CHAPTER 17
FINANCIAL PLANNING AND FORECASTING

(Difficulty: E = Easy, M = Medium, and T = Tough)

Multiple Choice: Conceptual

Easy:

Percent of sales method **Answer: e Diff: E**

1. The percent of sales method is based on which of the following assumptions?

   a. All balance sheet accounts are tied directly to sales.
   b. Most balance sheet accounts are tied directly to sales.
   c. The current level of total assets is optimal for the current sales level.
   d. Statements a and c above are correct.
   e. Statements b and c above are correct.

Additional funds needed **Answer: b Diff: E**

2. A company is forecasting an increase in sales and is using the AFN model to forecast the additional capital that they need to raise. Which of the following factors are likely to increase the additional funds needed (AFN)?

   a. The company has a lot of excess capacity.
   b. The company has a high dividend payout ratio.
   c. The company has a lot of spontaneous liabilities that increase as sales increase.
   d. The company has a high profit margin.
   e. All of the statements above are correct.

Additional funds needed **Answer: e Diff: E**

3. Jefferson City Computers has developed a forecasting model to determine the additional funds it needs in the upcoming year. All else being equal, which of the following factors is likely to increase its additional funds needed (AFN)?

   a. A sharp increase in its forecasted sales and the company's fixed assets are at full capacity.
   b. A reduction in its dividend payout ratio.
   c. The company reduces its reliance on trade credit that sharply reduces its accounts payable.
   d. Statements a and b are correct.
   e. Statements a and c are correct.

Additional funds needed **Answer: c Diff: E**

4. Which of the following is likely to increase the additional funds needed (AFN) in a given year?

   a. The company reduces its dividend payout ratio.
   b. The company's profit margin increases.
   c. The company decides to reduce its reliance on accounts payable as a form of financing.
   d. The company is operating well below full capacity.
   e. All of the statements above are correct.

Additional funds needed **Answer: a Diff: E**

5. All else equal, which of the following is likely to increase a company's additional funds needed (AFN)?

   a. An increase in its dividend payout ratio.
   b. The company has a lot of excess capacity.
   c. Accounts payable increase faster than sales.
   d. All of the statements above are correct.
   e. None of the statements above is correct.

Additional funds needed **Answer: b Diff: E N**

6. Additional funds needed are best defined as:

   a. Funds that are obtained automatically from routine business transactions.
   b. Funds that a firm must raise externally through borrowing or by selling new common or preferred stock.
   c. The amount of assets required per dollar of sales.
   d. The amount of cash generated in a given year minus the amount of cash needed to finance the additional capital expenditures and working capital needed to support the firm's growth.
   e. A forecasting approach in which the forecasted percentage of sales for each item is held constant.

Additional funds needed **Answer: e Diff: E N**

7. Which of the following is likely to decrease the additional funds needed (AFN) in a given year?

   a. The company increases its retention ratio.
   b. The company's profit margin increases.
   c. The company's sales growth is reduced.
   d. Both statements b and c are correct.
   e. All of the statements above is correct.

Forecasting concepts **Answer: b Diff: E**

8. Which of the following statements is most correct?

a. One of the key steps in the development of pro forma financial statements is to identify those assets and liabilities that increase spontaneously with net income.
b. The first, and most critical, step in constructing a set of pro forma financial statements is establishing the sales forecast.
c. Pro forma financial statements as discussed in the text are used primarily to assess a firm's historical performance.
d. The capital intensity ratio reflects how rapidly a firm turns over its assets and is the reciprocal of the fixed assets turnover ratio.
e. The percent of sales method produces accurate results when fixed assets are lumpy and when economies of scale are present.

Strategic plans and corporate scope **Answer: e Diff: E N**

9. Which of the following statements is most correct?

a. A mission statement is a condensed version of a firm's strategic plans.
b. Both mission statements and strategic plans usually begin with a statement of the overall corporate purpose.
c. A firm's corporate scope defines a firm's lines of business and geographic area of operations.
d. Both statements b and c are correct.
e. All of the statements above are correct.

Operating plans and corporate strategies **Answer: c Diff: E N**

10. Which of the following statements is most correct?

a. Once a firm has defined its purpose, scope, and objectives, it must develop a strategy for achieving its goals. Corporate strategies are detailed plans rather than broad approaches.
b. A firm's corporate purpose states the general philosophy of the business and provides managers with operational objectives.
c. Operating plans provide detailed implementation guidance, based on the corporate strategy, to help meet the corporate objectives. These plans can be developed for any time horizon, but most companies use a 5-year horizon.
d. All of the statements above are correct.
e. None of the statements above is correct.

Spontaneously generated funds **Answer: d Diff: E N**

11. Spontaneously generated funds are best defined as:

a. The amount of assets required per dollar of sales.
b. A forecasting approach in which the forecasted percentage of sales for each item is held constant.
c. Funds that a firm must raise externally through borrowing or by selling new common or preferred stock.
d. Funds that are obtained automatically from routine business transactions.
e. The amount of cash generated in a given year minus the amount of cash needed to finance the additional capital expenditures and working capital needed to support the firm's growth.

Capital intensity ratio **Answer: d Diff: E N**

12. The capital intensity ratio is:

a. The inverse of the total assets turnover ratio.
b. The percentage of liabilities that increase spontaneously as a percentage of sales.
c. The amount of assets required per dollar of sales.
d. Both statements a and c are correct.
e. None of the statements above is correct.

Medium:

Forecasting financial requirements **Answer: c Diff: M**

13. Which of the following statements is most correct?

a. The AFN formula method assumes that the balance sheet ratios of assets and liabilities to sales (A^*/S_0 and L^*/S_0) remain constant over time, while the percent of sales method does not.
b. When assets are added in large, discrete units as a company grows, then the assumption of constant ratios and steady growth rates is most appropriate.
c. Temporary excess capacity can be characteristic of a firm that adds lumpy assets as it grows or one that experiences cyclical changes.
d. For a firm that has lumpy assets, small increases in sales can be accommodated without expanding fixed assets, even when the firm is at capacity.
e. The graphical relationship between assets and sales where economies of scale are present is always linear.

Additional funds needed **Answer: c Diff: M**

14. On the basis of historical relationships between its balance sheet items and its sales, profit margin, and dividend policy, Thode Corporation's analysts have graphed the relationship of additional funds needed (on the Y-axis) to possible growth rates in sales (on the X-axis). If Thode decides to increase the percentage of earnings paid out as dividends, which of the following changes would occur in the graph?

a. The line would shift to the right.
b. The line would pass through the origin.
c. The line would shift to the left.
d. The slope coefficient would fall.
e. The slope coefficient would increase.

Additional funds needed **Answer: c Diff: M**

15. Considering each action independently and holding other things constant, which of the following actions would reduce a firm's need for additional capital?

a. An increase in the dividend payout ratio.
b. A decrease in the profit margin.
c. A decrease in the days sales outstanding.
d. An increase in expected sales growth.
e. A decrease in the accrual accounts (accrued wages and taxes).

Additional funds needed **Answer: d Diff: M**

16. Which of the following statements is most correct?

a. Since accounts payable and accrued liabilities must eventually be paid, as these accounts increase, AFN also increases.
b. Suppose a firm is operating its fixed assets below 100 percent capacity but is at 100 percent with respect to current assets. If sales grow, the firm can offset the needed increase in current assets with its idle fixed assets capacity.
c. If a firm retains all of its earnings, then it will not need any additional funds to support sales growth.
d. Additional funds needed are typically raised from some combination of notes payable, long-term bonds, and common stock. These accounts are nonspontaneous in that they require an explicit financing decision to increase them.
e. None of the statements above is correct.

Percent of sales method **Answer: d Diff: M**

17. Which of the following statements is most correct?

a. Any forecast of financial requirements involves determining how much money the firm will need and is obtained by adding together increases in assets and spontaneous liabilities and subtracting operating income.
b. The percent of sales method of forecasting financial needs requires only a forecast of the firm's balance sheet. Although a forecasted income statement helps clarify the need, it is not essential to the percent of sales method.
c. Because dividends are paid after taxes from retained earnings, dividends are not included in the percent of sales method of forecasting.
d. Financing feedbacks describe the fact that interest must be paid on the debt used to help finance AFN and dividends must be paid on the shares issued to raise the equity part of the AFN. These payments would lower the net income and retained earnings shown in the projected financial statements.
e. None of the statements above is correct.

AFN formula method **Answer: a Diff: M**

18. Which of the following statements is most correct?

a. Inherent in the AFN formula is the assumption that each asset item must increase in direct proportion to sales increases and that spontaneous liability accounts also grow at the same rate as sales.
b. If a firm has positive growth in its assets, but has no increase in retained earnings, AFN for the firm must be positive.
c. Using the AFN formula, if a firm increases its dividend payout ratio in anticipation of higher earnings, but sales actually decrease, the firm will automatically experience an increase in additional funds needed.
d. Higher sales usually require higher asset levels. Some of the increase in assets can be supported by spontaneous increases in accounts payable and accrued liabilities, and by increases in certain current asset accounts and retained earnings.
e. Dividend policy does not affect requirements for external capital under the AFN formula method.

Financial plan **Answer: e Diff: M N**

19. Which of the following is not one of the steps taken in the financial planning process?

a. Project financial statements and use these projections to analyze the effects of the operating plan on projected profits and various financial ratios.
b. Determine the funds needed to support the 5-year plan.
c. Establish and maintain a system of controls to govern the allocation and use of funds within the firm.
d. Establish a performance-based management compensation system.
e. None of the above, i.e., all the statements above are steps included in the financial planning process.

Multiple Choice: Problems

Easy:

Additional funds needed **Answer: d Diff: E**

20. Jill's Wigs Inc. had the following balance sheet last year:

Cash	$ 800	Accounts payable	$ 350
Accounts receivable	450	Accrued wages	150
Inventories	950	Notes payable	2,000
Net fixed assets	34,000	Mortgage	26,500
		Common stock	3,200
		Retained earnings	4,000
Total assets	$36,200	Total liabilities and equity	$36,200

Jill has just invented a non-slip wig for men that she expects will cause sales to double from $10,000 to $20,000, increasing net income to $1,000. She feels that she can handle the increase without adding any fixed assets. (1) Will Jill need any outside capital if she pays no dividends? (2) If so, how much?

a. No; zero
b. Yes; $7,700
c. Yes; $1,700
d. Yes; $700
e. No; $700 surplus

Forecasting addition to retained earnings **Answer: b Diff: E**

21. Kenney Corporation recently reported the following income statement for 2002 (numbers are in millions of dollars):

Sales	$7,000
Operating costs	3,000
EBIT	$4,000
Interest	200
Earnings before taxes (EBT)	$3,800
Taxes (40%)	1,520
Net income available to common shareholders	$2,280

The company forecasts that its sales will increase by 10 percent in 2003 and its operating costs will increase in proportion to sales. The company's interest expense is expected to remain at $200 million, and the tax rate will remain at 40 percent. The company plans to pay out 50 percent of its net income as dividends, the other 50 percent will be additions to retained earnings. What is the forecasted addition to retained earnings for 2003?

a. $1,140
b. $1,260
c. $1,440
d. $1,790
e. $1,810

Linear regression and ratios **Answer: e Diff: E N**

22. Flannery Furnishings has $150,000 in sales. The company expects that its sales will increase 30 percent this year. Flannery's CFO uses a simple linear regression to forecast the company's inventory level for a given level of projected sales. On the basis of recent history, the estimated relationship between inventories and sales (in thousands of dollars) is

Inventories = $7.50 + 0.1875(Sales).

Given the estimated sales forecast and the estimated relationship between inventories and sales, what is your forecast of the company's year-end inventory turnover ratio?

a. 2.25
b. 2.89
c. 3.35
d. 3.66
e. 4.43

Medium:

Additional funds needed **Answer: c Diff: M**

23. Brown & Sons recently reported sales of $100 million, and net income equal to $5 million. The company has $70 million in total assets. Over the next year, the company is forecasting a 20 percent increase in sales. Since the company is at full capacity, its assets must increase in proportion to sales. The company also estimates that if sales increase 20 percent, spontaneous liabilities will increase by $2 million. If the company's sales increase, its profit margin will remain at its current level. The company's dividend payout ratio is 40 percent. Based on the AFN formula, how much additional capital must the company raise in order to support the 20 percent increase in sales?

a. $ 2,000,000
b. $ 6,000,000
c. $ 8,400,000
d. $ 9,600,000
e. $14,000,000

AFN with excess capacity **Answer: b Diff: M**

24. A firm has the following balance sheet:

Cash	$ 20	Accounts payable	$ 20
Accounts receivable	20	Notes payable	40
Inventories	20	Long-term debt	80
Fixed assets	180	Common stock	80
		Retained earnings	20
		Total liabilities	
Total assets	$240	and equity	$240

Sales for the year just ended were $400, and fixed assets were used at 80 percent of capacity, but its current assets were at optimal levels. Sales are expected to grow by 5 percent next year, the profit margin is 5 percent, and the dividend payout ratio is 60 percent. How much additional funds (AFN) will be needed?

a. $4.6
b. -$6.4 (Surplus)
c. $2.4
d. -$4.6 (Surplus)
e. $0.8

AFN with excess capacity **Answer: d Diff: M**

25. Splash Bottling's December 31st balance sheet is given below:

Cash	$ 10	Accounts payable	$ 15
Accounts receivable	25	Notes payable	20
Inventories	40	Accrued wages and taxes	15
Net fixed assets	75	Long-term debt	30
		Common equity	70
		Total liabilities	
Total assets	$150	and equity	$150

Sales during the past year were $100, and they are expected to rise by 50 percent to $150 during next year. Also, during last year fixed assets were being utilized to only 85 percent of capacity, so Splash could have supported $100 of sales with fixed assets that were only 85 percent of last year's actual fixed assets. Assume that Splash's profit margin will remain constant at 5 percent and that the company will continue to pay out 60 percent of its earnings as dividends. To the nearest whole dollar, what amount of nonspontaneous, additional funds (AFN) will be needed during the next year?

a. $57
b. $51
c. $36
d. $40
e. $48

AFN with excess capacity **Answer: d Diff: M**

26. A firm has the following balance sheet:

Cash	$ 10	Accounts payable	$ 10
Accounts receivable	10	Notes payable	20
Inventories	10	Long-term debt	40
Fixed assets	90	Common stock	40
		Retained earnings	10
		Total liabilities	
Total assets	$120	and equity	$120

Fixed assets are being used at 80 percent of capacity; sales for the year just ended were $200; sales will increase $10 per year for the next 4 years; the profit margin is 5 percent; and the dividend payout ratio is 60 percent. Assume that underutilized fixed assets cannot be sold. What are the total external financing requirements for the entire 4 years, that is, the total AFN for the 4-year period?

a. $ 4.00
b. $ 2.00
c. -$ 0.80 (surplus)
d. -$14.00 (surplus)
e. $ 0

AFN with excess capacity **Answer: a Diff: M**

27. Baxter Box Company's balance sheet showed the following amounts as of December 31st:

Cash	$ 10	Accounts payable	$ 15
Accounts receivable	40	Accrued liabilities	5
Inventories	50	Notes payable	20
Net fixed assets	100	Long-term debt	20
		Common stock	20
		Retained earnings	120
		Total liabilities	
Total assets	$200	and equity	$200

Last year the firm's sales were $2,000, and it had a profit margin of 10 percent and a dividend payout ratio of 50 percent. Baxter Box operated its fixed assets at 80 percent of capacity during the year. The company expects to increase next year's sales by 37.5 percent, to $2,750, but the profit margin is expected to fall to 3 percent and the dividend payout ratio is expected to rise to 60 percent. What is Baxter Box's additional funds needed (AFN) for next year?

a. $ 7.00
b. -$ 3.00 (surplus)
c. $30.50
d. -$97.50 (surplus)
e. $18.50

AFN formula and forecasted debt **Answer: e Diff: M**

28. Jackson Co. has the following balance sheet as of December 31, 2002.

Current assets	$ 600,000	Accounts payable	$ 100,000
Fixed assets	400,000	Accrued liabilities	100,000
		Notes payable	100,000
		Long-term debt	300,000
		Total common equity	400,000
		Total liabilities	
Total assets	$1,000,000	and equity	$1,000,000

In 2002, the company reported sales of $5 million, net income of $100,000, and dividends of $60,000. The company anticipates its sales will increase 20 percent in 2003 and its dividend payout will remain at 60 percent. Assume the company is at full capacity, so its assets and spontaneous liabilities will increase proportionately with an increase in sales.

Assume the company uses the AFN formula and all additional funds needed (AFN) will come from issuing new long-term debt. Given its forecast, how much long-term debt will the company have to issue in 2003?

a. $ 12,000
b. $ 60,000
c. $ 88,000
d. $ 92,000
e. $112,000

Expected growth rate **Answer: d Diff: M**

29. Apex Roofing Inc. has the following balance sheet (in millions of dollars):

Current assets	$3.0	Accounts payable	$1.2
Net fixed assets	4.0	Notes payable	0.8
		Accrued wages and taxes	0.3
		Long-term debt	1.2
		Common equity	1.5
		Retained earnings	2.0
		Total liabilities	
Total assets	$7.0	and equity	$7.0

Last year's sales were $10 million, and Apex estimates it will need to raise $2 million in new debt and equity next year. You have identified the following facts: (1) it pays out 30 percent of earnings as dividends; (2) a profit margin of 4 percent is projected; (3) fixed assets were used to full capacity; and (4) assets and spontaneous liabilities as shown on last year's balance sheet are expected to grow proportionally with sales. If the above assumptions hold, what sales growth rate is the firm anticipating? (Hint: You can use the AFN formula to help answer this problem.)

a. 187%
b. 51%
c. 97%
d. 44%
e. 26%

Expected growth rate **Answer: e Diff: M**

30. Your company has the following balance sheet (in millions of dollars):

Current assets	$4.0	Accounts payable	$0.8
Net fixed assets	4.0	Notes payable	1.0
		Accrued wages and taxes	0.2
		Long-term debt	1.5
		Common equity	1.5
		Retained earnings	3.0
		Total liabilities	
Total assets	$8.0	and equity	$8.0

You have determined the following facts: (1) last year's sales were $10 million; (2) the company will pay out 40 percent of earnings as dividends; (3) a profit margin of 3 percent is projected; (4) fixed assets were used to full capacity; and (5) all assets as well as spontaneous liabilities as shown on the balance sheet are expected to grow proportionally with sales. Further, your boss estimates she will need to raise $2 million externally by issuing new debt or common stock next year. If the above assumptions hold, what rate of sales growth is your boss expecting? (Hint: You can use the AFN formula to help answer this problem.)

a. 12.50%
b. 15.25%
c. 18.00%
d. 23.15%
e. 31.96%

Level of assets **Answer: d Diff: M**

31. Using the AFN formula approach, calculate the total assets of Harmon Photo Company given the following information: Sales this year = $3,000; sales increase projected for next year = 20 percent; net income this year = $250; dividend payout ratio = 40 percent; projected excess funds available next year = $100; accounts payable = $600; notes payable = $100; and accrued wages and taxes = $200. Except for the accounts noted, there were no other current liabilities. Assume that the firm's profit margin remains constant and that the company is operating at full capacity.

a. $3,000
b. $2,200
c. $2,000
d. $1,200
e. $1,000

Forecasting and ratio changes **Answer: a Diff: M**

32. Gemini Beverage has the following historical balance sheet:

Cash	$ 20	Accounts payable	$ 200
Accounts receivable	240	Notes payable	130
Inventories	320	Accrued liabilities	30
Total current assets	$ 580	Total current liabilities	$ 360
Net plant & equipment	420	Long-term bonds	260
		Common stock	270
		Retained earnings	110
Total assets	$1,000	Total liabilities and equity	$1,000

Over the next year Gemini's current assets, accounts payable, and accrued liabilities will grow in proportion to sales. Last year's sales were $800 and this year's sales are expected to increase by 40 percent. The firm will retain $58 in earnings to fund current asset growth, and the rest of the increase will be funded entirely with notes payable. The net plant and equipment account will increase to $500 and will be funded directly by a new equity issue. What will Gemini's new current ratio be after the changes in the firm's financial picture are complete?

a. 1.52
b. 1.61
c. 1.26
d. 1.21
e. 1.37

Forecasting net income **Answer: b Diff: M N**

33. Samson's Sailboats Inc. recently reported the following income statement (in millions of dollars):

	2002
Sales	$3,500
Operating costs	2,500
EBIT	$1,000
Interest	200
EBT	$ 800
Taxes (40%)	320
Net income	$ 480
Dividends (40%)	$ 192
Addition to retained earnings	$ 288

This year the company is forecasting a 40 percent increase in sales, and it expects that its year-end operating costs will decline to 60 percent of sales. Samson's tax rate, interest expense, and dividend payout ratio are all expected to remain constant. What is Samson's projected 2003 net income?

a. $ 931
b. $1,056
c. $ 775
d. $1,254
e. $1,150

Linear regression and receivables **Answer: c Diff: M N**

34. Jericho Enterprises has $225 million in sales. The company expects that its sales will increase 8 percent this year. Jericho's CFO uses a simple linear regression to forecast the company's receivables level for a given level of projected sales. On the basis of recent history, the estimated relationship between receivables and sales (in millions of dollars) is

Receivables = $8.5 + 0.095(Sales).

Given the estimated sales forecast and the estimated relationship between receivables and sales, what is your forecast of the company's year-end days' sales outstanding (DSO) ratio? Assume that DSO is calculated on the basis of a 365-day year.

a. 36.50
b. 43.00
c. 47.44
d. 50.25
e. 53.25

Linear regression and inventories **Answer: b Diff: M N**

35. Harley Brothers has $150 million in sales. The company expects that its sales will increase 10 percent this year. Harley's CFO uses a simple linear regression to forecast the company's inventory level for a given level of projected sales. On the basis of recent history, the estimated relationship between inventories and sales (in millions of dollars) is

Inventories = $15 + 0.12(Sales).

Given the estimated sales forecast and the estimated relationship between inventories and sales, what is your forecast of the company's year-end inventory turnover ratio?

a. 3.66
b. 4.74
c. 5.25
d. 5.85
e. 6.33

Forecasting inventory with regression analysis **Answer: c Diff: M**

36. Over the past four years, a well-managed company has had the following link between its inventories and its sales:

Year	Sales	Inventories
1999	$200 million	$35 million
2000	250 million	38 million
2001	400 million	55 million
2002	500 million	70 million

The company is in the process of generating its forecasted financial statements for 2003. The company first generates a forecast for sales and then, given its sales forecast, uses a regression model (using data given above) to forecast its inventories for 2003. Assuming that the forecasted sales for 2003 are $650 million, what are its forecasted inventories for 2003?

a. $54,399,885
b. $75,801,342
c. $86,175,824
d. $93,000,000
e. $97,542,137

Forecasting inventory with regression analysis **Answer: b Diff: M**

37. A well-managed company has reported the following sales and inventories over the past three years:

Year	Sales	Inventories
2000	$1,700,000	$150,000
2001	1,900,000	165,000
2002	2,400,000	185,000

The company forecasts that its sales will be $3,000,000 in 2003, and the company uses regression analysis (on the basis of the last three years' data) to forecast its inventories. What are its forecasted inventories (to the nearest dollar) for 2003?

a. $209,000
b. $214,744
c. $215,689
d. $230,000
e. $530,667

Tough:

Maximum growth rate **Answer: b Diff: T**

38. The Tapley Company is trying to determine an acceptable growth rate in sales. While the firm wants to expand, it does not want to use any external funds to support such expansion due to the particularly high interest rates in the market now. Having gathered the following data for the firm, what is the maximum growth rate it can sustain without requiring additional funds?

- Capital intensity ratio = 1.2.
- Profit margin = 10%.
- Dividend payout ratio = 50%.
- Current sales = $100,000.
- Spontaneous liabilities = $10,000.

a. 3.6%
b. 4.8%
c. 5.2%
d. 6.1%
e. 5.7%

AFN formula method **Answer: b Diff: T**

39. Volunteer Retailers has the following balance sheet:

Current assets	$ 600,000,000	Accounts payable	$ 200,000,000
Fixed assets	900,000,000	Accrued liabilities	200,000,000
		Long-term debt	600,000,000
		Common stock	100,000,000
		Retained earnings	400,000,000
		Total liabilities	
Total assets	$1,500,000,000	and equity	$1,500,000,000

Volunteer's profit margin is 5 percent, and it pays out 40 percent of its earnings as dividends. Its sales last year were $6,000,000,000; its assets were used to full capacity; no economies of scale exist in the use of assets; and its profit margin and payout ratio are expected to remain constant. Thus, both current assets and fixed assets are expected to grow at the same rate as sales. The company uses the AFN formula to estimate funds requirements, and it plans to raise any required external capital as short-term bank loans, which will be included as part of current liabilities. If sales grow by 30 percent, what will Volunteer's current ratio be after it has raised the necessary expansion funds? (Note: Ignore any financing feedback effects.)

a. 1.12
b. 1.27
c. 1.21
d. 1.57
e. 1.16

AFN and current ratio **Answer: e Diff: T**

40. Snowball & Company has the following balance sheet:

Current assets	$ 7,000	A/P & accrued liabilities	$ 1,500
Fixed assets	3,000	S-T (3-month) loans	2,000
		Common stock	1,500
		Retained earnings	5,000
		Total liabilities	
Total assets	$10,000	and equity	$10,000

Snowball's after-tax profit margin is 11 percent, and the company pays out 60 percent of its earnings as dividends. Its sales last year were $10,000; its assets were used to full capacity; no economies of scale exist in the use of assets; and the profit margin and payout ratio are expected to remain constant. The company uses the AFN formula to estimate funds requirements, and it plans to raise any required external capital as short-term bank loans. If sales grow by 50 percent, what will Snowball's current ratio be after it has raised the necessary expansion funds? (Note: Ignore any financing feedback effects.)

a. 2.36
b. 2.00
c. 1.78
d. 1.50
e. 1.34

Regression analysis vs. percent of sales **Answer: b Diff: T**

41. Mom's Cookie Company has the following December 31, 2002 balance sheet:

Inventories	$100	A/P & accrued liabilities	$ 80
Other assets	300	Other debt	170
		Common equity	150
		Total liabilities	
Total assets	$400	and equity	$400

Sales for 2002 were $400; the after-tax profit margin was 8 percent; Mom's paid out half of her earnings as dividends, and all assets except inventories were operated at full capacity and will increase in proportion to increases in sales. Data on three companies that Mom's uses for benchmark comparisons are shown below:

	Sales	Inventories
Company A	$300	$ 60
Company B	500	80
Company C	700	100

Mom's forecasts a 50 percent increase in sales to $600. Using the AFN formula and assuming constant ratios, Mom's accountant forecasted AFN for 2002. If you forecasted her inventory requirements by the regression method rather than the percent of sales method, by how much would the AFN change? Assume that the profit margin remains constant at 8 percent, and excess inventories can be sold.

a. -$30 (surplus)
b. -$60 (surplus)
c. 0
d. $30
e. $60

Percent of sales method and ROE **Answer: d Diff: T**

42. You have been given the attached information on the Crum Company. Crum expects sales to grow by 50 percent in 2003 and operating costs should increase in proportion to sales. Fixed assets were being operated at 40 percent of capacity in 2002, but all other assets were used to full capacity. Underutilized fixed assets cannot be sold. Current assets and spontaneous liabilities should increase in proportion to sales during 2003. The company plans to finance any external funds needed as 35 percent notes payable and 65 percent common stock. What is Crum's projected ROE using the percent of sales method? (Ignore any financing feedback effects.)

a. 16.98%
b. 23.73%
c. 25.68%
d. 19.99%
e. 23.24%

The blank worksheet for The Crum Company for the percent of sales method follows:

	2002	2003 Forecast	2003 After AFN
Sales	$1,000.00		
Operating costs	800.00	_____	_____
EBIT	$ 200.00		
Interest	16.00	_____	_____
EBT	$ 184.00		
Taxes (40%)	73.60	_____	_____
Net income	$ 110.40		
Dividends (60%)	$ 66.24	_____	_____
Add'n to R.E.	$ 44.16	_____	_____
Current assets	$ 700.00		
Net fixed assets	300.00	_____	_____
Total assets	$1,000.00	_____	_____
A/P and accrued liabilities	$ 150.00		
N/P	200.00		
Common stock	150.00		
Retained earnings	500.00	_____	_____
Total liab & equity	$1,000.00	_____	_____
AFN		_____	
Profit margin	11.04%		
ROE	16.98		
Debt/Assets	35.00		
Current ratio	2.00×		
Payout ratio	60.00%		
AFN Financing:	Weights	Dollars	
N/P	0.3500		
Common stock	0.6500	_____	
	1.0000		

Multiple Part:

(The following information applies to the next three problems.)

Inman Industries has $2.5 million in sales and $0.8 million in fixed assets. Currently, the company's fixed assets are operating at 75 percent of capacity.

Full capacity sales **Answer: b Diff: E N**

43. What level of sales could Inman Industries have obtained if it had been operating at full capacity?

a. $2,800,000
b. $3,333,333
c. $3,000,000
d. $3,125,575
e. $3,500,000

Target fixed assets/sales ratio **Answer: d Diff: E N**

44. What is Inman's target fixed assets/sales ratio?

a. 5.5%
b. 10.0%
c. 12.5%
d. 24.0%
e. 20.8%

Excess capacity adjustment **Answer: c Diff: M N**

45. If Inman's sales increase 50 percent, how large of an increase in fixed assets would the company need in order to meet its target fixed assets/sales ratio?

a. $ 33,250
b. $ 68,750
c. $100,000
d. $125,550
e. $150,000

(The following information applies to the next three problems.)

Ellison Industries has $3 billion in sales and $0.8 billion in fixed assets. Currently, the company's fixed assets are operating at 85 percent of capacity.

Full capacity sales **Answer: d Diff: E N**

46. What level of sales could Ellison Industries have obtained if it had been operating at full capacity?

a. $2,500,000,000
b. $2,822,535,475
c. $3,333,333,333
d. $3,529,411,765
e. $3,808,929,667

Target fixed assets/sales ratio **Answer: b Diff: E N**

47. What is Ellison's target fixed assets/sales ratio?

a. 15.33%
b. 22.67%
c. 28.94%
d. 30.00%
e. 33.33%

Fixed assets and excess capacity **Answer: c Diff: E N**

48. If Ellison's sales increase 20 percent, how large of an increase in fixed assets would the company need in order to meet its target fixed assets/sales ratio?

a. $ 7,750,000
b. $12,500,000
c. $16,000,000
d. $20,000,000
e. $22,250,000

(The following information applies to the next two problems.)

Gourmet Kitchens Incorporated recently reported the following 2002 income statement (in millions of dollars):

Sales	$1,225
Operating costs	875
EBIT	$ 350
Interest	70
EBT	$ 280
Taxes (40%)	112
Net income	$ 168
Dividends (33.333%)	$ 56
Addition to retained earnings	$ 112

The company is forecasting a 30 percent increase in 2003 sales, and it expects that its year-end operating costs will equal 75 percent of sales. Gourmet's tax rate, interest expense, and dividend payout ratio are all expected to remain constant.

Pro forma net income **Answer: e Diff: M N**

49. What is Gourmet's projected 2003 net income (in millions of dollars)?

a. $125.22
b. $135.75
c. $143.44
d. $175.66
e. $196.88

Pro forma dividend growth rate **Answer: c Diff: E N**

50. What is the expected growth rate in Gourmet's dividends?

a. 5.00%
b. 12.50%
c. 17.20%
d. 20.33%
e. 22.75%

Web Appendix 17B

Multiple Choice: Conceptual

Easy:

Percent of sales method **Answer: d Diff: E**

17B-1. The percent of sales method produces accurate results unless which of the following conditions is (are) present?

a. Fixed assets are "lumpy."
b. Strong economies of scale are present.
c. Excess capacity exists because of a temporary recession.
d. Statements a, b, and c all make the percent of sales method inaccurate.
e. Statements a and c make the percent of sales method inaccurate, but, as the text explains, the assumption of increasing economies of scale is built into the percent of sales method.

Forecasting when ratios subject to change **Answer: e Diff: E N**

17B-2. Which of the following conditions does not make the assumption that each spontaneous asset and liability item increases at the same rate as sales?

a. Economies of scale.
b. Lumpy assets.
c. Excess assets due to forecasting errors.
d. Statements a and b are correct.
e. All of the statements above are correct.

Medium:

Changing balance sheet ratios **Answer: d Diff: M**

17B-3. Which of the following statements is most correct?

a. If the capital intensity ratio is high, this permits sales to grow more rapidly without much outside capital.
b. The lower the profit margin, the lower the additional funds needed because less assets are needed to support existing sales.
c. When positive economies of scale are present, linear balance sheet relationships no longer hold. As sales increase, a proportionately greater stock of assets is required to support the higher sales level.
d. Technological considerations often require firms to add fixed assets in large, discrete units. Such assets are called lumpy assets and they affect the firm's financial requirements through the fixed assets/sales ratio at different sales levels.
e. The percent of sales method accounts for changing balance sheet ratios and thus, cyclical changes in the actual sales to assets ratio do not have an impact on financing requirements.

CHAPTER 17
ANSWERS AND SOLUTIONS

1. Percent of sales method **Answer: e Diff: E**

2. Additional funds needed **Answer: b Diff: E**

Only answer b will increase AFN; the other statements will decrease AFN.

3. Additional funds needed **Answer: e Diff: E**

AFN = $(A^*/S)\Delta S - (L^*/S)\Delta S - (M)(S_1)(RR)$. Statement a is correct. If the company expects a sharp increase in sales, then current assets must increase. However, if in addition to that, fixed assets are at full capacity, the company's fixed assets will also have to increase. (It may need to build a new factory.) Therefore, the first term in the AFN formula will increase, so AFN will increase. Statement b is false. If the firm's dividend payout ratio decreases, (RR) will increase. This will increase the value of the third term in the AFN formula. Since the third term gets larger, AFN will decrease. Statement c is correct. If the company reduces its trade credit, it is reducing its accounts payable. If accounts payable decreases (although, usually we assume it is a spontaneous liability), spontaneous liabilities, L*, will be smaller. If L* is smaller, the entire second term is smaller; therefore, AFN will increase.

4. Additional funds needed **Answer: c Diff: E**

Remember the AFN formula is stated as: AFN = $(A^*/S)\Delta S - (L^*/S)\Delta S - (M)(S_1)(RR)$. If the firm's dividend payout decreases, RR will increase and AFN will decrease, not increase. Therefore, statement a is false. If M increases, AFN will decrease. Therefore, statement b is false. If the company reduces its reliance on accounts payable, then spontaneous liabilities will decrease. Thus, AFN will increase. Therefore, statement c is correct. If the company is operating well below full capacity, then it will not need new fixed assets. Therefore, spontaneous assets will be smaller and AFN will decrease. Therefore, statement d is false.

5. Additional funds needed **Answer: a Diff: E**

AFN = $\frac{A^*}{S_0}(\Delta S) - \frac{L^*}{S_0}(\Delta S) - MS_1(RR)$. If RR decreases, this will make the entire third term of the formula smaller, which will make AFN larger. RR is (1 - d), so an increase in d makes RR smaller. Therefore, an increase in d increases AFN. So, statement a is true. If the company has excess capacity, then it doesn't need to increase fixed assets. If it only has to increase current assets and not fixed assets, AFN will be smaller. (That is, A* is smaller.) Therefore, statement b is false. Statement c is false. If accounts payable increase faster than sales, then L^*/S_0 will increase by more than the sales increase. As this term increases, AFN will decrease.

6. Additional funds needed **Answer: b Diff: E N**

The correct answer is statement b. Statement a is the definition of spontaneously generated funds. Statement c is the definition of the capital intensity ratio. Statement d is the definition of free cash flow. Statement e is the definition of the constant ratio method of forecasting.

7. Additional funds needed **Answer: e Diff: E N**

The correct answer is statement e. Statements a, b, and c will all reduce the firm's need for additional external financing.

8. Forecasting concepts **Answer: b Diff: E**

9. Strategic plans and corporate scope **Answer: e Diff: E N**

The correct answer is statement e. Statements a, b, and c are all verbatim statements from the text.

10. Operating plans and corporate strategies **Answer: c Diff: E N**

The correct answer is statement c. Statement a is incorrect; corporate strategies are broad approaches rather than detailed plans. Statement b is incorrect; the firm's corporate purpose does not provide managers with operational objectives. Statement c is correct. Therefore, the correct choice is statement c.

11. Spontaneously generated funds **Answer: d Diff: E N**

The correct answer is statement d. Statement a is the definition of the capital intensity ratio. Statement b is the definition of the constant ratio method of forecasting. Statement c is the definition of additional funds needed. Statement e is the definition of free cash flow.

12. Capital intensity ratio **Answer: d Diff: E N**

The correct answer is statement d. The capital intensity ratio is Total assets/Sales, which is the inverse of the total assets turnover ratio. So, statement a is correct. Statement b is the definition of Liabilities/Sales, so this is not correct. Statement c is the correct definition of the capital intensity ratio. Therefore, the correct choice is statement d.

13. Forecasting financial requirements **Answer: c Diff: M**

14. Additional funds needed **Answer: c Diff: M**

15. Additional funds needed **Answer: c Diff: M**

16. Additional funds needed **Answer: d Diff: M**

17. Percent of sales method **Answer: d Diff: M**

18. AFN formula method **Answer: a Diff: M**

19. Financial plan **Answer: e Diff: M N**

The correct answer is statement e. Statements a, b, c, and d are all steps taken in the financial planning process. Two additional steps not mentioned are: Forecast funds availability over the next five years and develop procedures for adjusting the basic plan if the economic forecasts upon which the plan was based do not materialize.

20. Additional funds needed **Answer: d Diff: E**

Balance sheet solution:			
Cash	$ 1,600	Accounts payable	$ 700
Accounts receivable	900	Accrued wages	300
Inventories	1,900	Notes payable	2,000
Net fixed assets	34,000	Mortgage	26,500
		Common stock	3,200
		Retained earnings	5,000
		Total liabilities	
Total assets	$38,400	and equity	$37,700

AFN = $38,400 - $37,700 = $700.

Formula solution:

$S_0 = \Delta S$; $MS_1 = \$1{,}000$.

$$AFN = \frac{A^*}{S_0}(\Delta S) - \frac{L^*}{S_0}(\Delta S) - MS_1(RR) = \$2{,}200 - \$500 - \$1{,}000(1) = \$700.$$

21. Forecasting addition to retained earnings **Answer: b Diff: E**

	2002	Forecast Basis	2003
Sales	$7,000	× 1.1	$7,700
Operating costs	3,000	× 0.4286 (S_1)	3,300
EBIT	$4,000		$4,400
Interest	200		200
Earnings before taxes (EBT)	$3,800		$4,200
Taxes (40%)	1,520		1,680
Net income available to common shareholders	$2,280		$2,520
Dividends to common (50%)			$1,260
Addition to retained earnings (50%)			$1,260

22. Linear regression and ratios **Answer: e Diff: E N**

Sales = \$150,000; g_{Sales} = 30%; Inv. = \$7.50 + 0.1875(Sales).

S_1 = \$150,000 × 1.30 = \$195,000.

Inv. = \$7.50 + 0.1875(\$195)
= 44.0625.

Since this relationship is expressed in thousands of dollars, Inv. = \$44.0625 × \$1,000 = \$44,062.50.

Sales/Inv. = \$195,000/\$44,062.50 = 4.4255 ≈ 4.43.

23. Additional funds needed **Answer: c Diff: M**

$$\text{AFN} = \begin{matrix}\text{Required asset} \\ \text{increase}\end{matrix} - \begin{matrix}\text{Spontaneous} \\ \text{liability increase}\end{matrix} - \begin{matrix}\text{Increase in} \\ \text{retained earnings}\end{matrix}$$

= (\$70/\$100)(\$20) - \$2 - (0.05)(\$120)(0.6)
= \$14 - \$2 - \$3.6
= \$8.4 million, or \$8,400,000.

24. AFN with excess capacity **Answer: b Diff: M**

S_0 = \$400; S_1 = S_0 × 1.05 = \$420; $S_{Capacity}$ = \$400/0.80 = \$500. No new fixed assets are needed to support the sales increase.

Balance sheet solution:

Cash	\$ 21	Accounts payable	\$ 21.0
Accounts receivable	21	Notes payable	40.0
Inventories	21	Long-term debt	80.0
Fixed assets	180	Common stock	80.0
		Retained earnings	28.4
		Total liabilities	
Total assets	\$243	and equity	\$249.4

Addition to retained earnings = \$420 × 0.05 × 0.4 = \$8.40.
AFN = \$243.0 - \$249.4 = -\$6.4. Surplus of 6.4.

Formula solution:

$$\text{AFN} = \frac{\$60}{\$400}(\$20) - \frac{\$20}{\$400}(\$20) - \$420(0.05)(0.40)$$

= \$3.0 - \$1.0 - \$8.4 = -\$6.4.

Fixed assets are not included in the formula equation since full capacity sales (\$500) have not been reached.

25. AFN with excess capacity **Answer: d Diff: M**

$S_0 = \$100$; $S_1 = \$150$; $S_{Capacity} = \frac{\$100}{0.85} = \$117.65$.

$$\text{Target fixed assets to sales ratio} = \frac{\text{Fixed assets}}{\text{Sales}_{Capacity}} = \frac{\$75}{\$117.65} = 0.6375.$$

$S_1 \times$ Target ratio = New fixed assets level. $\$150 \times 0.6375 = \$95.62$.

Balance sheet solution:

Cash	$ 15.00	Accounts payable	$ 22.50
Accounts receivable	37.50	Notes payable	20.00
Inventories	60.00	Accrued wages and taxes	22.50
Net fixed assets	95.62	Long-term debt	30.00
		Common equity	73.00
		Total liabilities	
Total assets	$208.12	and equity	$168.00

Addition to retained earnings = $\$150 \times 0.05 \times 0.40 = \$3.00$.
AFN = $\$208.12 - \$168.00 = \$40.12 \approx \$40$.

26. AFN with excess capacity **Answer: d Diff: M**

$S_0 = \$200$; $S_1 = \$210$; $S_2 = \$220$; $S_3 = \$230$; $S_4 = \$240$.
$S_{Capacity} = \frac{\$200}{0.80} = \$250$. Fixed assets will not need to be increased since $S_4 < S_{Capacity}$; $\$240 < \$250$.

Balance sheet solution:

Cash	$ 12	Accounts payable	$ 12
Accounts receivable	12	Notes payable	20
Inventories	12	Long-term debt	40
Fixed assets	90	Common stock	40
		Retained earnings	28
		Total liabilities	
Total assets	$126	and equity	$140

Addition to retained earnings: $(S_1 + S_2 + S_3 + S_4) \times 0.05 \times 0.40 = \$18.00$.
AFN = $\$126 - \$140 = -\$14$ Surplus.

Formula solution:

$$AFN = \frac{\$30}{\$200}(\$40) - \frac{\$10}{\$200}(\$40) - (0.05)(\$900)(0.4) = -\$14 \text{ (Surplus)}.$$

The $900 is the sum of sales over the 4-year period. Fixed assets are not included in the formula equation since full capacity sales ($250) are never reached.

27. AFN with excess capacity **Answer: a Diff: M**

$S_0 = \$2{,}000$; $S_1 = \$2{,}750$; $S_{Capacity} = \$2{,}000/0.80 = \$2{,}500$.

$$\text{Target fixed assets to sales ratio} = \frac{\text{Fixed assets}}{\text{Sales}_{Capacity}} = \frac{\$100}{\$2{,}500} = 0.04.$$

New fixed assets level = 0.04 × \$2,750 = \$110.

Balance sheet solution:

Cash	\$ 13.75	Accounts payable	\$ 20.625
Accounts receivable	55.00	Accrued liabilities	6.875
Inventories	68.75	Notes payable	20.000
Net fixed assets	110.00	Long-term debt	20.000
		Common stock	20.000
		Retained earnings	153.000
		Total liabilities	
Total assets	\$247.50	and equity	\$240.500

Addition to retained earnings = \$2,750 × 0.03 × 0.40 = \$33.00.
AFN = \$247.50 - \$240.50 = \$7.00.

28. AFN formula and forecasted debt **Answer: e Diff: M**

AFN = $(A^*/S)\Delta S - (L^*/S)\Delta S - (M)(S_1)(RR)$. A* = \$1,000,000 because the firm is at full capacity. (The firm will need to increase fixed assets as well as current assets.)

Sales = \$5,000,000.

ΔS = \$5,000,000 × 20%
= \$1,000,000.

L* = \$100,000 + \$100,000 = \$200,000. Only the accounts payable and accrued liabilities are spontaneous liabilities. (Notes payable are not.)

d = 60%; so RR = (1 - 0.6) = 0.4 or 40%.

M = NI/Sales
= \$100,000/\$5,000,000
= 2%.

S_1 = \$5,000,000 × 1.2
= \$6,000,000.

AFN = $(A^*/S)\Delta S - (L^*/S)\Delta S - (M)(S_1)$ (RR)
= (\$1,000,000/\$5,000,000)(\$1,000,000) - (\$200,000/\$5,000,000) (\$1,000,000) - (0.02)(\$6,000,000) (0.4)
= \$200,000 - \$40,000 - \$48,000
= \$112,000.

29. Expected growth rate **Answer: d Diff: M**

Let $S_1 = S_0(1 + g)$. Let $\Delta S/S_0 = g$ or growth rate. $RR = (1 - d) = (1 - 0.3) = 0.7$.
Find g = ?

$$\$2 = (A^*/S_0)\Delta S - (L^*/S_0)\Delta S - MS_1(RR)$$
$$\$2 = A^*(g) - L^*(g) - MS_0(1 + g)(RR)$$
$$\$2 = \$7g - \$1.5g - 0.04(\$10)(1 + g)(0.70)$$
$$\$2 = \$5.5g - \$0.28g - \$0.28$$
$$\$5.22g = \$2.28$$
$$g = 0.437 \approx 44\%.$$

30. Expected growth rate **Answer: e Diff: M**

$AFN = (A^*/S_0)\Delta S - (L^*/S_0)\Delta S - MS_1(RR)$.
$\Delta S/S_0 = g$; $S_1 = S_0(1 + g)$; $RR = (1 - d) = (1 - 0.4) = 0.6$.
Find g = ?

$$AFN = A^*(g) - L^*(g) - M(S_0)(1 + g)(RR)$$
$$\$2 = \$8g - \$1g - 0.03(\$10)(1 + g)(0.6)$$
$$\$2 = \$8g - \$1g - \$0.18(1 + g)$$
$$\$2 = \$7g - \$0.18 - \$0.18g$$
$$\$2.18 = \$6.82g$$
$$\$2.18/\$6.82 = g$$
$$g = 31.96\%.$$

31. Level of assets **Answer: d Diff: M**

$$AFN = \frac{A^*}{S_0}(\Delta S) - \frac{L^*}{S_0}(\Delta S) - MS_1(RR)$$
$$-\$100 = \frac{A^*}{\$3,000}(\$600) - \frac{\$800}{\$3,000}(\$600) - \frac{\$250}{\$3,000}(\$3,600)(0.6)$$
$$-\$100 = 0.20A^* - \$160 - \$180$$
$$0.20A^* = \$240$$
$$A^* = \$1,200.$$

32. Forecasting and ratio changes **Answer: a Diff: M**

	Actual	Frcst Basis	1st Pass		Actual	Frcst Basis	1st Pass
Cash	$ 20	0.025	$ 28	Acc pay	$ 200	0.25	$ 280
Accts rec	240	0.300	336	Notes pay	130	+82	212
Inventories	320	0.400	448	Accrued liab	30	0.0375	42
Total C.A.	$ 580		$ 812	Tot. curr liab	$ 360		$ 534
Net plant	420	+80	500	LT bonds	260		260
				Common stk	270	+80	350
				RE	110	+58	168
Total assets	$1,000		$1,312	Total L&E	$1,000		$1,312

The old current ratio = $580/$360 = 1.61×.

Calculate new current assets, new LT debt, and equity:
New current assets = $28 + $336 + $448 = $812.
New LT debt and equity = $260 + $350 + $168 = $778.

Calculate new current liabilities and new current ratio:
New current liabilities = New total assets - LT debt and equity
= $1,312 - $778 = $534.

The new current ratio = $812/$534 = 1.52×.

33. Forecasting net income **Answer: b Diff: M N**

	2002	Forecast Basis	2003
Sales	$3,500	× 1.40	$4,900
Operating costs	2,500	× 0.60 (S_1)	2,940
EBIT	$1,000		$1,960
Interest	200		200
EBT	$ 800		$1,760
Taxes (40%)	320		704
Net income	$ 480		$1,056
Dividends (40%)	$ 192		$422.40
Addition to retained earnings	$ 288		$633.60

34. Linear regression and receivables **Answer: c Diff: M N**

Sales = $225,000,000; g_{Sales} = 8%; Rec. = $8.5 + 0.095(Sales).

S_1 = $225,000,000 × 1.08 = $243,000,000.

Rec. = $8.5 + 0.095($243)
= $31.585 million.

DSO = Rec./(Sales/365)
= $31,585,000/($243,000,000/365)
= 47.44 days.

35. Linear regression and inventories **Answer: b Diff: M N**

Sales = \$150,000,000; g_{Sales} = 10%; Inv. = \$15 + 0.12(Sales).

S_1 = \$150,000,000 × 1.10 = \$165,000,000.

Inv. = \$15 + 0.12(\$165)
= \$34.8 million.

Sales/Inv. = \$165,000,000/\$34,800,000
= 4.74.

36. Forecasting inventory with regression analysis **Answer: c Diff: M**

Step 1: Determine the regression equation using the calculator:
Enter the input data in the calculator:
200 INPUT 35 Σ+
250 INPUT 38 Σ+
400 INPUT 55 Σ+
500 INPUT 70 Σ+
0 ■ ŷ,m displays the y-intercept, \$9.890110.
■ Swap displays the slope of the line, 0.117363.

Inventories = \$9.89011 + 0.117363(Sales).

Step 2: Predict inventories:
650 ■ ŷ,m displays the predicted level of inventories, \$86.175824 million, or \$86,175,824.

37. Forecasting inventory with regression analysis **Answer: b Diff: M**

Step 1: Determine the regression equation using the calculator:
Enter the input data in the calculator:
1,700,000 INPUT 150,000 Σ+
1,900,000 INPUT 165,000 Σ+
2,400,000 INPUT 185,000 Σ+
0 ■ ŷ,m displays the y-intercept, \$70,512.82.
■ Swap displays the slope of the line, 0.04808.

Inventories = \$70,512.82 + 0.04808(Sales).

Step 2: Predict inventories:
3,000,000 ■ ŷ,m displays the predicted level of inventories, \$214,743.59 ≈ \$214,744.

38. Maximum growth rate **Answer: b Diff: T**

Let $\Delta S = S_0(g)$, $S_1 = S_0(1 + g)$, RR = (1 - d) = (1 - 0.5) = 0.5, and AFN = 0. Find g = ?

$$AFN = \frac{A^*}{S_0}(S_0)(g) - \frac{L^*}{S_0}(S_0)(g) - MS_0(1 + g)(RR) = 0.$$

$$0 = 1.2(\$100{,}000g) - \frac{\$10{,}000}{\$100{,}000}(\$100{,}000g) - (0.10)(\$100{,}000)(1 + g)(0.5)$$

$$0 = \$120{,}000g - \$10{,}000g - \$5{,}000g - \$5{,}000$$

$$\$5{,}000 = \$105{,}000g$$

$$g = 4.76\% \approx 4.8\%.$$

39. AFN formula method **Answer: b Diff: T**

Facts given: M = 5%; RR = (1 - 0.4) = 0.6; S_0 = \$6,000 million; A* = \$1,500 million (Firm at full capacity); S_1 = 1.30 × \$6,000 million = \$7,800 million; ΔS = 0.3 × \$6,000 million = \$1,800 million; L* = \$200 million + \$200 million = \$400 million. (From balance sheet.)

Step 1: Use the AFN formula to determine the additional funds needed:

$$AFN = \frac{A^*}{S_0}(\Delta S) - \frac{L^*}{S_0}(\Delta S) - MS_1(RR)$$

$$= \frac{\$1{,}500}{\$6{,}000}(\$1{,}800) - \frac{\$400}{\$6{,}000}(\$1{,}800) - [(0.05)(\$7{,}800)(0.6)]$$

$$= \$450 - \$120 - \$234$$

$$= \$96 \text{ million.}$$

The company needs \$96 million in additional funds, which it will raise with short-term bank loans.

Step 2: Determine the new projected level of current assets:
CA = \$600/\$6,000 × \$7,800 = \$780 million.

Step 3: Determine the new projected level of current liabilities:
CL = A/P + Accrued liabilities + ST Loans
= (\$200/\$6,000 × \$7,800) + (\$200/\$6,000 × \$7,800) + \$96
= \$520 + \$96
= \$616 million.

Step 4: Determine the firm's new current ratio:
CR = CA/CL = \$780/\$616
= 1.27.

40. AFN and current ratio **Answer: e Diff: T**

RR = (1 - d) = (1 - 0.6) = 0.4.

Step 1: $AFN = A^*/S_0(\Delta S) - L^*/S_0(\Delta S) - M(S_1)(RR)$

$$= \frac{\$10,000}{\$10,000}(\$5,000) - \frac{\$1,500}{\$10,000}(\$5,000) - 0.11(\$15,000)(0.4)$$

$$= 1(\$5,000) - 0.15(\$5,000) - 0.11(\$15,000)(0.4)$$

$$= \$5,000 - \$750 - \$660 = \$3,590.$$

Step 2: Current assets will increase to \$7,000/\$10,000 × \$15,000 = \$10,500.
Current liabilities will increase to:

$$\text{A/P + Accrued liabilities} = \frac{\$1,500}{\$10,000} \times \$15,000 = \$2,250$$

$$\text{S-T Debt} = \$2,000 + \$3,590 = \underline{\ 5,590}$$

$$\text{Total C.L.} = \underline{\underline{\$7,840}}$$

New current ratio = \$10,500/\$7,840 = 1.34×.

41. Regression analysis vs. percent of sales **Answer: b Diff: T**

RR = (1 - d) = (1 - 0.5) = 0.5.

Formula method:

$AFN = (A^*/S_0)\Delta S - (L^*/S_0)\Delta S - MS_1(RR)$

$= \$400/\$400(\$200) - \$80/\$400(\$200) - 0.08(\$600)(0.5)$

$= \$200 - \$40 - \$24$

$= \$136.$

Of that amount, inventories are projected to increase by \$100/\$400(\$200) = \$50. 2003 inventories = \$100 + \$50 = \$150.

Regression analysis:
Inventories = Y variable. (dependent)
Sales = X variable. (independent)

Input values in calculator to obtain the following regression equation:
Inventories = \$30 + 0.10(Sales).

Project 2003 inventories by substituting 2003 sales into the regression equation as follows:
Inventories = \$30 + 0.10(\$600) = \$90.

Thus, inventories would decrease by \$10 from the 2002 level: \$100 - \$90. AFN would be lowered by \$150 - \$90 = \$60 (surplus). ΔAFN = -\$60.

42. Percent of sales method and ROE **Answer: d Diff: T**

Growth rate: 50.00%

	2002	2003 Forecast	2003 After AFN
Sales	$1,000.00	$1,500.00	$1,500.00
Operating costs	800.00	1,200.00	1,200.00
EBIT	$ 200.00	$ 300.00	$ 300.00
Interest	16.00	16.00	16.00
EBT	$ 184.00	$ 284.00	$ 284.00
Taxes (40%)	73.60	113.60	113.60
Net income	$ 110.40	$ 170.40	$ 170.40
Dividends (60%)	$ 66.24	$ 102.24	$ 102.24
Add'n to R.E.	$ 44.16	$ 68.16	$ 68.16
Current assets	$ 700.00	$1,050.00	$1,050.00
Net fixed assets*	300.00	300.00	300.00
Total assets	$1,000.00	$1,350.00	$1,350.00
A/P and accrued liabilities	$ 150.00	$ 225.00	$ 225.00
N/P	200.00	200.00	272.39
Common stock	150.00	150.00	284.45
Retained earnings	500.00	568.16	568.16
Total liab & equity	$1,000.00	$1,143.16	$1,350.00
AFN		$ 206.84	
Profit margin	11.04%	11.36%	11.36%
ROE	16.98	23.73	19.99
Debt/Assets	35.00	31.48	36.84
Current ratio	2.00×	2.47×	2.11×
Payout ratio	60.00%	60.00%	60.00%

AFN Financing:	Weights	Dollars
N/P	0.3500	72.39
Common stock	0.6500	134.45
	1.0000	206.84

ROE = NI/equity = $170.40/$852.61 = 0.1999 = 19.99%.

$$*\frac{\text{2002 Sales}}{\text{Current FA Capacity}} = \text{Full Capacity Sales.}$$

$$\frac{\$1,000}{0.4} = \$2,500;$$ thus FA will remain at $300.

43. Full capacity sales **Answer: b Diff: E N**

Sales = $2,500,000; FA = $800,000; FA are operated at 75% capacity.

Full capacity sales = $2,500,000/0.75 = $3,333,333.

44. Target fixed assets/sales ratio **Answer: d Diff: E N**

Target FA/S ratio = $800,000/$3,333,333 = 24.0%.

45. Excess capacity adjustment **Answer: c Diff: M N**

Sales increase 50%; ΔFA = ?

S_1 = \$2,500,000 × 1.5 = \$3,750,000.

No increase in FA up to \$3,333,333.

ΔFA = 0.24 × (\$3,750,000 - \$3,333,333)
= 0.24 × (\$416,667)
= \$100,000.

46. Full capacity sales **Answer: d Diff: E N**

Sales = \$3,000,000,000; FA = \$800,000,000; FA are operated at 85% capacity.

Full capacity sales = Actual sales/(% of capacity at which FA are operated)
= \$3,000,000,000/0.85
= \$3,529,411,765.

47. Target fixed assets/sales ratio **Answer: b Diff: E N**

Target FA/Sales ratio = \$800,000,000/\$3,529,411,765
= 0.226667 = 22.6667% ≈ 22.67%.

48. Fixed assets and excess capacity **Answer: c Diff: E N**

Sales increase 20%; ΔFA = ?
S_1 = \$3,000,000,000 × 1.20 = \$3,600,000,000.
No increase in FA up to \$3,529,411,765.

ΔFA = 0.226667 × (\$3,600,000,000 − \$3,529,411,765)
= 0.226667 × \$70,588,235
= \$16,000,023 ≈ \$16,000,000.

49. Pro forma net income **Answer: e Diff: M N**

	2002	Forecast Basis	2003
Sales	\$1,225	× 1.30	\$1,592.50
Operating costs	875	× 0.75 (S_1)	1,194.38
EBIT	\$ 350		\$ 398.13
Interest	70		70.00
EBT	\$ 280		\$ 328.13
Taxes (40%)	112		131.25
Net income	\$ 168		\$ 196.88
Dividends (33.333%)	\$ 56		\$ 65.63
Addition to retained earnings	\$ 112		\$ 131.25

50. Pro forma dividend growth rate **Answer: c Diff: E N**

From the first question we know that the new dividend amount is \$65.63.
ΔDividends = (\$65.63 − \$56.00)/\$56.00 = 0.1720 = 17.20%.

WEB APPENDIX 17B SOLUTIONS

17B-1. Percent of sales method **Answer: d Diff: E**

17B-2. Forecasting when ratios subject to change **Answer: e Diff: E N**

The correct answer is statement e. Statements a, b, and c are all conditions under which the assumption that spontaneous asset and liability items increase at the same rate as sales is violated.

17B-3. Changing balance sheet ratios **Answer: d Diff: M**