1. 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%; net income this year = $250; dividend payout ratio = 40%; 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

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

$$-\$100 = \frac{A^*}{\$3,000}(\$600) - \frac{\$800}{\$3,000}(\$600) - \frac{\$250}{\$3,000}(\$3,600)(0.6)$$

$$-\$100 = 0.20A^* - \$160 - \$180$$

$$0.20A^* = \$240$$

$$A^* = \$1,200.$$

2. 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 liabilities	
Total assets	$36,200	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

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:

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

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

3. 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% of capacity, but its current assets were at optimal levels. Sales are expected to grow by 5% next year, the profit margin is 5%, and the dividend payout ratio is 60%. 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

$S_0 = \$400$; $S_1 = S_0 \times 1.05 = \$420$; $S_{Capacity} = \$400/0.80 = \$500$. 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.

4. 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%

   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 = ?

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

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

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

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

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

5. Last year O'Riley Inc had $650,000 of sales, and it had $250,000 of fixed assets that were used at only 60% of capacity. What is the maximum sales growth rate O'Riley could enjoy before it would have to increase its fixed assets?

   a. 56.7%
   b. 60.0%
   c. 63.3%
   d. 65.0%
   e. 66.7%

   Sales $650,000
   Fixed assets $250,000
   % of capacity utilized 60%
   Additional sales without adding FA = old sales/% capacity - old sales =$433.333
   Percent growth in sales = additional sales/old sales = 66.7%

6. Last year Rowland Tech had $500,000 of sales and $200,000 of fixed assets, so its FA/Sales ratio was 40%. However, its fixed assets were used at only 60% of capacity. Now the company is planning its financial forecast for the coming year. At what level should Rowland set its target fixed assets/sales ratio?

   a. 22.00%
   b. 24.00%
   c. 26.00%
   d. 28.00%
   e. 30.00%

Sales	$500,000
Fixed assets	$200,000
Operating % of capacity	60%

Full capacity sales = Actual sales /% capacity utilization = $833.333
Target fixed assets/sales ratio = FA/Capacity sales = 24%

7. Cross Town Express has sales of $132,000, net income of $12,600, total assets of $98,000, and total equity of $45,000. The firm paid $7,560 in dividends and maintains a constant dividend payout ratio. Currently, the firm is operating at full capacity. All costs and assets vary directly with sales. The firm does not want to obtain any additional external equity. At the sustainable rate of growth, how much new total debt must the firm acquire?

A. $0
B. $4,311
C. $5,989
D. $6,207
E. $6,685

Dividend payout ratio = $7,560/$12,600 = 0.60
Retention ratio = 1 - 0.60 = 0.40
Sustainable growth = [($12,600/$45,000) × 0.40]/{1 - [($12,600/$45,000) × 0.40]} = 0.126126
Projected total assets = $98,000 × 1.126126 = $110,360.35
Current debt = $98,000 - $45,000 = $53,000
Projected equity = $45,000 + ($12,600 × 1.126126 × 0.40) = $50,675.68
Net debt required = $110,360.35 - $53,000 - $50,675.68 = $6,685

8. Monika's Dinor is operating at 94 percent of its fixed asset capacity and has current sales of $611,000. How much can the firm grow before any new fixed assets are needed?
A. 4.99 percent
B. 5.78 percent
C. 6.02 percent
D. 6.38 percent
E. 6.79 percent

Full-capacity sales = $611,000/0.94 = $650,000
Maximum growth without additional assets = ($650,000/$611,000) - 1 = 6.38 percent

9. Jasper Metals is considering installing a new molding machine which is expected to produce operating cash flows of $73,000 a year for 7 years. At the beginning of the project, inventory will decrease by $16,000, accounts receivables will increase by $21,000, and accounts payable will increase by $15,000. All net working capital will be recovered at the end of the project. The initial cost of the molding machine is $249,000. The equipment will be depreciated straight-line to a zero book value over the life of the project. The equipment will be salvaged at the end of the project creating a $48,000 after-tax cash flow. At the end of the project, net working capital will return to its normal level. What is the net present value of this project given a required return of 14.5 percent?
A. $77,211.20
B. $79,418.80
C. $82,336.01
D. $84,049.74
E. $87,925.54

CF_0 = -$249,000 + $16,000 - $21,000 + $15,000 = -$239,000
$C0_7$ = $73,000 + $48,000 - $16,000 + $21,000 - $15,000 = $111,000

$$NPV = -\$239,000 + \$73,000 \times \left[\frac{1 - \frac{1}{(1+0.145)^6}}{0.145} \right] + \frac{\$111,000}{(1+0.145)^7} = \$84,049.74$$

10. A project will produce an operating cash flow of $14,600 a year for 8 years. The initial fixed asset investment in the project will be $48,900. The net after-tax salvage value is estimated at $11,000 and will be received during the last year of the project's life. What is the net present value of the project if the required rate of return is 12 percent?
A. $23,627.54
B. $28,070.26
C. $34,627.54
D. $39,070.26
E. $41,040.83

$$NPV = -\$48,900 + \$14,600 \times \left[\frac{1 - \frac{1}{(1+0.12)^8}}{0.12} \right] + \frac{\$11,000}{(1+0.12)^8} = \$28,070.26$$

11. Gateway Communications is considering a project with an initial fixed asset cost of $2.46 million which will be depreciated straight-line to a zero-book value over the 10-year life of the project. At the end of the project the equipment will be sold for an estimated $300,000. The project will not directly produce any sales but will reduce operating costs by $725,000 a year. The tax rate is 35 percent. The project will require $45,000 of inventory which will be recouped when the project ends. Should this project be implemented if the firm requires a 14 percent rate of return? Why or why not?
A. No; The NPV is -$172,937.49.
B. No; The NPV is -$87,820.48.
C. Yes; The NPV is $251,860.34
D. Yes; The NPV is $387,516.67
E. Yes; The NPV is $466,940.57

Initial cash flow = -$2,460,000 - $45,000 = -$2,505,000
OCF = $725,000(1 - 0.35) + ($2,460,000/10)(0.35) = $557,350
Final cash flow = $45,000 + $300,000 (1 - 0.35) = $240,000
Initial cash flow = -$2,460,000 - $45,000 = -$2,505,000
OCF = $725,000(1 - 0.35) + ($2,460,000/10)(0.35) = $557,350
Final cash flow = $45,000 + $300,000 (1 - 0.35) = $240,000

$$NPV = -\$2{,}505{,}000 + \$557{,}350 \times \left[\frac{1 - \frac{1}{(1+0.14)^{10}}}{0.14}\right] + \frac{\$240{,}000}{(1+0.14)^{10}} = \$466{,}940.57$$

12. You are working on a bid to build two city parks a year for the next three years. This project requires the purchase of $180,000 of equipment that will be depreciated using straight-line depreciation to a zero book value over the 3-year project life. The equipment can be sold at the end of the project for $34,000. You will also need $20,000 in net working capital for the duration of the project. The fixed costs will be $16,000 a year and the variable costs will be $168,000 per park. Your required rate of return is 15 percent and your tax rate is 34 percent. What is the minimal amount you should bid per park? (Round your answer to the nearest $100)
A. $72,500
B. $128,600
C. $154,300
D. $189,100
E. $217,600

$$OCF\,NPV = \$180{,}000 + \$20{,}000 - \frac{\$34{,}000(1-0.34) + \$20{,}000}{(1+0.15)^3} = \$172{,}095.01$$

$$\$172{,}095.01 = OCF \times \frac{1 - \frac{1}{(1+0.15)^3}}{.15};\ OCF = \$75{,}373.65$$

NI = $75,373.65 - ($180,000/3) = $15,373.65
EBT = $15,373.65/(1 - 0.34) = $23,293.41
Sales = $23,293.41 + ($180,000/3) + $16,000 + ($168,000 × 2) = $435,293.41
Bid per park = $435,293.41/2 = $217,646.71
When rounded to the nearest $100, the bid price is $217,600.

13.If you pay your suppliers five days sooner, then:
A. your payables turnover rate will decrease.
B. you may require additional funds from other sources to fund the cash cycle.
C. the cash cycle will decrease.
D. your operating cycle will increase.
E. the accounts receivable period will decrease

14. Which one of the following actions will tend to increase the accounts receivable period? Assume the accounts receivable period is currently 34 days.
A. tightening the standards for granting credit to customers
B. refusing to grant additional credit to any customer who pays late
C. increasing the finance charges applied to all customer balances outstanding over thirty days
D. granting discounts for cash sales
E. eliminating the discount for early payment by credit customers

15. A compensating balance:
I. is required when a firm acquires any bank financing other than a line of credit.
II. increases the cost of short-term bank financing.
III. may be required even if a firm never borrows funds.
IV. is often used as a means of paying for banking services received.
A. I and III only
B. II and IV only
C. II and III only
D. I and IV only
E. II, III, and IV only

Line of credit with compensating balance offered to you by the bank means the bank allows you to borrow certain amount but x% of the amount that you can borrow must be deposit with the bank first in a non-interest-bearing account. Whether you draw down (or borrow) the amount you can borrow or not, x% of the amount must be deposited with the bank. Hence, Option III is correct,

16. Which one of the following statements is correct?
A. Net float decreases every time a firm issues a check to pay one of its suppliers.
B. A positive net float indicates that collection float exceeds disbursements float.
C. Firms prefer a zero-net float over a positive net float.
D. Net float is equal to collection float minus disbursement float.
E. Net float is equal to a firm's available balance minus its book balance.

17. You are doing some comparison shopping. Five stores offer the product you want at basically the same price. Which one of the following stores offers the best credit terms if you plan on taking the discount?

Store	Credit terms
A	1/10, net 20
B	2/10, net 10
C	2/5, net 30
D	1/15, net 45
E	2/15, net 30

A. store A
B. store B
C. store C
D. store D
E. store E

18. On average, your firm receives 62 checks a day from customers. These checks, on average, are worth $39.90 each and clear the bank in 1.5 days. In addition, your firm disburses 38 checks a day with an average amount of $89.50. These checks clear your bank in 2 days. What is the average amount of the collection float?
    A. $2,473.80
    B. $3,401.00
    C. $3,710.70
    D. $5,101.50
    E. $6,802.00

    Collection float = 62 × $39.90 × 1.5 = $3,710.70

19. You are doing some comparison shopping. Five stores offer the product you want at basically the same price. Which one of the following stores offers the best credit terms if you plan to forego the discount?

Store	Credit terms
A	1/5, net 15
B	2/5, net 20
C	2/5, net 30
D	1/15, net 45
E	2/15, net 30

    A. store A
    B. store B
    C. store C
    D. store D
    E. store E

20. Your firm has an average collection period of 42 days. Current practice is to factor all receivables immediately at a 4 percent discount. Assume that default is extremely unlikely. What is the effective cost of borrowing?
A. 28.79 percent
B. 36.20 percent
C. 37.78 percent
D. 40.97 percent
E. 42.58 percent

Number of periods = 365/42 = 8.6905
EAR = $\{1 + [0.04/(1 - 0.04)]^{8.6905} - 1$ = 42.58 percent

21. The Delta Fish Hatchery factors its accounts receivables immediately at a 1.5 percent discount. The average collection period is 34 days. Assume that all accounts are collected in full. What is the effective annual interest rate on this arrangement?
A. 17.61 percent
B. 18.20 percent
C. 18.36 percent
D. 18.78 percent
E. 19.04 percent

Interest rate for 34 days = 0.015/(1 - 0.015) = 0.015228
Number of periods per year = 365/34 = 10.735294
Effective annual rate = $1.015228^{10.735294} - 1$ = 17.61 percent