL STATEMENTS AND CASH FLOW

Answers to Concepts Review and Critical Thinking Questions

1. True. Every asset can be converted to cash at some price. However, when we are referring to a liquid asset, the added assumption that the asset can be quickly converted to cash at or near market value is important.

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. The bottom line number shows the change in the cash balance on the balance sheet. As such, it is not a useful number for analyzing a company.

4. The major difference is the treatment of interest expense. The accounting statement of cash flows treats interest as an operating cash flow, while the financial cash flows treat interest as a financing cash flow. The logic of the accounting statement of cash flows is that since interest appears on the income statement, which shows the operations for the period, it is an operating cash flow. In reality, interest is a financing expense, which results from the company's choice of debt and equity. We will have more to say about this in a later chapter. When comparing the two cash flow statements, the financial statement of cash flows is a more appropriate measure of the company's performance because of its treatment of interest.

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, for example, capital outlays will 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 to have negative cash flow from operations, 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 the company becomes better at collecting its receivables. In general, anything that leads to a decline in ending NWC relative to beginning 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 and principal, 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 derivatives.

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. To find owners' equity, we must construct a balance sheet as follows:

Balance Sheet

CA	$ 5,700	CL	$ 4,400
NFA	27,000	LTD	12,900
		OE	??
TA	$32,700	TL & OE	$32,700

We know that total liabilities and owners' equity (TL & OE) must equal total assets of $32,700. We also know that TL & OE is equal to current liabilities plus long-term debt plus owner's equity, so owner's equity is:

OE = $32,700 –12,900 – 4,400 = $15,400

NWC = CA – CL = $5,700 – 4,400 = $1,300

2. The income statement for the company is:

Income Statement

Sales	$387,000
Costs	175,000
Depreciation	40,000
EBIT	$172,000
Interest	21,000
EBT	$151,000
Taxes	52,850
Net income	$ 98,150

One equation for net income is:

Net income = Dividends + Addition to retained earnings

Rearranging, we get:

Addition to retained earnings = Net income – Dividends
Addition to retained earnings = $98,150 – 30,000
Addition to retained earnings = $68,150

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

CA = NWC + CL = $800,000 + 2,400,000 = $3,200,000

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

Book value CA	= $3,200,000	Market value CA	= $2,600,000
Book value NFA	= $5,200,000	Market value NFA	= $6,500,000
Book value assets	= $8,400,000	Market value assets	= $9,100,000

4. Taxes = 0.15($50,000) + 0.25($25,000) + 0.34($25,000) + 0.39($273,000 – 100,000)
Taxes = $89,720

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

Average tax rate = $89,720 / $273,000
Average tax rate = 32.86%

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

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

Income Statement	
Sales	$18,700
Costs	10,300
Depreciation	1,900
EBIT	$6,500
Interest	1,250
Taxable income	$5,250
Taxes	2,100
Net income	$3,150

OCF = EBIT + Depreciation – Taxes
OCF = $6,500 + 1,900 – 2,100
OCF = $6,300

6. Net capital spending = NFA_{end} – NFA_{beg} + Depreciation
Net capital spending = $1,690,000 – 1,420,000 + 145,000
Net capital spending = $415,000

7. The long-term debt account will increase by $35 million, the amount of the new long-term debt issue. Since the company sold 10 million new shares of stock with a $1 par value, the common stock account will increase by $10 million. The capital surplus account will increase by $48 million, the value of the new stock sold above its par value. Since the company had a net income of $9 million, and paid $2 million in dividends, the addition to retained earnings was $7 million, which will increase the accumulated retained earnings account. So, the new long-term debt and stockholders' equity portion of the balance sheet will be:

Long-term debt	$ 100,000,000
Total long-term debt	$ 100,000,000
Shareholders equity	
Preferred stock	$ 4,000,000
Common stock ($1 par value)	25,000,000
Accumulated retained earnings	142,000,000
Capital surplus	93,000,000
Total equity	$ 264,000,000
Total Liabilities & Equity	$ 364,000,000

8. Cash flow to creditors = Interest paid – Net new borrowing
Cash flow to creditors = $127,000 – ($LTD_{end}$ – LTD_{beg})
Cash flow to creditors = $127,000 – ($1,520,000 – 1,450,000)
Cash flow to creditors = $127,000 – 70,000
Cash flow to creditors = $57,000

9. Cash flow to stockholders = Dividends paid – Net new equity
Cash flow to stockholders = $275,000 – [($Common_{end}$ + $APIS_{end}$) – ($Common_{beg}$ + $APIS_{beg}$)]
Cash flow to stockholders = $275,000 – [($525,000 + 3,700,000) – ($490,000 + 3,400,000)]
Cash flow to stockholders = $275,000 – ($4,225,000 – 3,890,000)
Cash flow to stockholders = –$60,000

Note, APIS is the additional paid-in surplus.

10. Cash flow from assets = Cash flow to creditors + Cash flow to stockholders
= $57,000 – 60,000
= –$3,000

Cash flow from assets = OCF – Change in NWC – Net capital spending
–$3,000 = OCF – (–$87,000) – 945,000
OCF = $855,000

Operating cash flow = –$3,000 – 87,000 + 945,000
Operating cash flow = $855,000

Intermediate

11. *a.* The accounting statement of cash flows explains the change in cash during the year. The accounting statement of cash flows will be:

Statement of cash flows

Operations	
Net income	$95
Depreciation	90
Changes in other current assets	(5)
Accounts payable	10
Total cash flow from operations	$190
Investing activities	
Acquisition of fixed assets	$(110)
Total cash flow from investing activities	$(110)
Financing activities	
Proceeds of long-term debt	$5
Dividends	(75)
Total cash flow from financing activities	($70)
Change in cash (on balance sheet)	$10

b. Change in NWC $= NWC_{end} - NWC_{beg}$
$= (CA_{end} - CL_{end}) - (CA_{beg} - CL_{beg})$
$= [(\$65 + 170) - 125] - [(\$55 + 165) - 115)$
$= \$110 - 105$
$= \$5$

c. To find the cash flow generated by the firm's assets, we need the operating cash flow, and the capital spending. So, calculating each of these, we find:

Operating cash flow	
Net income	$95
Depreciation	90
Operating cash flow	$185

Note that we can calculate OCF in this manner since there are no taxes.

Capital spending	
Ending fixed assets	$390
Beginning fixed assets	(370)
Depreciation	90
Capital spending	$110

Now we can calculate the cash flow generated by the firm's assets, which is:

Cash flow from assets	
Operating cash flow	$185
Capital spending	(110)
Change in NWC	(5)
Cash flow from assets	$ 70

12. With the information provided, the cash flows from the firm are the capital spending and the change in net working capital, so:

Cash flows from the firm	
Capital spending	$(21,000)
Additions to NWC	(1,900)
Cash flows from the firm	$(22,900)

And the cash flows to the investors of the firm are:

Cash flows to investors of the firm	
Sale of long-term debt	(17,000)
Sale of common stock	(4,000)
Dividends paid	14,500
Cash flows to investors of the firm	$(6,500)

13. *a.* The interest expense for the company is the amount of debt times the interest rate on the debt. So, the income statement for the company is:

Income Statement	
Sales	$1,060,000
Cost of goods sold	525,000
Selling costs	215,000
Depreciation	130,000
EBIT	$190,000
Interest	56,000
Taxable income	$134,000
Taxes	46,900
Net income	$ 87,100

b. And the operating cash flow is:

OCF = EBIT + Depreciation – Taxes
OCF = $190,000 + 130,000 – 46,900
OCF = $273,100

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

Income Statement	
Sales	$185,000
Costs	98,000
Depreciation	16,500
Other expenses	6,700
EBIT	$63,800
Interest	9,000
Taxable income	$54,800
Taxes	19,180
Net income	$35,620
Dividends	$9,500
Additions to RE	$26,120

a. OCF = EBIT + Depreciation – Taxes
OCF = $63,800 + 16,500 – 19,180
OCF = $61,120

b. CFC = Interest – Net new LTD
CFC = $9,000 – (–$7,100)
CFC = $16,100

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

c. CFS = Dividends – Net new equity
CFS = $9,500 – 7,550
CFS = $1,950

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

CFA = $16,100 + 1,950 = $18,050

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

Net capital spending = Increase in NFA + Depreciation
Net capital spending = $26,100 + 16,500
Net capital spending = $42,600

Now we can use:

CFA = OCF – Net capital spending – Change in NWC
$18,050 = $61,120 – 42,600 – Change in NWC.

Solving for the change in NWC gives $470, meaning the company increased its NWC by $470.

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

Net income = Dividends + Addition to ret. earnings
Net income = $1,570 + 4,900
Net income = $6,470

Now, looking at the income statement:

EBT – (EBT × Tax rate) = Net income

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

EBT = NI / (1– Tax rate)
EBT = $6,470 / (1 – .35)
EBT = $9,953.85

Now we can calculate:

EBIT = EBT + Interest
EBIT = $9,953.85 + 1,840
EBIT = $11,793.85

The last step is to use:

EBIT = Sales – Costs – Depreciation
$11,793.85 = $41,000 – 26,400 – Depreciation
Depreciation = $2,806.15

16. The market value of shareholders' equity cannot be negative. A negative market value in this case would imply that the company would pay you to own the stock. The market value of shareholders' equity can be stated as: Shareholders' equity = Max [(TA – TL), 0]. So, if TA is $12,400, equity is equal to $1,500, and if TA is $9,600, equity is equal to $0. We should note here that while the market value of equity cannot be negative, the book value of shareholders' equity can be negative.

17. *a.* Taxes Growth = 0.15($50,000) + 0.25($25,000) + 0.34($86,000 – 75,000) = $17,490
Taxes Income = 0.15($50,000) + 0.25($25,000) + 0.34($25,000) + 0.39($235,000)
+ 0.34($8,600,000 – 335,000)
= $2,924,000

b. Each firm has a marginal tax rate of 34% on the next $10,000 of taxable income, despite their different average tax rates, so both firms will pay an additional $3,400 in taxes.

18.

	Income Statement	
	Sales	$630,000
	COGS	470,000
	A&S expenses	95,000
	Depreciation	140,000
	EBIT	($75,000)
	Interest	70,000
	Taxable income	($145,000)
	Taxes (35%)	0
a.	Net income	($145,000)

b. OCF = EBIT + Depreciation – Taxes
OCF = ($75,000) + 140,000 – 0
OCF = $65,000

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

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

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

Cash flow from assets = OCF – Change in NWC – Net capital spending
Cash flow from assets = $65,000 – 0 – 0 = $65,000

Cash flow to stockholders = Dividends – Net new equity
Cash flow to stockholders = $34,000 – 0 = $34,000

Cash flow to creditors = Cash flow from assets – Cash flow to stockholders
Cash flow to creditors = $65,000 – 34,000
Cash flow to creditors = $31,000

Cash flow to creditors is also:

Cash flow to creditors = Interest – Net new LTD

So:

Net new LTD = Interest – Cash flow to creditors
Net new LTD = $70,000 – 31,000
Net new LTD = $39,000

20. *a.* The income statement is:

Income Statement	
Sales	$19,900
Cost of good sold	14,200
Depreciation	2,700
EBIT	$ 3,000
Interest	670
Taxable income	$ 2,330
Taxes	932
Net income	$1,398

b. OCF = EBIT + Depreciation – Taxes
OCF = $3,000 + 2,700 – 932
OCF = $4,768

c. Change in NWC $= NWC_{end} - NWC_{beg}$
$= (CA_{end} - CL_{end}) - (CA_{beg} - CL_{beg})$
= ($5,135 – 2,535) – ($4,420 – 2,470)
= $2,600 – 1,950 = $650

Net capital spending $= NFA_{end} - NFA_{beg}$ + Depreciation
= $16,770 – 15,340 + 2,700
= $4,130

CFA = OCF – Change in NWC – Net capital spending
= $4,768 – 650 – 4,130
= –$12

The cash flow from assets can be positive or negative, since it represents whether the firm raised funds or distributed funds on a net basis. In this problem, even though net income and OCF are positive, the firm invested heavily in both fixed assets and net working capital; it had to raise a net $12 in funds from its stockholders and creditors to make these investments.

d. Cash flow to creditors = Interest – Net new LTD
= $670 – 0
= $670

Cash flow to stockholders = Cash flow from assets – Cash flow to creditors
= –$12 – 670
= –$682

We can also calculate the cash flow to stockholders as:

Cash flow to stockholders = Dividends – Net new equity

Solving for net new equity, we get:

Net new equity = $650 – (–682)
= $1,332

The firm had positive earnings in an accounting sense (NI > 0) and had positive cash flow from operations. The firm invested $650 in new net working capital and $4,130 in new fixed assets. The firm had to raise $12 from its stakeholders to support this new investment. It accomplished this by raising $1,332 in the form of new equity. After paying out $650 of this in the form of dividends to shareholders and $670 in the form of interest to creditors, $12 was left to meet the firm's cash flow needs for investment.

21. *a.* Total assets 2011 = $936 + 4,176 = $5,112
Total liabilities 2011 = $382 + 2,160 = $2,542
Owners' equity 2011 = $5,112 – 2,542 = $2,570

Total assets 2012 = $1,015 + 4,896 = $5,911
Total liabilities 2012 = $416 + 2,477 = $2,893
Owners' equity 2012 = $5,911 – 2,893 = $3,018

b. NWC 2011 = CA11 – CL11 = $936 – 382 = $554
NWC 2012 = CA12 – CL12 = $1,015 – 416 = $599
Change in NWC = NWC12 – NWC11 = $599 – 554 = $45

c. We can calculate net capital spending as:

Net capital spending = Net fixed assets 2012 – Net fixed assets 2011 + Depreciation
Net capital spending = $4,896 – 4,176 + 1,150
Net capital spending = $1,870

So, the company had a net capital spending cash flow of $1,870. We also know that net capital spending is:

Net capital spending = Fixed assets bought – Fixed assets sold
$1,870 = $2,160 – Fixed assets sold
Fixed assets sold = $2,160 – 1,870 = $290

To calculate the cash flow from assets, we must first calculate the operating cash flow. The operating cash flow is calculated as follows (you can also prepare a traditional income statement):

EBIT = Sales – Costs – Depreciation
EBIT = $12,380 – 5,776 – 1,150
EBIT = $5,454

EBT = EBIT – Interest
EBT = $5,454 – 314
EBT = $5,140

Taxes = EBT × .40
Taxes = $5,140 × .40
Taxes = $2,056

OCF = EBIT + Depreciation – Taxes
OCF = $5,454 + 1,150 – 2,056
OCF = $4,548

Cash flow from assets = OCF – Change in NWC – Net capital spending.
Cash flow from assets = $4,548 – 45 – 1,870
Cash flow from assets = $2,633

d. Net new borrowing = LTD12 – LTD11
Net new borrowing = $2,477 – 2,160
Net new borrowing = $317

Cash flow to creditors = Interest – Net new LTD
Cash flow to creditors = $314 – 317
Cash flow to creditors = –$3

Net new borrowing = $317 = Debt issued – Debt retired
Debt retired = $432 – 317 = $115

22.

Balance sheet as of Dec. 31, 2011

Cash	$4,109	Accounts payable	$4,316
Accounts receivable	5,439	Notes payable	794
Inventory	9,670	Current liabilities	$5,110
Current assets	$19,218		
		Long-term debt	$13,460
Net fixed assets	$34,455	Owners' equity	35,103
Total assets	$53,673	Total liab. & equity	$53,673

Balance sheet as of Dec. 31, 2012

Cash	$5,203	Accounts payable	$4,185
Accounts receivable	6,127	Notes payable	746
Inventory	9,938	Current liabilities	$4,931
Current assets	$21,268		
		Long-term debt	$16,050
Net fixed assets	$35,277	Owners' equity	35,564
Total assets	$56,545	Total liab. & equity	$56,545

2011 Income Statement		2012 Income Statement	
Sales	$7,835.00	Sales	$8,409.00
COGS	2,696.00	COGS	3,060.00
Other expenses	639.00	Other expenses	534.00
Depreciation	1,125.00	Depreciation	1,126.00
EBIT	$3,375.00	EBIT	$3,689.00
Interest	525.00	Interest	603.00
EBT	$2,850.00	EBT	$3,086.00
Taxes	969.00	Taxes	1,049.24
Net income	$1,881.00	Net income	$2,036.76
Dividends	$956.00	Dividends	$1,051.00
Additions to RE	925.00	Additions to RE	985.76

23. OCF = EBIT + Depreciation – Taxes
OCF = $3,689 + 1,126 – 1,049.24
OCF = $3,765.76

Change in NWC = $NWC_{end} – NWC_{beg}$ = $(CA – CL)_{end} – (CA – CL)_{beg}$
Change in NWC = ($21,268 – 4,931) – ($19,218 – 5,110)
Change in NWC = $2,229

Net capital spending = $NFA_{end} – NFA_{beg}$ + Depreciation
Net capital spending = $35,277 – 34,455 + 1,126
Net capital spending = $1,948

Cash flow from assets = OCF – Change in NWC – Net capital spending
Cash flow from assets = $3,765.76 – 2,229 – 1,948
Cash flow from assets = –$411.24

Cash flow to creditors = Interest – Net new LTD
Net new LTD = $LTD_{end} – LTD_{beg}$
Cash flow to creditors = $603 – ($16,050 – 13,460)
Cash flow to creditors = –$1,987

Net new equity = Common $stock_{end}$ – Common $stock_{beg}$
Common stock + Retained earnings = Total owners' equity
Net new equity = $(OE – RE)_{end} – (OE – RE)_{beg}$
Net new equity = $OE_{end} – OE_{beg} + RE_{beg} – RE_{end}$
$RE_{end} = RE_{beg}$ + Additions to RE

$\therefore$ Net new equity = $OE_{end} – OE_{beg} + RE_{beg} – (RE_{beg}$ + Additions to RE)
= $OE_{end} – OE_{beg}$ – Additions to RE
Net new equity = \$35,564 – 35,103 – 985.76 = –\$524.76

Cash flow to stockholders = Dividends – Net new equity
Cash flow to stockholders = \$1,051– (–\$524.76)
Cash flow to stockholders = \$1,575.76

As a check, cash flow from assets is –\$411.24

Cash flow from assets = Cash flow from creditors + Cash flow to stockholders
Cash flow from assets = –\$1,987 + 1,575.76
Cash flow from assets = –\$411.24

Challenge

24. We will begin by calculating the operating cash flow. First, we need the EBIT, which can be calculated as:

EBIT = Net income + Current taxes + Deferred taxes + Interest
EBIT = \$173 + 98 + 19 + 48
EBIT = \$338

Now we can calculate the operating cash flow as:

Operating cash flow	
Earnings before interest and taxes	\$338
Depreciation	94
Current taxes	(98)
Operating cash flow	\$334

The cash flow from assets is found in the investing activities portion of the accounting statement of cash flows, so:

Cash flow from assets	
Acquisition of fixed assets	\$215
Sale of fixed assets	(23)
Capital spending	\$192

The net working capital cash flows are all found in the operations cash flow section of the accounting statement of cash flows. However, instead of calculating the net working capital cash flows as the change in net working capital, we must calculate each item individually. Doing so, we find:

Net working capital cash flow	
Cash	$14
Accounts receivable	18
Inventories	(22)
Accounts payable	(17)
Accrued expenses	9
Notes payable	(6)
Other	(3)
NWC cash flow	($7)

Except for the interest expense and notes payable, the cash flow to creditors is found in the financing activities of the accounting statement of cash flows. The interest expense from the income statement is given, so:

Cash flow to creditors	
Interest	$48
Retirement of debt	162
Debt service	$210
Proceeds from sale of long-term debt	(116)
Total	$94

And we can find the cash flow to stockholders in the financing section of the accounting statement of cash flows. The cash flow to stockholders was:

Cash flow to stockholders	
Dividends	$ 86
Repurchase of stock	13
Cash to stockholders	$ 99
Proceeds from new stock issue	(44)
Total	$ 55

25. Net capital spending $= NFA_{end} - NFA_{beg} + \text{Depreciation}$

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

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

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

26. *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.