Test Bank for Fundamental Managerial Accounting Concepts 10th Edition by Edmonds

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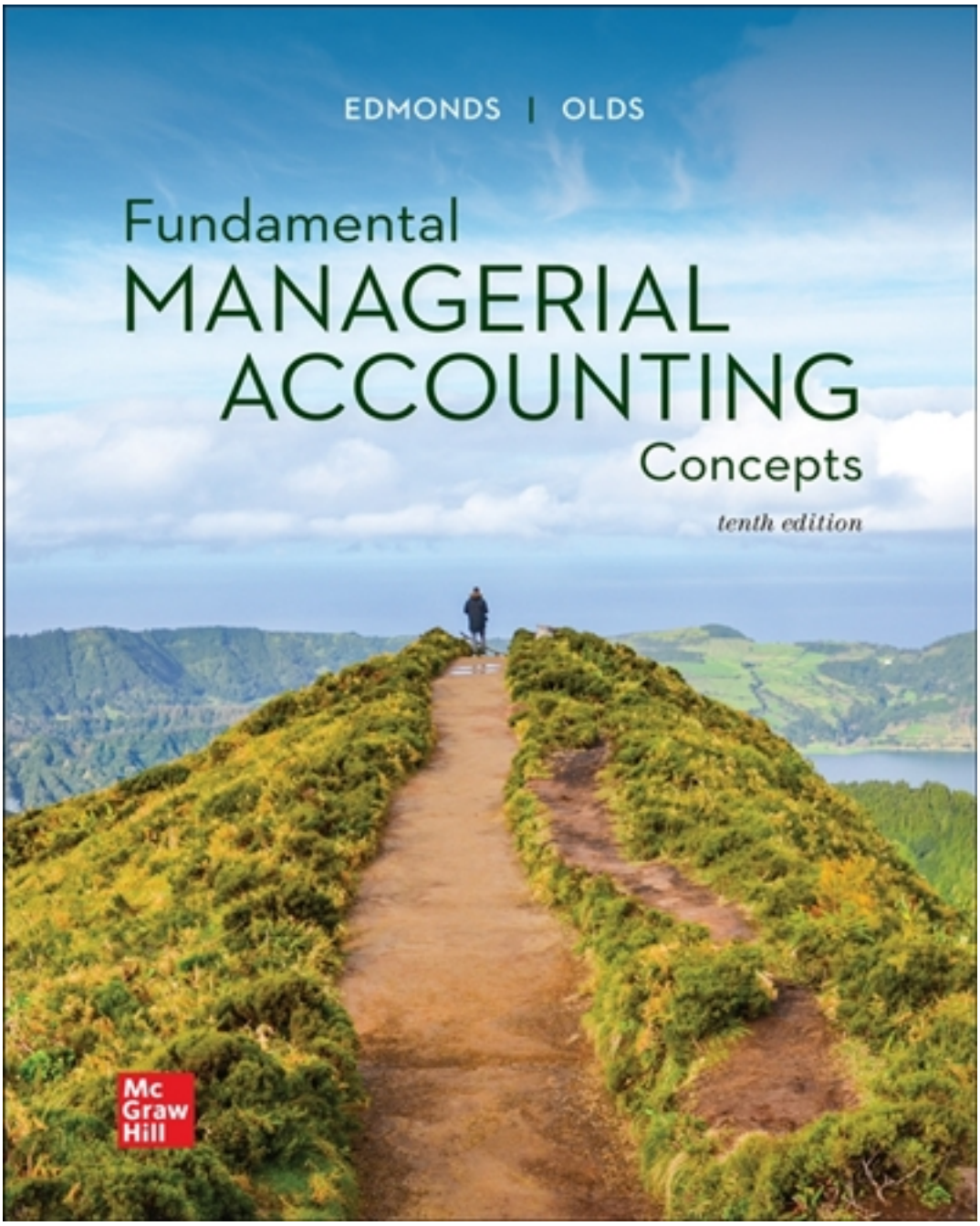

Test Bank

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CORRECT ANSWERS ARE LOCATED IN THE 2ND HALF OF THIS DOC.

TRUE/FALSE - Write 'T' if the statement is true and 'F' if the statement is false.

1) The variable cost per unit increases in direct proportion to the activity base.
   - ◎ true
   - ◎ false

2) If managers of a company do not understand the behavior of its costs, they are likely to make poor decisions about the company's operations.
   - ◎ true
   - ◎ false

3) For a mixed cost, total cost increases in direct proportion to volume.
   - ◎ true
   - ◎ false

4) The total variable cost increases in direct proportion to volume.
   - ◎ true
   - ◎ false

5) If a company had a mixed cost structure, every dollar of revenue after covering the fixed costs would be pure profit.
   - ◎ true
   - ◎ false

6) As activity increases, the fixed cost per unit increases while the variable cost per unit remains constant.
   - ◎ true
   - ◎ false

7) Risk refers to the possibility that sacrifices may exceed benefits.
   - ◎ true
   - ◎ false

8) Operating leverage enables a company to convert small changes in fixed costs into dramatic changes in profitability.
   - ◎ true
   - ◎ false

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9) If a company shifts its cost structure by decreasing fixed costs and increasing variable costs, it will lower both the level of risk and its potential for profits.
- ◎ true
- ◎ false

10) If revenues are expected to decline, management should attempt to convert its variable costs into fixed costs.
- ◎ true
- ◎ false

11) Companies with low operating leverage will experience lower profits when sales increase than will companies with higher operating leverage.
- ◎ true
- ◎ false

12) A company with a completely fixed cost structure will have operating leverage of 1.
- ◎ true
- ◎ false

13) Contribution margin represents the amount available to cover fixed expenses and then provide company profits.
- ◎ true
- ◎ false

14) No contribution margin is provided by selling one unit of a product at a price of $35 if variable production costs are $20, variable general and administrative costs are $5, and fixed costs are $10 per unit.
- ◎ true
- ◎ false

15) The contribution margin format income statement is **not** widely used for external financial reporting, but is allowed by GAAP.
- ◎ true
- ◎ false

16) The contribution margin format income statement classifies costs according to their behavior patterns.
- ◎ true
- ◎ false

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17) Contribution margin can only be determined if costs are separated into product and period costs.
- ◎ true
- ◎ false

18) If a profitable company has both fixed and variable costs, its operating leverage will always be greater than 1.
- ◎ true
- ◎ false

19) The higher the magnitude of a company's operating leverage, the more benefit the company will receive from a given percentage increase in revenue.
- ◎ true
- ◎ false

20) The higher the magnitude of a company's operating leverage, the smaller the decrease in profit for a given percentage decrease in revenue.
- ◎ true
- ◎ false

21) A low magnitude of operating leverage is best for most companies.
- ◎ true
- ◎ false

22) The BRC Company is considering the introduction of a new line of high end electronics. Because there is considerable uncertainty with regard to the demand for the products, the company would probably be served better by a variable cost structure.
- ◎ true
- ◎ false

23) Descriptions of cost behavior as fixed or variable pertain to a particular range of activity.
- ◎ true
- ◎ false

24) Variable costs will become fixed outside the relevant range.
- ◎ true
- ◎ false

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25) Within the relevant range, the fixed cost per unit can be expected to decrease with increases in volume.
- ◎ true
- ◎ false

26) The activity base selected determines whether a cost behaves as a variable cost or fixed cost.
- ◎ true
- ◎ false

27) A cost that is considered variable for one activity base may be considered fixed for a different activity base.
- ◎ true
- ◎ false

28) One reason for computing the average cost for a product rather than the actual cost is that average cost is easier to compute.
- ◎ true
- ◎ false

29) One way that computing an average cost per unit facilitates management decision making is that managers are provided more timely and more relevant cost information.
- ◎ true
- ◎ false

30) Potential problems associated with cost averaging can be reduced by averaging the cost over a shorter span of time.
- ◎ true
- ◎ false

31) A cost that is part selling cost and part manufacturing cost is referred to as a mixed cost.
- ◎ true
- ◎ false

32) When selecting the high and low observations under the high-low method of analyzing mixed costs, the selection should be based on the dependent variable (cost).
- ◎ true
- ◎ false

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33) When using least-squares regression to determine variable and fixed costs, the r-square refers to the degree to which the change in the dependent variable can be explained by a change in the independent variable.
- ◎ true
- ◎ false

34) An advantage of using the scattergraph method over the high-low method is that all points of data are used in determining the cost line.
- ◎ true
- ◎ false

35) Multiple regression analysis should be performed when a single independent variable influences multiple dependent variables.
- ◎ true
- ◎ false

36) In regression analysis, an r-square value of one indicates that there is a perfect fit between the independent and dependent variables.
- ◎ true
- ◎ false

37) A disadvantage of the high-low method is that the high point and low point may not be representative of the total data set available.
- ◎ true
- ◎ false

MULTIPLE CHOICE - Choose the one alternative that best completes the statement or answers the question.

38) Java Joe operates a chain of coffee shops. The company pays rent of $20,000 per year for each shop. Supplies (napkins, bags, and condiments) are purchased as needed. The manager of each shop is paid a salary of $3,000 per month, and all other employees are paid on an hourly basis. Relative to the number of customers for a shop, the cost of supplies is which kind of cost?
- A) Fixed cost
- B) Variable cost
- C) Mixed cost
- D) Relevant cost

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39) Select the correct statement regarding fixed costs.
A) Because they do not change, fixed costs should be ignored in decision making.
B) The fixed cost per unit decreases when volume increases.
C) The fixed cost per unit increases when volume increases.
D) The fixed cost per unit does not change when volume decreases.

40) Larry's Lawn Care incurs significant gasoline costs. This cost would be classified as a variable cost if the total gasoline cost:
A) varies inversely with the number of hours the lawn equipment is operated.
B) is not affected by the number of hours the lawn equipment is operated.
C) increases in direct proportion to the number of hours the lawn equipment is operated.
D) None of these are correct.

41) Select the correct statement regarding fixed costs.
A) There is a contradiction between the term "fixed cost per unit" and the behavior pattern implied by the term.
B) Fixed cost per unit is not fixed.
C) Total fixed cost remains constant when volume changes.
D) All of these are correct statements.

42) Rock Creek Bottling Company pays its production manager a salary of $6,000 per month. Salespersons are paid strictly on commission, at $1.50 for each case of product sold.

For Rock Creek Bottling Company, the production manager's salary is an example of:
A) a variable cost.
B) a mixed cost.
C) a fixed cost.
D) None of these

43) Rock Creek Bottling Company pays its production manager a salary of $6,000 per month. Salespersons are paid strictly on commission, at $1.50 for each case of product sold.

For Rock Creek Bottling Company, the cost of the salespersons' commissions is an example of:
A) a fixed cost.
B) a variable cost.
C) a mixed cost.
D) none of these

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44) Based on the following cost data, what conclusions can you make about the costs of Product A and Product B?

Production:	Total Cost	
	Product A	**Product B**
10 units	$ 100	?
100 units	$ 1,000	?
1,000 units	$ 10,000	?

Production:	Unit Cost	
	Product A	**Product B**
10 units	?	$ 10,000
100 units	?	$ 1,000
1,000 units	?	$ 100

A) The cost of Product A is a fixed cost and the cost of Product B is a variable cost.
B) The cost of Product A is a variable cost and the cost of Product B is a fixed cost.
C) The costs of Product A and Product B are both variable costs.
D) The costs of Product A and Product B are both mixed costs.

45) Based on the behavior shown in the following table, which of the following is a variable cost?

Units Produced	**2**	**3**	**4**	**5**
Cost Per Unit of Materials	500	500	500	500
Cost Per Unit of Labor	500	333	250	200
Total Utilities Cost	4,500	4,500	4,500	4,500

A) Materials Cost
B) Labor Cost
C) Utilities Cost
D) All of the costs are variable

46) At a production and sales level of 2,480 units, Bastion Company incurred $73,000 of fixed cost and $62,000 of variable cost. When 6,600 units of product are produced and sold the company's cost per unit is:

Note: Round your final answer to whole dollars.

A) $36.
B) $51.
C) $50.
D) $41.

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47) At a production and sales level of 2,545 units, Bastion Company incurred $70,000 of fixed cost and $56,000 of variable cost. When 6,000 units of product are produced and sold the company's cost per unit is:

A) $46.
B) $39.
C) $34.
D) $44.

48) The following variable manufacturing costs apply to goods produced by Bitty Corporation.

Item	Cost per unit
Materials	$ 4.10
Labor	3.60
Overhead	2.60
Total	$ 10.30

Determine the total variable manufacturing cost if Bitty produces 3,100 units.

A) $11,160
B) $12,710
C) $31,930
D) $8,060

49) The following variable manufacturing costs apply to goods produced by Bitty Corporation.

Item	Cost per unit
Materials	$ 4.00
Labor	3.50
Overhead	2.50
Total	$ 10.00

Determine the total variable manufacturing cost if Bitty produces 3,000 units.

A) $12,000
B) $10,500
C) $7,500
D) $30,000

50) Wu Company incurred $38,500 of fixed cost and $30,500 of variable cost when 12,000 units of product were made and sold.
If the company's volume increases to 14,500 units, the company's total fixed costs will be:

A) $34,521
B) $38,500
C) $69,000
D) $73,021

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51) Wu Company incurred $36,500 of fixed cost and $28,500 of variable cost when 10,000 units of product were made and sold.
If the company's volume increases to 12,500 units, the company's total fixed costs will be:
A) $35,625
B) $36,500
C) $65,000
D) $72,125

52) Ryan Company incurred $69,000 of fixed cost and $258,400 of variable cost when 38,000 units of product were made and sold.
If the company's volume decreases to 33,000 units, the company's total variable costs will be:
A) $68,265
B) $224,400
C) $258,400
D) $284,400

53) Ryan Company incurred $51,000 of fixed cost and $100,000 of variable cost when 20,000 units of product were made and sold.
If the company's volume decreases to 15,000 units, the company's total variable costs will be:
A) $50,000
B) $75,000
C) $100,000
D) $126,000

54) Two different costs incurred by Ruiz Company exhibit the following behavior pattern per unit:

	Units Sold			
	55	110	165	220
Cost Number 1	$ 15 per unit	$ 15 per unit	$ 15 per unit	$ 15 per unit
Cost Number 2	$ per unit 696	$ per unit 348	$ per unit 232	$ per unit 174

Cost Number 1 and Cost Number 2 exhibit which of the following cost behavior patterns, respectively?
A) Fixed and variable
B) Variable and fixed
C) Variable and variable
D) Fixed and fixed

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55) Two different costs incurred by Ruiz Company exhibit the following behavior pattern per unit:

	Units Sold			
	50	100	150	200
Cost Number 1	$ 14 per unit	$ 14 per unit	$ 14 per unit	$ 14 per unit
Cost Number 2	$ per unit 600	$ per unit 300	$ per unit 200	$ per unit 150

Cost Number 1 and Cost Number 2 exhibit which of the following cost behavior patterns, respectively?

A) Variable and fixed
B) Fixed and variable
C) Variable and variable
D) Fixed and fixed

56) Based on the following cost data, items labeled (a) and (b) in the table below are which of the following amounts, respectively?

Number of units:	1,600	3,200
Total cost:		
Variable	$ 8,000	$ 16,000
Fixed	$ 7,840	$ 7,840
Cost per unit:		
Variable	$ 5.0	(a)
Fixed	$ 4.9	(b)

A) (a) = $5.00; (b) = $2.45
B) (a) = $2.45; (b) = $3.00
C) (a) = $5.00; (b) = $4.90
D) (a) = $2.50; (b) = $2.5

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57) Based on the following cost data, items labeled (a) and (b) in the table below are which of the following amounts, respectively?

Number of units:	1,500	3,000
Total cost:		
Variable	$ 7,500	$ 15,000
Fixed	$ 6,000	$ 6,000
Cost per unit:		
Variable	$ 5	(a)
Fixed	$ 4	(b)

A) (a) = $3.00; (b) = $3.00
B) (a) = $5.00; (b) = $4.00
C) (a) = $2.50; (b) = $2.00
D) (a) = $5.00; (b) = $2.00

58) Two different costs incurred by Ruiz Company exhibit the following behavior pattern per unit:

	Units Sold			
	50	**100**	**150**	**200**
Cost Number 1	$ per unit 300	$ per unit 150	$ per unit 100	$ per unit 75
Cost Number 2	$ 2 per unit	$ 2 per unit	$ 2 per unit	$ 2 per unit

Cost Number 1 and Cost Number 2 exhibit which of the following cost behavior patterns, respectively?

A) Fixed and variable
B) Variable and variable
C) Fixed and fixed
D) Variable and fixed

59) Wu Company incurred $154,000 of fixed cost and $171,600 of variable cost when 3,900 units of product were made and sold.
If the company's volume doubles, the total cost per unit will:

A) increase but will not double.
B) double as well.
C) decrease.
D) stay the same.

60) Wu Company incurred $40,000 of fixed cost and $50,000 of variable cost when 4,000 units of product were made and sold.
If the company's volume doubles, the total cost per unit will:
A) stay the same.
B) decrease.
C) double as well.
D) increase but will not double.

61) Wu Company incurred $53,200 of fixed cost and $64,400 of variable cost when 2,300 units of product were made and sold.
If the company's volume increases to 2,800 units, the total cost per unit will be:
A) $42.
B) $19.
C) $47.
D) $23.

62) Wu Company incurred $40,000 of fixed cost and $50,000 of variable cost when 4,000 units of product were made and sold.
If the company's volume increases to 5,000 units, the total cost per unit will be:
A) $18.00.
B) $20.00.
C) $20.50.
D) $22.50.

63) Wu Company incurred $50,000 of fixed cost and $55,000 of variable cost when 5,000 units of product were made and sold.
If the company's volume increases to 6,000 units, the company's total costs will be:
Note: Round your intermediate calculations to 2 decimal places.
A) $91,667
B) $110,000
C) $116,000
D) $83,333

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64) Wu Company incurred $40,000 of fixed cost and $50,000 of variable cost when 4,000 units of product were made and sold.
If the company's volume increases to 5,000 units, the company's total costs will be:
A) $100,000
B) $90,000
C) $102,500
D) $80,000

65) Wu Company incurred $46,000 of fixed cost and $46,000 of variable cost when 4,600 units of product were made and sold.
If the company's volume doubles, the company's **total cost** will:
A) stay the same.
B) double as well.
C) increase but will not double.
D) decrease.

66) Wu Company incurred $40,000 of fixed cost and $50,000 of variable cost when 4,000 units of product were made and sold.

If the company's volume doubles, the company's **total cost** will:
A) stay the same.
B) double as well.
C) increase but will not double.
D) decrease.

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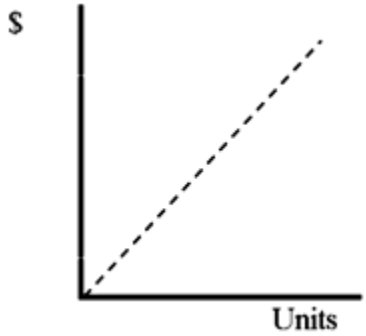
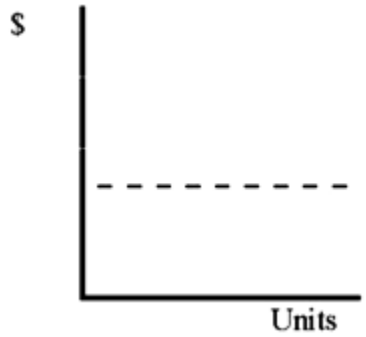
67) In the graph below, which depicts the relationship between units produced and total cost, the dotted line depicts which type of total **cost**?



A) Variable cost
B) Fixed cost
C) Mixed cost
D) None of these

68) In the graph below, which depicts the relationship between units produced and unit cost, the dotted line depicts which type of **cost per unit**?



A) Variable cost
B) Fixed cost
C) Mixed cost
D) None of these

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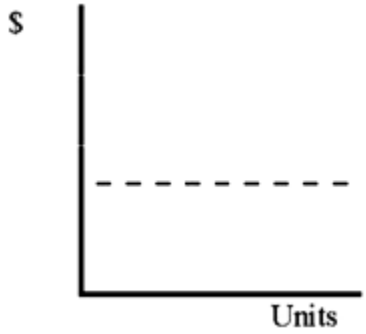
69) In the graph below, which depicts the relationship between units produced and total cost, the dotted line depicts which type of **total cost**?



A) Variable cost
B) Fixed cost
C) Mixed cost
D) None of these

70) Pickard Company pays its sales staff a base salary of $5,700 a month plus a $2.30 commission for each product sold. If a salesperson sells 530 units of product in January, the employee would be paid:
A) $1,219.
B) $6,919.
C) $5,700.
D) $4,481.

71) Pickard Company pays its sales staff a base salary of $4,500 a month plus a $3.00 commission for each product sold. If a salesperson sells 800 units of product in January, the employee would be paid:
A) $6,900.
B) $4,500.
C) $2,300.
D) $2,700.

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72) Quick Change and Fast Change are competing oil change businesses. Both companies have 3,200 customers. The price of an oil change at both companies is $19. Quick Change pays its employees on a salary basis, and its salary expense is $16,000. Fast Change pays its employees $5 per customer served. Suppose Quick Change lures 1,200 customers from Fast Change by lowering its price to $17 per vehicle. Thus, Quick Change will have 4,400 customers and Fast Change will have only 2,000 customers.
Select the **correct** statement from the following.

A) Quick Change's profit will remain the same while Fast Change's profit will decrease.
B) Quick Change's profit will increase while Fast Change's profit will fall.
C) Profits will decline for both Quick Change and Fast Change.
D) Fast Change's profit will fall but it will still earn a higher profit than Quick Change.

73) Quick Change and Fast Change are competing oil change businesses. Both companies have 5,000 customers. The price of an oil change at both companies is $20. Quick Change pays its employees on a salary basis, and its salary expense is $40,000. Fast Change pays its employees $8 per customer served. Suppose Quick Change lures 1,000 customers from Fast Change by lowering its price to $18 per vehicle. Thus, Quick Change will have 6,000 customers and Fast Change will have only 4,000 customers.
Select the **correct** statement from the following.

A) Quick Change's profit will increase while Fast Change's profit will fall.
B) Fast Change's profit will fall but it will still earn a higher profit than Quick Change.
C) Profits will decline for both Quick Change and Fast Change.
D) Quick Change's profit will remain the same while Fast Change's profit will decrease.

74) Hard Nails and Bright Nails are competing nail salons. Both companies have the same number of customers. Both charge the same price for a manicure. The only difference is that Hard Nails pays its manicurists on a salary basis (i.e., a fixed cost structure) while Bright Nails pays its manicurists on the basis of the number of customers they serve (i.e., a variable cost structure). Both companies currently make the same amount of net income. If sales of both salons increase by an equal amount, Hard Nails:

A) will earn a higher profit than Bright Nails.
B) will earn a lower profit than Bright Nails.
C) will earn the same amount of profit as Bright Nails.
D) The answer cannot be determined from the information provided.

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75) Fixed cost per unit:
- A) decreases as production volume decreases.
- B) is not affected by changes in the production volume.
- C) decreases as production volume increases.
- D) increases as production volume increases.

76) Cool Runnings operates a chain of frozen yogurt shops. The company pays $5,000 of rent expense per month for each shop. The managers of each shop are paid a salary of $3,000 per month and all other employees are paid on an hourly basis. Relative to the number of shops, the cost of rent is which kind of cost?
- A) Variable cost
- B) Fixed cost
- C) Mixed cost
- D) Opportunity cost

77) Companies A and B are in the same industry and are identical except for cost structure. At a volume of 50,000 units, the companies have equal net incomes. At 60,000 units, Company A's net income would be substantially higher than B's. Based on this information,
- A) Company A's cost structure has more variable costs than B's.
- B) Company A's cost structure has higher fixed costs than B's.
- C) Company B's cost structure has higher fixed costs than A's.
- D) At a volume of 50,000 units, Company A's magnitude of operating leverage was lower than B's.

78) Operating leverage exists when:
- A) a company utilizes debt to finance its assets.
- B) management buys enough of the company's shares of stock to take control of the corporation.
- C) the organization makes purchases on credit instead of paying cash.
- D) small percentage changes in revenue produce large percentage changes in profit.

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79) For the last two years BRC Company had net income as follows:

	Year 1	Year 2
Net Income	$91,000	$111,000

What was the percentage change in income from Year 1 to Year 2?

A) 18.02% decrease
B) 21.98% decrease
C) 21.98% increase
D) 18.02% increase

80) For the last two years BRC Company had net income as follows:

	Year 1	Year 2
Net Income	$160,000	$200,000

What was the percentage change in income from Year 1 to Year 2?

A) 20% increase
B) 20% decrease
C) 25% increase
D) 25% decrease

81) Tutor, Incorporated (TI) provides instructional services to its customers. TI charges $390 per student. The company expects to serve 1,450 students during the coming year. All of the company's expenses are fixed. Total annual fixed costs are projected to be $155,000. If the estimated number of students increase by 20%, net income will increase by:
Note: Round your final answer to the nearest percent.

A) 60%.
B) 40%.
C) 28%.
D) 20%.

82) Tutor, Incorporated (TI) provides instructional services to its customers. TI charges $300 per student. The company expects to serve 1,000 students during the coming year. All of the company's expenses are fixed. Total annual fixed costs are projected to be $110,000. If the estimated number of students increase by 10%, net income will increase by:

A) 10%.
B) 16%.
C) 20%.
D) 30%.

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83) Tutor, Incorporated (TI) provides instructional services to its customers. TI charges $380 per student. The company expects to serve 1,400 students during the coming year. All of the company's expenses are fixed. Total annual fixed costs are projected to be $150,000. If the estimated number of students decreases by 10%, net income will
A) increase by 14%.
B) decrease by 14%.
C) decrease by 10%.
D) increase by 10%.

84) Tutor, Incorporated (TI) provides instructional services to its customers. TI charges $300 per student. The company expects to serve 1,000 students during the coming year. All of the company's expenses are fixed. Total annual fixed costs are projected to be $110,000. If the estimated number of students decreases by 10%, net income will
A) increase by 10%.
B) increase by 16%.
C) decrease by 10%.
D) decrease by 16%.

85) Assume a company sold 32 units in Year 1 and 170 units in Year 2. What is the percentage change in units sold from Year 1 to Year 2?

A) 431%
B) 138%
C) 4%
D) 38%

86) Assume a company sold 30 units in Year 1 and 150 units in Year 2. What is the percentage change in units sold from Year 1 to Year 2?
A) 4%
B) 40%
C) 140%
D) 400%

87) Shifting the cost structure from fixed to variable
A) increases risk by decreasing operating leverage.
B) increases risk by increasing operating leverage.
C) reduces risk by decreasing operating leverage.
D) reduces risk by increasing operating leverage.

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88) Assuming a firm has no operating leverage, a small change in revenue will result in
A) no change in profitability
B) a small change in profitability.
C) a large change in profitability.
D) The answer cannot be determined from this information.

89) Finley Company is currently operating profitably. The company has a fixed cost structure . Based on this information, which of the following statements is true?
A) If volume increases by 40%, profitability will increase by less than 40%.
B) If volume increases by 40%, profitability will increase by 40%.
C) If volume increases by 40%, profitability will decrease by 40%.
D) If volume increases by 40%, profitability will increase by more than 40%.

90) The activity director for City Recreation is planning an activity. She is considering alternative ways to set up the activity's cost structure. Select the **incorrect** statement from the following.
A) If the director expects a low turnout, she should use a fixed cost structure.
B) If the director expects a large turnout, she should attempt to convert variable costs into fixed costs.
C) If the director shifts the cost structure from fixed to variable, the level of risk decreases.
D) If the director shifts the cost structure from fixed to variable, the potential for profits will be reduced.

91) Select the**correct** statement regarding the relationship between cost behavior and profits.
A) A pure variable cost structure offers higher potential rewards.
B) A pure fixed cost structure offers more security if volume expectations are not achieved.
C) In a pure variable cost structure, when revenue increases by $1, so do profits.
D) In a pure fixed cost structure, the unit selling price and unit contribution margin are equal.

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92) Select the**correct** statement from the following.
A) A fixed cost structure offers less risk (i.e., less earnings volatility) and higher opportunity for profitability than does a variable cost structure.
B) A variable cost structure offers less risk and higher opportunity for profitability than does a fixed cost structure.
C) A fixed cost structure offers greater risk but higher opportunity for profitability than does a variable cost structure.
D) A variable cost structure offers greater risk but higher opportunity for profitability than does a fixed cost structure.

93) The manager of Kenton Company stated that 45% of its total costs were fixed. The manager was describing the company's:
A) operating leverage.
B) contribution margin.
C) cost structure.
D) cost averaging.

94) Select the**incorrect** statement regarding cost structures.
A) Highly leveraged companies will experience greater profits than companies less leveraged when sales increase.
B) The more variable cost, the higher the fluctuation in income as sales fluctuate.
C) When sales change, the amount of the corresponding change in income is affected by the company's cost structure.
D) Faced with significant uncertainty about future revenues, a low leverage cost structure is preferable to a high leverage cost structure.

95) Executive management at Ballard Books is very optimistic about the chain's ability to achieve significant increases in sales in each of the next five years. The company will most benefit if management creates a:
A) low operating leverage cost structure.
B) medium operating leverage cost structure.
C) high operating leverage cost structure.
D) no operating leverage cost structure.

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96) Based on the income statements shown below, which division has the cost structure with the highest operating leverage?

	Soft Drinks	Bottled Water	Fruit Juices
Revenue	$ 64,000	$ 64,000	$ 64,000
Variable costs	(16,000)	(8,000)	(36,000)
Contribution margin	48,000	56,000	28,000
Fixed costs	(37,920)	(47,920)	(10,080)
Net income	$ 10,080	$ 8,080	$ 17,920

A) Bottled Water.
B) Fruit Juices.
C) Soft Drinks.
D) The three divisions have identical operating leverage.

97) Based on the income statements shown below, which division has the cost structure with the highest operating leverage?

	Soft Drinks	Bottled Water	Fruit Juices
Revenue	$ 50,000	$ 50,000	$ 50,000
Variable costs	(10,000)	(5,000)	(30,000)
Contribution margin	40,000	45,000	20,000
Fixed costs	(30,000)	(40,000)	(10,000)
Net income	$ 10,000	$ 5,000	$ 10,000

A) Bottled Water.
B) Fruit Juices.
C) Soft Drinks.
D) The three divisions have identical operating leverage.

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98) The following income statements are provided for two companies operating in the same industry:

	Felix Company	Jinx Company
Revenue	$ 188,000	$ 188,000
Variable costs	(33,840)	(80,163)
Contribution margin	154,160	107,837
Fixed costs	(80,163)	(33,840)
Net income	$ 73,997	$ 73,997

Assuming sales increase by $940, select the correct statement from the following:

A) Felix's net income will be more than Jinx's.
B) Only Felix will experience an increase in profit.
C) Felix's net income will increase by $250.
D) Jinx's net income will increase by 6%.

99) The following income statements are provided for two companies operating in the same industry:

	Felix Company	Jinx Company
Revenue	$ 200,000	$ 200,000
Variable costs	(25,000)	(70,000)
Contribution margin	175,000	130,000
Fixed costs	(70,000)	(25,000)
Net income	$ 105,000	$ 105,000

Assuming sales increase by $1,000, select the correct statement from the following:

A) Felix's net income will be more than Jinx's.
B) Only Felix will experience an increase in profit.
C) Felix's net income will increase by $250.
D) Jinx's net income will increase by 6%.

100) The excess of revenue over variable costs is referred to as:

A) gross profit
B) gross margin
C) contribution margin
D) manufacturing margin

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101) Select the **incorrect** statement regarding the contribution margin income statement.

A) The contribution margin approach for the income statement is unacceptable for external reporting.

B) Contribution margin represents the amount available to cover product costs and thereafter to provide profit.

C) The contribution margin approach requires that all costs be classified as fixed or variable.

D) Assuming no change in fixed costs, a $1 increase in contribution margin will result in a $1 increase in profit.

102) Which of the following items would**not** be found on a contribution format income statement?

A) Fixed cost

B) Variable cost

C) Gross margin

D) Net income

103) The following income statement is provided for Ramirez Company for the current year:

Sales revenue (2,400 units × $19.90 per unit)	$ 47,760
Cost of goods sold (variable; 2,400 units × $7.90 per unit)	(18,960)
Cost of goods sold (fixed)	(3,900)
Gross margin	24,900
Administrative salaries	(5,900)
Depreciation	(3,900)
Supplies (2,400 units × $1.90 per unit)	(4,560)
Net income	$ 10,540

What amount was the company's contribution margin?

A) $24,900

B) $10,540

C) $24,240

D) $28,800

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104) The following income statement is provided for Ramirez Company for the current year:

Sales revenue (2,500 units × $40 per unit)	$100,000
Cost of goods sold (variable; 2,500 units × $16 per unit)	(40,000)
Cost of goods sold (fixed)	(8,000)
Gross margin	52,000
Administrative salaries	(12,000)
Depreciation	(8,000)
Supplies (2,500 units × $4 per unit)	(10,000)
Net income	$ 22,000

What amount was the company's contribution margin?

A) $50,000
B) $22,000
C) $52,000
D) $60,000

105) The following information was drawn from the accounting records of Dark Night, Incorporated:

Income Statement

Sales Revenue (210 @ $560 per unit)	$ 117,600
Cost of Goods Sold: Variable (210 @ $260 per unit)	(54,600)
Gross Margin	63,000
Sales Commissions (210 @ $40)	(8,400)
Fixed Period Expenses	(16,000)
Net Income	$ 38,600

Based on this information, Dark Night's contribution margin is:

A) $54,600.
B) $101,600.
C) $51,600.
D) $38,600.

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106) The following information was drawn from the accounting records of Dark Night, Incorporated:

Income Statement	
Sales Revenue (350 @ $700 per unit)	$ 245,000
Cost of Goods Sold: Variable (350 @ $400 per unit)	(140,000)
Gross Margin	105,000
Sales Commissions (350 @ $40)	(14,000)
Fixed Period Expenses	(14,000)
Net Income	$ 77,000

Based on this information, Dark Night's contribution margin is:

A) $77,000.
B) $88,000.
C) $91,000.
D) $231,000.

107) Omega Company has sales of $328,000 and cost of goods sold of $214,000. The cost of goods sold is a variable cost. The Company incurred $34,000 of fixed operating expenses and $47,000 of variable operating expenses. Based on this information

A) the company's gross margin is $114,000, while its contribution margin is $67,000.
B) net income is $33,000 under the gross margin format and $114,000 under the contribution margin format.
C) the company's gross margin is $67,000, while its contribution margin is $114,000.
D) net income is $114,000 under the gross margin format and $33,000 under the contribution margin format.

108) Omega Company has sales of $320,000 and cost of goods sold of $210,000. The cost of goods sold is a variable cost. The Company incurred $30,000 of fixed operating expenses and $45,000 of variable operating expenses. Based on this information

A) the company's gross margin is $65,000, while its contribution margin is $110,000.
B) net income is $110,000 under the gross margin format and $35,000 under the contribution margin format.
C) net income is $35,000 under the gross margin format and $110,000 under the contribution margin format.
D) the company's gross margin is $110,000, while its contribution margin is $65,000.

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109) Sam Company sells dog toys. Each toy is priced at $15. The variable cost per unit is $6, and the fixed cost per unit is $2. If Sam sells 190 dog toys, what is the total contribution margin?

A) $1,140
B) $2,470
C) $1,710
D) $190

110) Sam Company sells dog toys. Each toy is priced at $9. The variable cost per unit is $4, and the fixed cost per unit is $1. If Sam sells 100 dog toys, what is the total contribution margin?

A) $100
B) $500
C) $800
D) $400

111) The following information is provided for Sax Company:

Sales revenue	$ 2,580,000
Fixed costs	508,000
Variable costs	308,000

What is this company's contribution margin?

A) $2,072,000
B) $1,764,000
C) $2,272,000
D) $2,888,000

112) The following information is provided for Sax Company:

Sales revenue	$ 2,500,000
Fixed costs	500,000
Variable costs	300,000

What is this company's contribution margin?

A) $2,000,000
B) $1,700,000
C) $2,200,000
D) $2,800,000

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113) In order to prepare a contribution format income statement, costs must be separated into:
A) manufacturing and selling, general, and administrative costs.
B) cost of goods sold and operating expenses.
C) variable and fixed costs.
D) mixed, variable and fixed costs.

114) Select from the following the**incorrect** statement regarding contribution margin.
A) Sales − Fixed costs = Contribution margin
B) Net income + Total fixed costs = Contribution margin
C) At the breakeven point (where the company has neither profit nor loss), Total fixed costs = Total contribution margin
D) Total sales revenue times the contribution margin percentage = Total contribution margin

115) The following information is provided for Southall Company:

Sales revenue	$ 292,000
Variable manufacturing costs	99,000
Fixed manufacturing costs	61,000
Variable selling and administrative costs	44,000
Fixed selling and administrative costs	39,000

What is this company's contribution margin?
A) $149,000
B) $49,000
C) $88,000
D) $132,000

116) The following information is provided for Southall Company:

Sales revenue	$ 125,000
Variable manufacturing costs	42,500
Fixed manufacturing costs	37,500
Variable selling and administrative costs	15,000
Fixed selling and administrative costs	12,500

What is this company's contribution margin?
A) $30,000
B) $17,500
C) $45,000
D) $67,500

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117) Which of the following equations can be used to compute a firm's magnitude of operating leverage?

A) Net income ÷ sales
B) Fixed costs ÷ contribution margin
C) Contribution margin ÷ net income
D) Net income ÷ contribution margin

118) The following income statement is provided for Vargas, Incorporated

Sales revenue (2,000 units × $19.50 per unit)	$ 39,000
Cost of goods sold (variable; 2,000 units × $9.50 per unit)	(19,000)
Cost of goods sold (fixed)	(3,500)
Gross margin	16,500
Administrative salaries	(5,500)
Depreciation	(4,500)
Supplies (2,000 units × $1.50 per unit)	(3,000)
Net income	$ 3,500

What is this company's magnitude of operating leverage?

Note: Round your answer to 2 decimal places.

A) 0.21
B) 0.26
C) 4.86
D) 4.71

119) The following income statement is provided for Vargas, Incorporated

Sales revenue (2,500 units × $60 per unit)	$ 150,000
Cost of goods sold (variable; 2,500 units × $20 per unit)	(50,000)
Cost of goods sold (fixed)	(8,000)
Gross margin	92,000
Administrative salaries	(42,000)
Depreciation	(10,000)
Supplies (2,500 units × $4 per unit)	(10,000)
Net income	$ 30,000

What is this company's magnitude of operating leverage?

A) 3.07
B) 0.33
C) 3.00
D) 1.67

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120) The following income statement is provided for Grant, Incorporated

Sales revenue (2,100 @ $15.60 per unit)	$ 32,760
Variable costs (2,100 @ $7.60 per unit)	15,960
Fixed costs	4,800
Net income	$ 12,000

What is this company's magnitude of operating leverage?

Note: Round your answer to 2 decimal places.

A) 1.40
B) 2.05
C) 1.33
D) 2.73

121) The following income statement is provided for Grant, Incorporated

Sales revenue (1,500 @ $30 per unit)	$ 45,000
Variable costs (1,500 @ $14 per unit)	21,000
Fixed costs	16,000
Net income	$ 8,000

What is this company's magnitude of operating leverage?

A) 0.33
B) 1.31
C) 2.00
D) 3.00

122) The following information was drawn from the records of Calico Company:

Sales Revenue (240 @ $590 per unit)	$ 141,600
Cost of Goods Sold: Variable (240 @ $290 per unit)	(69,600)
Fixed	(13,500)
Gross Margin	58,500
Sales Commissions (240 @ $50 per unit)	(12,000)
Depreciation	(2,100)
Net Income	$ 44,400

Based on this information the magnitude of operating leverage is approximately:

Note: Round your answer to 2 decimal places.

A) 1.35.
B) 1.07.
C) 1.29.
D) 1.42.

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123) The following information was drawn from the records of Calico Company:

Sales Revenue (350 @ $700 per unit)	$ 245,000
Cost of Goods Sold: Variable (350 @ $400 per unit)	(140,000)
Fixed	(13,000)
Gross Margin	92,000
Sales Commissions (350 @ $40 per unit)	(14,000)
Depreciation	(2,000)
Net Income	$ 76,000

Based on this information the magnitude of operating leverage is approximately:
Note: Round your answer to 2 decimal places.

A) 1.20.
B) 0.92.
C) 1.27.
D) 1.14.

124) At a sales level of $282,000, the magnitude of operating leverage for Donuts Unlimited is 4.0. If number of units sold increase by 15%, profits will increase by:

A) 19.87%
B) 15.00%
C) 4.00%
D) 60.00%

125) At a sales level of $280,000, the magnitude of operating leverage for Donuts Unlimited is 3.8. If number of units sold increase by 15%, profits will increase by:

A) 19.67%
B) 3.80%
C) 57.00%
D) 15.00%

126) Omega Company has sales of $470,000 and cost of goods sold of $285,000. The cost of goods sold is a variable cost. The company incurred $37,000 of fixed operating expenses and $57,000 of variable operating expenses. Based on this information, a(n) 22.75% increase in revenue will produce a
Note: Round your intermediate calculations to 2 decimal places and final answer to one decimal place.

A) 24.2% change in net income.
B) 22.8% change in net income.
C) 32.1% change in net income.
D) 45.5% change in net income.

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127) Omega Company has sales of $400,000 and cost of goods sold of $250,000. The cost of goods sold is a variable cost. The company incurred $30,000 of fixed operating expenses and $50,000 of variable operating expenses. Based on this information, a 17.50% increase in revenue will produce a

A) 25.0% change in net income.
B) 18.9% change in net income.
C) 17.5% change in net income.
D) 35.0% change in net income.

128) The magnitude of operating leverage for Forbes Corporation is 3.8 when sales are $300,000 and net income is $34,000. If sales increase by 5%, what is net income expected to be?

A) $35,700
B) $40,460
C) $38,000
D) $34,700

129) The magnitude of operating leverage for Forbes Corporation is 1.8 when sales are $200,000 and net income is $24,000. If sales increase by 5%, what is net income expected to be?

A) $25,200
B) $26,160
C) $24,667
D) $43,200

130) The magnitude of operating leverage for Blue Ridge Corporation is 3.9 when sales are $270,000 and net income is $43,000. If sales decrease by 6%, net income is expected to decrease by what amount?

A) $1,711
B) $4,260
C) $2,580
D) $10,062

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131) The magnitude of operating leverage for Blue Ridge Corporation is 3.5 when sales are $200,000 and net income is $36,000. If sales decrease by 6%, net income is expected to decrease by what amount?

A) $2,160
B) $7,560
C) $3,420
D) $1,260

132) The magnitude of operating leverage for Perkins Corporation is 3.6 when sales are $110,000. If sales increase to $125,400, profits would be expected to increase by what percent?

Note: Round your answer to 1 decimal place.

A) 3.6%
B) 17.6%
C) 50.4%
D) 10.0%

133) The magnitude of operating leverage for Perkins Corporation is 4.5 when sales are $100,000. If sales increase to $110,000, profits would be expected to increase by what percent?

A) 4.5%
B) 14.5%
C) 45.0%
D) 10.0%

134) Based on the income statements of the three following retail businesses, which company has the highest operating leverage?

	Alpha Company	Beta Company	Gamma Company
Revenue	$ 270,000	$ 270,000	$ 270,000
Variable costs	(151,000)	(211,000)	(181,000)
Contribution margin	$ 119,000	$ 59,000	$ 89,000
Fixed costs	(80,000)	(20,000)	(50,000)
Net income	$ 39,000	$ 39,000	$ 39,000

A) Alpha Company
B) Beta Company
C) Gamma Company
D) They all have same operating leverage

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135) Based on the income statements of the three following retail businesses, which company has the highest operating leverage?

	Alpha Company	Beta Company	Gamma Company
Revenue	$ 200,000	$ 200,000	$ 200,000
Variable costs	(95,000)	(155,000)	(125,000)
Contribution margin	$ 105,000	$ 45,000	$ 75,000
Fixed costs	(80,000)	(20,000)	(50,000)
Net income	$ 25,000	$ 25,000	$ 25,000

A) Alpha Company
B) Beta Company
C) Gamma Company
D) They all have same operating leverage

136) Wham Company sells electronic squirrel repellants for $50. Variable costs are 40% of sales and total fixed costs are $40,000. What is the firm's magnitude of operating leverage if 2,000 units are sold?
A) 3.00
B) 2.00
C) 1.50
D) None of these

137) Wham Company sells electronic squirrel repellants for $60. Variable costs are 60% of sales and total fixed costs are $40,000. What is the firm's magnitude of operating leverage if 2,000 units are sold?
A) 0.17
B) 6.00
C) 2.25
D) None of these

138) Whether a cost behaves as a fixed cost or as a variable cost depends upon the:
A) activity base used.
B) cost structure of the company.
C) industry.
D) significance of the dollar amount of the cost.

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139) Craft, Incorporated normally produces between 120,000 and 150,000 units each year. Producing more than 150,000 units alters the company's cost structure. For example, fixed costs increase because more space must be rented, and additional supervisors must be hired. The production range between 120,000 and 150,000 is called the:

A) differential range.
B) median range.
C) relevant range.
D) leverage range.

140) Mug Shots operates a chain of coffee shops. The company pays rent of $15,000 per year for each shop. Supplies (napkins, bags, and condiments) are purchased as needed. The managers of each shop are paid a salary of $2,500 per month and all other employees are paid on an hourly basis. The cost of rent relative to the number of customers in a particular shop and relative to the number of customers in the entire chain of shops is which kind of cost, respectively?

A) Variable cost and fixed cost
B) Fixed cost and fixed cost
C) Fixed cost and variable cost
D) Variable cost and variable cost

141) Select the**incorrect** statement regarding the relevant range of volume.

A) Total fixed costs are expected to remain constant.
B) Total variable costs are expected to vary in direct proportion with changes in volume.
C) Variable cost per unit is expected to remain constant.
D) Total cost per unit is expected to remain constant.

142) What are the expected average quarterly costs of running a consulting practice if fixed costs are expected to be $5,300 a month and variable costs are expected to be $130 per client for each quarter? Expected number of clients for the year are

Note: Do not round intermediate calculations:

Jan-March	April-June	July-Sep	Oct-Dec
125	155	175	115

A) $33,475
B) $34,425
C) $18,525
D) $41,275

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143) What are the expected average quarterly costs of running a consulting practice if fixed costs are expected to be $4,000 a month and variable costs are expected to be $100 per client for each quarter? Expected number of clients for the year are:

Jan-March	April-June	July-Sep	Oct-Dec
110	140	150	100

A) $12,500
B) $24,500
C) $16,500
D) $19,500

144) Owens sells computers. He purchases the computers for $620 each and incurs $91,000 in fixed operating expenses each month. If Owens makes and sells 1,300 units of product, what is the average cost per unit?

A) $690
B) $620
C) $480
D) $70

145) Owens sells computers. He purchases the computers for $600 each and incurs $50,000 in fixed operating expenses each month. If Owens makes and sells 1,000 units of product, what is the average cost per unit?

A) $650
B) $600
C) $50
D) $500

146) Summit Incorporated operates a concert series that has monthly fixed expense of $7,800. In addition, the company pays distributors $2.00 per ticket sold. The following chart shows the number of tickets Summit expects to sell during the year.

January	February	March	April	May	June	July	August	September	October	November	December	Total
1,220	1,020	1,120	620	1,120	1,420	2,080	1,120	920	1,020	520	820	13,000

Assume Summit wants to earn $6.00 per concert attendee. How much should the company charge for a ticket in January?

A) $15.20
B) $9.20
C) $13.20
D) None of the answers are correct.

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147) Summit Incorporated operates a concert series that has monthly fixed expense of $6,000. In addition , the company pays distributors $2.00 per ticket sold. The following chart shows the number of tickets Summit expects to sell during the year.

January	February	March	April	May	June	July	August	September	October	November	December	Total
1,000	800	900	400	900	1,200	1,500	900	700	800	300	600	10,000

Assume Summit wants to earn $5.00 per concert attendee. How much should the company charge for a ticket in January?

A) $14.20
B) $9.20
C) $12.20
D) None of the answers are correct.

148) Yankee Tours provide seven-day guided tours along the New England coast. The company pays its guides a total of $220,000 per year. The average cost of supplies, lodging, and food per customer is $550. The company expects a total of 1,000 customers during the period January through June, and a total of 3,000 customers from July through December. Yankee wants to earn $250 income per customer. For promotional reasons the company desires to charge the same price throughout the year. Based on this information, what is the correct price per customer?

Note: Round your answer to the nearest dollar.

A) $910
B) $855
C) $605
D) $650

149) Yankee Tours provide seven-day guided tours along the New England coast. The company pays its guides a total of $100,000 per year. The average cost of supplies, lodging, and food per customer is $500. The company expects a total of 500 customers during the period January through June, and a total of 1,500 customers from July through December. Yankee wants to earn $100 income per customer. For promotional reasons the company desires to charge the same price throughout the year. Based on this information, what is the correct price per customer?

Note: Round your answer to the nearest dollar.

A) $450
B) $500
C) $650
D) $700

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150) Select the**incorrect** statement regarding the use of average unit costs.

A) Average costs should be calculated for a sufficiently long time period to capture seasonal fluctuations in costs.
B) Average costs are often more relevant for decision making than are actual costs.
C) Average cost information can help managers evaluate performance of the company or departments in the company.
D) Cost averaging should be used only for fixed costs, and not for variable costs.

151) The following information is given regarding driving lessons provided by Arrive Alive Company over several spans of time:

	Length of Time		
	TODAY	ONE YEAR	FIVE YEARS
Total cost of lessons	$ 600	$ 110,000	$ 508,000
Number of lessons	50	10,000	55,000

Select the **incorrect** statement from the following.

A) The average cost per lesson over the five-year period was $9.24.
B) Based on the most current information, the cost per lesson was $12.00.
C) The average cost based on the total five-year period is probably the most appropriate cost for pricing purposes.
D) The selection of the most appropriate time span for calculating the average cost often requires considerable judgment.

152) Owens sells computers. He purchases the computers for $520 each and incurs $9,000 in fixed operating expenses each month. The average cost per unit is

A) $610 if Owens makes and sells 100 units of product.
B) $700 if Owens makes and sells 50 units of product.
C) $880 if Owens makes and sells 25 units of product.
D) All of the answers are correct.

153) Owens sells computers. He purchases the computers for $500 each and incurs $8,000 in fixed operating expenses each month. The average cost per unit is

A) $580 if Owens makes and sells 100 units of product.
B) $660 if Owens makes and sells 50 units of product.
C) $820 if Owens makes and sells 25 units of product.
D) All of the answers are correct.

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154) Professional Exam Prep (PEP) uses a cost-plus model to determine the price it charges students. Specifically, the company charges cost plus 20% of cost. Fixed costs, including facility rental and instructor compensation, amount to $7,300 per month. PEP incurs variable costs for books and supplies that amount to $63 per student. Monthly, enrollment tends to fluctuate. The following data represent the company's expectations for the first three months of the current year.

Month	January	February	March	Total
Number of Students	15	25	60	100
Total Variable Cost	$ 945	$ 1,575	$ 3,780	$ 6,300
Total Fixed Cost	$ 7,300	$ 7,300	$ 7,300	$ 21,900

Based on this information, which of the following amounts represents the average price PEP should charge per student for the month of January?

A) $338.40
B) $282.00
C) $549.67
D) $659.60

155) Professional Exam Prep (PEP) uses a cost-plus model to determine the price it charges students. Specifically, the company charges cost plus 25% of cost. Fixed costs, including facility rental and instructor compensation, amount to $7,000 per month. PEP incurs variable costs for books and supplies that amount to $60 per student. Monthly, enrollment tends to fluctuate. The following data represent the company's expectations for the first three months of the current year.

Month	January	February	March	Total
Number of Students	15	25	60	100
Total Variable Cost	$ 900	$ 1,500	$ 3,600	$ 6,000
Total Fixed Cost	$ 7,000	$ 7,000	$ 7,000	$ 21,000

Based on this information, which of the following amounts represents the average price PEP should charge per student for the month of January?

A) $658.33
B) $270.00
C) $526.67
D) $337.50

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156) A cost that contains both fixed and variable elements is referred to as a:
A) mixed cost.
B) hybrid cost.
C) relevant cost.
D) nonvariable cost.

157) Which of the following costs typically include both fixed and variable components?
A) Direct materials
B) Direct labor
C) Factory overhead
D) None of these

158) Southern Food Service operates six restaurants in the Atlanta area. The company pays rent of $20,000 per year for each shop. The managers of each shop are paid a salary of $4,200 per month and all other employees are paid on an hourly basis. Relative to the number of hours worked, total compensation cost for a particular shop is which kind of cost?
A) Mixed cost
B) Fixed cost
C) Variable cost
D) None of these

159) Production during the current year for California Manufacturing, a producer of high security bank vaults, was at its highest point in the month of June when 44 units were produced at a total cost of $640,000. The lowest point in production was in January when only 19 units were produced at a cost of $344,000. The company is preparing a budget for the current year and needs to project expected fixed cost for the budget year. Using the high-low method, the projected amount of fixed cost per month is:
A) $109,040
B) $296,000
C) $119,040
D) $276,000

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160) Production during the current year for California Manufacturing, a producer of high security bank vaults, was at its highest point in the month of June when 80 units were produced at a total cost of $800,000. The lowest point in production was in January when only 20 units were produced at a cost of $440,000. The company is preparing a budget for the current year and needs to project expected fixed cost for the budget year. Using the high-low method, the projected amount of fixed cost per month is:

A) $120,000
B) $320,000
C) $480,000
D) $360,000

161) The following income statements are provided for Li Company's last two years of operation:

	Year 1	Year 2
Number of units produced and sold	3,600	3,200
Sales revenue	$ 57,600	$ 51,200
Cost of goods sold	43,000	39,000
Gross margin	14,600	12,200
General, selling, and administrative expenses	7,420	6,940
Net income	$ 7,180	$ 5,260

Assuming that cost behavior did not change over the two-year period, what is the amount of the company's variable cost of goods sold per unit?

A) $8.00 per unit
B) $10.00 per unit
C) $16.00 per unit
D) None of these

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162) The following income statements are provided for Li Company's last two years of operation:

	Year 1	Year 2
Number of units produced and sold	3,500	3,000
Sales revenue	$ 101,500	$ 87,000
Cost of goods sold	68,000	60,000
Gross margin	33,500	27,000
General, selling, and administrative expenses	13,000	12,000
Net income	$ 20,500	$ 15,000

Assuming that cost behavior did not change over the two-year period, what is the amount of the company's variable cost of goods sold per unit?

A) $12.00 per unit
B) $16.00 per unit
C) $22.00 per unit
D) None of these

163) Calculate variable cost using the high-low method:

Month	Units Sold	Total Cost
January	860	$ 390
February	890	$ 690
March	810	$ 350
April	790	$ 320

A) $50.00
B) $0.27
C) $30.00
D) $3.70

164) Calculate variable cost using the high-low method:

Month	Units Sold	Total Cost
January	700	$ 220
February	720	$ 350
March	650	$ 180
April	620	$ 150

A) $0.50
B) $2
C) $20
D) $50

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165) Using the high-low method, we estimated fixed costs to be $208,000 and variable costs to be $13 a unit. If 10,800 units are produced, what is the total cost?

A) $2,603,852
B) $208,000
C) $348,400
D) $140,400

166) Using the high-low method, we estimated fixed costs to be $200,000 and variable costs to be $15 a unit. If 10,000 units are produced, what is the total cost?

A) $150,000
B) $200,000
C) $350,000
D) $2,000,000

167) Calculate fixed cost using the high-low method:

Month	Units Sold	Total Cost
January	140	$ 1,040
February	240	$ 2,100
March	100	$ 1,015
April	95	$ 940

A) $145
B) $260
C) $180
D) $192

168) Calculate fixed cost using the high-low method:

Month	Units Sold	Total Cost
January	100	$ 1,000
February	200	$ 2,100
March	80	$ 975
April	75	$ 900

A) $140
B) $180
C) $125
D) $192

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169) The following information was drawn from a scattergraph. Total cost at 38,000 units is $152,000. The line on the scattergraph intersects the Y axis at $38,000. What is variable cost per unit?

A) $6
B) $3
C) $4
D) None of the answers are correct.

170) The following information was drawn from a scattergraph. Total cost at 20,000 units is $100,000. The line on the scattergraph intersects the Y axis at $20,000. What is variable cost per unit?

A) $8
B) $4
C) $5
D) None of the answers are correct.

171) The following income statements are provided for Li Company's last two years of operation:

	Year 1	Year 2
Number of units produced and sold	4,600	4,100
Sales revenue	$ 69,750	$ 63,550
Cost of goods sold	41,700	38,000
Gross margin	28,050	25,550
General, selling, and administrative expenses	17,500	16,300
Net income	$ 10,550	$ 9,250

Assuming that cost behavior did not change over the two-year period, what is the annual amount of the company's fixed manufacturing overhead?

A) $7,660
B) $15,320
C) $17,320
D) None of these

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172) The following income statements are provided for Li Company's last two years of operation:

	Year 1	Year 2
Number of units produced and sold	3,500	3,000
Sales revenue	$ 101,500	$ 87,000
Cost of goods sold	68,000	60,000
Gross margin	33,500	27,000
General, selling, and administrative expenses	13,000	12,000
Net income	$ 20,500	$ 15,000

Assuming that cost behavior did not change over the two-year period, what is the annual amount of the company's fixed manufacturing overhead?

A) $12,000
B) $24,000
C) $26,000
D) None of these

173) The following income statements are provided for Li Company's last two years of operation:

	Year 1	Year 2
Number of units produced and sold	4,000	3,200
Sales revenue	$ 59,200	$ 47,360
Cost of goods sold	29,000	25,000
Gross margin	30,200	22,360
General, selling, and administrative expenses	9,700	8,420
Net income	$ 20,500	$ 13,940

Assuming that cost behavior did not change over the two-year period, what is the company's annual fixed general, selling, and administrative cost?

A) $3,800
B) $3,300
C) $1,650
D) $1,150

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174) The following income statements are provided for Li Company's last two years of operation:

	Year 1	Year 2
Number of units produced and sold	3,500	3,000
Sales revenue	$ 101,500	$ 87,000
Cost of goods sold	68,000	60,000
Gross margin	33,500	27,000
General, selling, and administrative expenses	13,000	12,000
Net income	$ 20,500	$ 15,000

Assuming that cost behavior did not change over the two-year period, what is the company's annual fixed general, selling, and administrative cost?

A) $6,500
B) $6,000
C) $3,000
D) $2,500

175) The following income statements are provided for Li Company's last two years of operation:

	Year 1	Year 2
Number of units produced and sold	3,800	3,000
Sales revenue	$ 55,860	$ 44,100
Cost of goods sold	27,000	23,000
Gross margin	28,860	21,100
General, selling, and administrative expenses	8,520	7,400
Net income	$ 20,340	$ 13,700

Assuming that cost behavior did not change over the two-year period, what is Li Company's contribution margin in Year 2?

A) $24,900
B) $23,900
C) $30,900
D) $70,900

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176) The following income statements are provided for Li Company's last two years of operation:

	Year 1	Year 2
Number of units produced and sold	3,500	3,000
Sales revenue	$ 101,500	$ 87,000
Cost of goods sold	68,000	60,000
Gross margin	33,500	27,000
General, selling, and administrative expenses	13,000	12,000
Net income	$ 20,500	$ 15,000

Assuming that cost behavior did not change over the two-year period, what is Li Company's contribution margin in Year 2?

A) $33,000
B) $32,000
C) $39,000
D) $69,000

177) Handy Hiking produces backpacks. In the previous year, its highest and lowest production levels occurred in July and January, respectively. In July, it produced 5,800 backpacks at a total cost of $202,250. In January, it produced 4,300 backpacks at a total cost of $96,500. Using the high-low method, the average variable cost per of producing a backpack was:

A) $34.87
B) $142.25
C) $70.50
D) $141.38

178) Handy Hiking produces backpacks. In the previous year, its highest and lowest production levels occurred in July and January, respectively. In July, it produced 5,000 backpacks at a total cost of $162,250. In January, it produced 3,500 backpacks at a total cost of $92,500. Using the high-low method, the average variable cost per of producing a backpack was:

A) $94.25
B) $93.38
C) $32.45
D) $46.50

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179) Handy Hiking produces backpacks. In the previous year, its highest and lowest production levels occurred in July and January, respectively. In July, it produced 5,400 backpacks at a total cost of $180,000. In January, it produced 2,452 backpacks at a total cost of $94,500. Using the high-low method, the total estimated fixed cost was

A) $180,000.
B) $156,615.
C) $23,385.
D) None of the answers is correct.

180) Handy Hiking produces backpacks. In the previous year, its highest and lowest production levels occurred in July and January, respectively. In July, it produced 5,000 backpacks at a total cost of $160,000. In January, it produced 2,300 backpacks at a total cost of $92,500. Using the high-low method, the total estimated fixed cost was

A) $160,000.
B) $125,000.
C) $35,000.
D) None of the answers is correct.

181) The results below represent what form of cost behavior?

	Year 1	Year 2
Units	4,500	4,800
Total Cost	$ 11,250	$ 12,000

A) Fixed Cost
B) Variable Cost
C) Mixed Cost
D) Opportunity Cost

182) Based on the following operating data, the operating leverage is

Note: Round your answer to 2 decimal places:

Sales	$ 750,000
Variable costs	389,000
Contribution margin	361,000
Fixed costs	139,000
Income from operations	$ 222,000

A) 1.63
B) 2.08
C) 1.08
D) 3.38

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183) Based on the following operating data, the operating leverage is:

Sales	$ 500,000
Variable costs	280,000
Contribution margin	220,000
Fixed costs	180,000
Income from operations	$ 40,000

A) 0.18
B) 5.50
C) 1.22
D) 12.5

184) The following information is for Gable, Incorporated and Harlowe, Incorporated for the recent year.

	Gable, Incorporated	Harlowe, Incorporated
Sales	$ 944,000	$ 944,000
Variable costs	424,000	224,000
Contribution margin	520,000	720,000
Fixed costs	200,000	400,000
Income from operations	$ 320,000	$ 320,000

Based on the above data, which company has a higher operating leverage?

A) Gable, Incorporated
B) Harlowe, Incorporated
C) Operating leverage is the same for both companies
D) Cannot be determined

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185) The following information is for Gable, Incorporated and Harlowe, Incorporated for the recent year.

	Gable, Incorporated	Harlowe, Incorporated
Sales	$ 800,000	$ 800,000
Variable costs	400,000	200,000
Contribution margin	400,000	600,000
Fixed costs	200,000	400,000
Income from operations	$ 200,000	$ 200,000

Based on the above data, which company has a higher operating leverage?

A) Gable, Incorporated
B) Harlowe, Incorporated
C) Operating leverage is the same for both companies
D) Cannot be determined

186) The following information is for Gable, Incorporated and Harlowe, Incorporated for the recent year.

	Gable, Incorporated	Harlowe, Incorporated
Sales	$ 770,000	$ 770,000
Variable costs	392,700	215,600
Contribution margin	377,300	554,400
Fixed costs	188,700	392,700
Income from operations	$ 188,600	$ 161,700

What total amount of net income will Harlowe, Incorporated earn if it experiences a 10 percent increase in revenue?

A) $190,080
B) $77,000
C) $217,140
D) $16,170

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187) The following information is for Gable, Incorporated and Harlowe, Incorporated for the recent year.

	Gable, Incorporated	Harlowe, Incorporated
Sales	$ 800,000	$ 800,000
Variable costs	400,000	200,000
Contribution margin	400,000	600,000
Fixed costs	200,000	400,000
Income from operations	$ 200,000	200,000

What total amount of net income will Harlowe, Incorporated earn if it experiences a 10 percent increase in revenue?

A) $180, 000
B) $80,000
C) $260,000
D) $20,000

Units sold	20	40	60
Total salary cost	$ 6,000	$ 7,800	$ 9,200
Total cost of goods sold	14,000	28,000	42,000
Depreciation cost per unit	$ 120	$ 60	$ 40

188) Based on the above information, select the correct statement.

A) Cost of goods sold is a mixed cost.
B) Salary cost is a mixed cost.
C) Depreciation cost is a variable cost.
D) If the company sells 20 units for $540 each, it will incur a loss of $200.

189) Select the**incorrect** statement regarding fixed and variable costs.

A) Fixed cost per unit remains constant as the number of units increases.
B) Total variable cost is represented by a straight line sloping upward from the origin when total variable cost is graphed versus number of units.
C) The concept of relevant range applies to both fixed costs and variable costs.
D) The terms "fixed" and "variable" refer to the behavior of total cost.

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190) The following information is for Companies M and N for the most recent year:

	Company M	Company N
Sales	$ 590,000	$ 590,000
Variable costs	$ 354,000	$ 236,000
Fixed costs	$ 59,000	$ 177,000

Based on this information, which of the following statements is **incorrect**?

A) N's magnitude of operating leverage is lower than M's.
B) N would suffer more than M from an equal drop in sales revenue.
C) N's cost structure carries greater risk and greater potential for profit.
D) If N's sales increased by 20%, its net income would increase by 40%.

191) The following information is for Companies M and N for the most recent year:

	Company M	Company N
Sales	$ 500,000	$ 500,000
Variable costs	$ 300,000	$ 200,000
Fixed costs	$ 50,000	$ 150,000

Based on this information, which of the following statements is **incorrect**?

A) N's magnitude of operating leverage is lower than M's.
B) N would suffer more than M from an equal drop in sales revenue.
C) N's cost structure carries greater risk and greater potential for profit.
D) If N's sales increased by 20%, its net income would increase by 40%.

192) Carson Corporation's sales increase from $600,000 to $780,000 in the current year. What is the percentage change in sales?

A) 30%
B) 23.1%
C) 43%
D) 36%

193) Carson Corporation's sales increase from $500,000 to $600,000 in the current year. What is the percentage change in sales?

A) 20%
B) 25%
C) 22%
D) 16.7%

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194) Frazier Company sells women's ski jackets. The average sales price is $281 and the variable cost per jacket is $131. Fixed Costs are $1,256,000. If Frazier sells 15,600 jackets, the contribution margin will be:

A) $3,127,600
B) $1,084,000
C) $2,340,000
D) $959,600

195) Frazier Company sells women's ski jackets. The average sales price is $275 and the variable cost per jacket is $175. Fixed Costs are $1,350,000. If Frazier sells 15,000 jackets, the contribution margin will be:

A) $2,775,000
B) $1,500,000
C) $2,250,000
D) $150,000

196) Mark Company, Incorporated sells electronics. The company generated sales of $70,000. Contribution margin is $33,600 and net income is $6,700. Based on this information, the magnitude of operating leverage is:

A) 2.08
B) 10.45
C) 5.01
D) 5.43

197) Mark Company, Incorporated sells electronics. The company generated sales of $45,000. Contribution margin is $20,000 and net income is $4,000. Based on this information, the magnitude of operating leverage is:

A) 2.25
B) 11.25
C) 5.00
D) 6.25

198) Which characteristic is true of the high-low method, the scattergraph method, and regression analysis?

A) All methods will produce the same estimate of variable and fixed costs.
B) All methods use historic data to estimate variable and fixed costs.
C) All methods use only two data points in analyzing a mixed cost.
D) None of these are correct.

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199) Taste of the Town, Incorporated operates a gourmet sandwich shop. The company orders bread, cold cuts, and produce several times a week. If the cost of these items remains constant per customer served, the cost is said to be:

A) Variable
B) Fixed
C) Opportunity
D) Mixed

200) The following income statement was produced when volume of sales was at 400 units.

Sales Revenue	$ 2,100
Variable Cost	1,100
Contribution Margin	$ 1,000
Fixed Cost	520
Net Income	$ 480

If volume reaches 500 units, net income will be:

A) $650
B) $1,850
C) $730
D) None of these

201) The following income statement was produced when volume of sales was at 400 units.

Sales Revenue	$ 2,000
Variable Cost	1,200
Contribution Margin	$ 800
Fixed Cost	300
Net Income	$ 500

If volume reaches 500 units, net income will be:

A) $625
B) $1,800
C) $700
D) None of these

202) All of the following would be considered a fixed cost for a bottled water company **except**:

A) rent on warehouse facility.
B) depreciation on its manufacturing equipment.
C) hourly wages for machine operators.
D) property taxes on its factory building.

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203) Assume that the management of Dairy Deli wants to expand operations. To help evaluate the risks involved in opening an additional store, the company president wants to know the amount of fixed cost a new store will likely incur. Management uses the regression method to analyze the company's mixed costs. In terms of interpreting the results:

A) a low R^2 statistic suggests that the independent value (units sold) more strongly influences the dependent variable (total cost).

B) the R^2 statistic represents the percentage of change in the independent variable (units sold) that is explained by a change in the independent variable (total cost).

C) the R^2 statistic represents the percentage of change in the dependent variable (total cost) that is explained by a change in the independent variable (units sold).

D) the R^2 statistic is not a good measure of reliability.

ESSAY. Write your answer in the space provided or on a separate sheet of paper.

204) Blackstock Company manufactures digital cameras. Indicate whether its cost behavior is fixed, variable, or mixed by placing X's in the appropriate boxes. As an example, commissions paid to sales staff would be classified as variable.

	Cost Behavior		
Cost	**Fixed**	**Variable**	**Mixed**
Insurance on executive offices			
Lens caps for digital cameras			
Depreciation on manufacturing equipment			
Shipping cost to deliver products to customers			
Salary of company president			
Wages of assembly workers			
Product advertising			
Utilities: electricity to run machines and for heat and lights in factory			

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205) How does total fixed cost behave when volume increases?

206) How does fixed cost per unit behave when volume decreases?

207) How does total variable cost respond when volume increases?

208) How does variable cost per unit behave when volume decreases?

209) If a company had a pure fixed cost structure, what would be the relationship between a given dollar increase in sales and net income?

210) What are mixed or semivariable costs? Give an example of a mixed cost.

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211) What is operating leverage, and how does a company achieve operating leverage?

212) What is meant by the phrase, "cost structure?"

213) How is operating leverage related to cost structure?

214) Describe the format of an income statement prepared using the contribution margin approach.

215) For Marvin Company, the magnitude of operating leverage was 3.5 during the current year. Demonstrate what this magnitude of operating leverage would mean for the company's profitability by creating an example.

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216) If a company had a pure variable cost structure, what would be the relationship between contribution margin and net income, and what would be the magnitude of operating leverage?

217) What is meant by the phrase, "relevant range"? How does the concept of relevant range affect fixed costs?

218) Assume that wages expense is a variable cost and that the relevant range is 10,000 to 15,000 labor hours. Within that range, the cost is $15 per hour. What can you assume about wages expense outside this range?

219) What is an activity base, and how does the activity base relate to a variable cost?

220) Why would a company often calculate and use average costs of its products and services rather than actual costs?

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221) Why would a company need to estimate the fixed and variable components of a mixed cost?

222) What is the high-low method used for?

223) Describe the steps in the high-low method.

224) What is a primary disadvantage of the high-low method of analyzing a mixed cost?

225) Compare least squares regression and the scattergraph method of analyzing mixed costs.

226) What advantages does the regression method of cost estimation offer, compared to the high-low and scattergraph methods of estimating mixed costs?

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227) Assume that management uses the regression method to separate a mixed cost into its fixed and variable components. Briefly describe the significance of the R Square (R^2) when interpreting the reliability of cost estimates that result.

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228) Select the term from the list provided that best matches each of the following descriptions. The first is done for you.

Answer	Description	List of terms
5	A. A cost that remains constant in total when volume changes	1. Mixed cost
	B. The way a cost changes relative to changes in a measure of activity	2. Operating leverage
	C. A company's cost mix or relative proportion of variable and fixed costs to total costs	3. Scattergraph method
	D. The difference between a company's sales revenue and its variable costs	4. Contribution margin
	E. Costs composed of both fixed and variable components	5. Fixed cost
	F. A cost that changes in total in direct proportion to changes in volume	6. Cost behavior
	G. A factor that causes (or drives) changes in costs	7. Activity base
	H. A condition in which a percentage change in revenue will produce a proportionately larger percentage change in net income	8. Variable cost
	I. A method of estimating the fixed and variable components of mixed cost using two data observations	9. Cost structure
	J. A method of estimating the fixed and variable components of a mixed cost where data are plotted on a graph and a line is visually fit to the data	10. High-low method

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229) Costs that might be incurred by service, merchandising, and manufacturing companies are described below:

Sales commissions paid to sales associates in a department store	_____
Shipping cost for Amazon	_____
Electricity cost to heat and light a law firm	_____
Rent on a storeroom used by Turf Pros to store lawn equipment	_____
Salary of a supervisor in a Best Buy distribution center	_____
Wages paid to production workers in a General Motors plant	_____
Insurance on a Hershey factory	_____
Fuel costs for Southwest Airlines	_____
Depreciation of office equipment by Microsoft Corporation	_____
Dishwashing in an Olive Garden restaurant	_____
Salary of the CEO of Microsoft	_____
Lubricants used to maintain machinery in a textile factory	_____
Cost of metal cans used in a dog food factory	_____
Cost of pizza boxes for Domino's Pizza	_____
Material handling costs for Frito Lay	_____

Required: Classify each cost as variable or fixed with respect to volume or level of activity.

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230) Complete the following table to indicate your understanding of fixed and variable cost behavior by inserting one of the following responses in each box: "Remain constant," "Increase," or "Decrease."

	When Activity Increases	When Activity Decreases
Unit fixed costs		
Total fixed costs		
Unit variable costs		
Total variable costs		

231) Sandford Company manufactures one product. Its variable manufacturing cost is $16 per unit; total fixed manufacturing cost is $600,000.

Required

a. Calculate Sandford's total manufacturing costs if it produces 10,000 units.

b. What would be the total cost per unit (including both fixed and variable costs) assuming that Sandford produces 10,000 units?

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232) Phoenix Corporation manufactures smartphones, generally selling from 200,000 to 300,000 units per year. The following cost data apply to the activity levels shown:

Number of Units	200,000	250,000	300,000
Total costs			
Fixed	$ 15,000,000		
Variable	24,000,000		
Total costs	39,000,000		
Cost per Unit			
Fixed	$ 75		
Variable	120		
Total cost per unit	$ 195		

Required

a. Complete the preceding table by filling the missing amounts for 250,000 and 300,000 units.

b. Assume that Phoenix actually makes 280,000 units. What would be the total costs and the cost per unit at this level of activity? Note: Round the cost per unit to two decimal places

c. If Phoenix sells each unit for $220, what is Phoenix's magnitude of operating leverage at sales of 280,000 units? Note: Round to two decimal places.

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233) Grant Company and Lee Company compete in the same market. The following budgeted income statements illustrate their cost structures.

	Grant Company	Lee Company
Number of customers	200	200
Sales revenue (200 × $150)	$ 30,000	$ 30,000
Less variable costs	6,000	18,000
Contribution margin	$ 24,000	$ 12,000
Less fixed costs	19,000	7,000
Net income	$ 5,000	$ 5,000

Required

a. If Grant Company lowers its price to $135, it will lure 80 customers away from Lee Company. Prepare Grant's income statement based on 280 customers.

b. If Lee Company lowers its price to $135 (assuming that Grant Company is still charging $150 per customer), Lee would lure 80 customers away from Grant. Prepare Lee's income statement based on 280 customers.

c. Which of the companies would benefit more from lowering its sales price to attract more customers, and why?

234) Income statements for three companies are provided below:

	Company A	Company B	Company C
Sales (20 units)	$ 1,000	$ 1,000	$ 1,000
Less variable costs	600	300	-
Less fixed costs	200	500	800
Net income	$ 200	$ 200	$ 200

Required

a. Prepare new income statements for the firms assuming each sells one additional unit (i.e. each firm sells 21 units)

b. Which company has the highest operating leverage?

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235) Former NFL coach Joe Gibbs is highly sought after as a guest speaker. His fee can run as high as $150,000 for a single two-hour appearance. Recently, he was asked to speak at a seminar offered by the National Sports in Education Foundation (NSEF). Due to the charitable nature of the organization, Mr. Gibbs offered to speak for $100,000. NSEF planned to invite 350 guests who would each make a $500 contribution to the organization. The Foundation's executive director was concerned about committing so much of the organization's cash to this one event. So instead of the $100,000 fee she countered with an offer to pay Mr. Gibbs 50% of the revenue received from the seminar and no other payments.

Required

a. Classify the two offers in terms of cost behavior (fixed versus variable). Scenario A, NSEF pays Gibbs a $100,000 fee: Scenario B, NSEF pays Gibbs 50% of revenue:

b. Compute the budgeted income (assuming there are no other expenses) under each of the following scenarios: 1) NSEF agrees to pay the $100,000 fee, and 350 guests actually attend the seminar; and 2) NSEF pays Mr. Gibbs 50% of revenue, and 350 guests attend the seminar.

c. For each scenario ($100,000 fee versus 50% of revenue), compute the percentage increase in profit that would result if the Foundation is able to increase attendance by 20 percent over the original plan (to a total of 420). Note: Round the percentages to the nearest whole numbers.

d. For each scenario, compute NSEF's cost per contributor if 350 attend and if 420 contributors attend. Note: Round the cost per contributor to two decimal points.

e. Summarize the impact on risk and profits of shifting the cost structure from fixed to variable costs.

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236) Assume that Microsoft and Sony both plan to introduce a new hand-held video game. Microsoft plans to use a heavily automated production process to produce its product while Sony plans to use a labor-intensive production process. The following revenue and cost relationships are provided:

	Microsoft Game	Sony Game
Selling price per unit	150	150
Variable cost per unit		
Direct material	$ 27.00	$ 27.00
Direct labor	7.50	30.00
Overhead	7.50	30.00
Selling and administrative	3.00	3.00
Annual fixed costs		
Overhead	$ 600,000	$ 240,000
Selling and administrative	135,000	135,000

Required

a. Compute the contribution margin per unit for each company.
b. Prepare a contribution income statement for each company assuming each company sells 8,000 units.
c. Compute each firm's net income if the number of units sold increases by 10%.
d. Which firm will have more stable profits when sales change? Why?

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237) Cannon Company operates a clothing store that reported the following operating results for the current year:

Income Statement	
Sales revenue	$ 2,000,000
Cost of goods sold	(1,200,000)
Gross margin	$ 800,000
Employee commissions and bonuses (5% of sales)	(100,000)
Depreciation expense	(150,000)
Salaries expense	(260,000)
Shipping and delivery expense (2% of sales)	(40,000)
Advertising expense	(80,000)
Net income	$ 170,000

RequiredPrepare an income statement for Cannon Company using the contribution margin format.

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238) Contribution margin income statements for two competing companies are provided below:

	Yin Company	Yang Company
Revenue	$ 750,000	$ 750,000
Less variable costs	300,000	525,000
Contribution margin	$ 450,000	$ 225,000
Less fixed costs	405,000	180,000
Net income	$ 45,000	$ 45,000

Required

a. Show each company's cost structure by inserting the percentage of the company's revenue represented by each item on the contribution margin income statement.
b. Compute each company's magnitude of operating leverage.
c. Using the operating leverage measures computed in requirement b, determine the increase in each company's net income (percentage and amount) if each company experiences a 10 percent increase in sales.
d. Assume that sales are expected to continue to increase for the foreseeable future, which company probably has more desirable cost structure? Why?

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239) ETutor is an online tutoring service provider that is particularly popular with college students. The company is interested in estimating the fixed and variable components of its tutoring services costs. The manager believes that these costs are driven by the number of hours of tutoring services provided. The following information was gathered for the last six months of business:

Month	Number of Hours	Tutoring Costs
January	25,000	$ 308,000
February	41,000	420,000
March	29,000	352,000
April	31,000	373,000
May	34,000	378,000
June	18,000	252,000

Required:

a. Compute the average tutoring cost per hour for the six-month period. Note: Round the average tutoring cost per hour to two decimal points.
b. Use the high-low method to estimate the total fixed cost and the variable cost per hour. Note: Round the variable cost per hour to two decimal points.
c. Name one advantage and one disadvantage of the high-low method.
d. Describe the scattergraph method that can be used to analyze mixed costs.

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240) Maryland Novelties Company produces and sells souvenir products. Monthly income statements for two activity levels are provided below:

Unit volumes	20,000 units	30,000 units
Revenue	$ 150,000	$ 225,000
Less cost of goods sold	60,000	90,000
Gross margin	$ 90,000	$ 135,000
Less operating expenses		
Salaries and commissions	20,000	25,000
Advertising expenses	30,000	30,000
Administrative expenses	12,500	12,500
Total operating expenses	62,500	67,500
Net income	$ 27,500	$ 67,500

Required

a. Identify the mixed expense(s).
b. Use the high-low method to separate the mixed costs into variable and fixed components.
c. Prepare a contribution margin income statement at the 20,000-unit level.

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Answer Key

Test name: Chapter 02

1) FALSE
2) TRUE
3) FALSE
4) TRUE
5) FALSE
6) FALSE
7) TRUE
8) FALSE
9) TRUE
10) FALSE
11) TRUE
12) FALSE
The sales revenue of a company with a completely fixed cost structure will equal its contribution margin. Since the magnitude of operating leverage equals the contribution margin divided by net income, the magnitude of operating leverage of a company with a completely fixed cost structure cannot be determined without additional information.

13) TRUE
14) FALSE
Contribution margin = Revenues − Variable expenses
Contribution margin = $35 − ($20 + $5) = $10

15) FALSE
16) TRUE
17) FALSE
Contribution margin can only be determined if costs are separated into fixed and variable costs.

18) TRUE
Recall that magnitude of operating leverage equals contribution margin divided by net income.

19) TRUE
20) FALSE
21) FALSE
Operating leverage itself is neither good nor bad; it represents a strategy that can work to a company's advantage or disadvantage, depending on how it is used.

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22) TRUE
A manager who expects revenues to increase should use a fixed cost structure. On the other hand, if future sales growth is uncertain or if the manager believes revenue is likely to decline, a variable cost structure makes more sense.

23) TRUE
24) FALSE
25) TRUE
26) TRUE
27) TRUE
28) TRUE
29) TRUE
30) FALSE
31) FALSE
32) FALSE
33) TRUE
34) TRUE
35) FALSE
36) TRUE
37) TRUE

38) B
When the volume increases, the total cost of supplies increases; when volume decreases, the total decreases; as such, the cost of supplies is a variable cost.

39) B
The total amount of a fixed cost does not change when volume changes. In contrast, fixed cost per unit is *not* fixed. It changes as the volume changes. The fixed cost per unit decreases when volume increases and the fixed cost per unit increases when volume decreases.

40) C
The gasoline cost would be classified as variable if the total gasoline cost increases when the volume increases and the total gasoline cost decreases when the volume decreases.

41) D
The total amount of a fixed cost does not change when volume changes. In contrast, fixed cost per unit is *not* fixed. It changes as the volume changes. The fixed cost per unit decreases when volume increases and the fixed cost per unit increases when volume decreases.

42) C

The total amount of a total fixed cost does not change when volume changes.

43) B

Since the salespersons are paid strictly on commission, at $1.50 for each case of product sold, the total cost of the salespersons' commissions would increase as the sales volume increases. As such, this cost would be classified as a variable cost.

44) B

When the volume increases, the total cost of Product A increases; as such, the cost of Product A is a variable cost. The fixed cost per unit of Product B decreases when volume increases; as such, the cost of Product B is a fixed cost.

45) A

When the number of units increases, the cost per unit of materials remains the same; as such, the cost of materials is a variable cost. Cost per unit of labor decreases when volume increases; as such, labor is a fixed cost. Utilities cost remains constant in total indicating it is a fixed cost.

46) A

Variable cost per unit = $62,000 ÷ 2,480 units = $25. Total cost at 6,600 units is:

Variable (6,600 units × $25)	$ 165,000
Fixed	73,000
Total	$ 238,000

Cost per unit = $238,000 ÷ 6,600 units = $36 per unit

47) C

Variable cost per unit = $56,000 ÷ 2,545 units = $22. Total cost at 6,000 units is:

Variable (6,000 units × $22)	$ 132,024
Fixed	70,000
Total	$ 202,024

Cost per unit = $202,024 ÷ 6,000 units = $34 per unit

48) C

Total variable manufacturing cost = variable manufacturing cost per unit × number of units produced

49) D

Total variable manufacturing cost = variable manufacturing cost per unit × number of units produced

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50) B
Fixed costs are constant in total. Therefore, total fixed cost is $38,500 whether the company makes 12,000 or 14,500 units.

51) B
Fixed costs are constant in total. Therefore, total fixed cost is $36,500 whether the company makes 10,000 or 12,500 units.

52) B
Variable cost per unit = $258,400 ÷ 38,000 units = $6.80 per unit
Total variable costs when 33,000 units are produced = Variable cost per unit of $6.80 × 33,000 units = $224,400

53) B
Variable cost per unit = $100,000 ÷ 20,000 units = $5 per unit
Total variable costs when 15,000 units are produced = Variable cost per unit of $5 × 15,000 units = $75,000

54) B
When the number of units increases, the cost per unit of Cost Number 1 remains the same; as such, it is a variable cost. When the number of units increases, the cost per unit of Cost Number 2 decreases, indicating it is a fixed cost.

55) A
When the number of units increases, the cost per unit of Cost #1 remains the same; as such, it is a variable cost. When the number of units increases, the cost per unit of Cost #2 decreases, indicating it is a fixed cost.

56) A
(a) Total cost of $16,000 ÷ 3,200 units = $5.00 per unit
(b) Total cost of $7,840 ÷ 3,200 units = $2.45 per unit

57) D
(a) Total cost of $15,000 ÷ 3,000 units = $5 per unit
(b) Total cost of $6,000 ÷ 3,000 units = $2 per unit

58) A

The cost per unit of Cost Number 1 decreases when volume increases; as such, Cost Number 1 is a fixed cost. When the volume increases, the cost per unit of Cost Number 2 stays the same; as such, Cost Number 2 is a variable cost.

59) C
Current cost per unit:
Total cost per unit = (Fixed cost + Variable cost) ÷ Number of units
Total cost per unit = ($154,000 + $171,600) ÷ 3,900 units = $83.49 per unit
Cost per unit when volume doubles:
Total cost per unit = [$154,000 + ($171,600 × 2)] ÷ (3,900 units × 2) = $63.74 per unit

60) B
Current cost per unit:
Total cost per unit = (Fixed cost + Variable cost) ÷ Number of units
Total cost per unit = ($40,000 + $50,000) ÷ 4,000 units = $22.50 per unit
Cost per unit when volume doubles:
Total cost per unit = [$40,000 + ($50,000 × 2)] ÷ (4,000 units × 2) = $17.50 per unit

61) C
Variable cost per unit = Total variable cost ÷ Number of units
Variable cost per unit = $64,400 ÷ 2,300 units = $28.00 per unit
Total cost per unit = Fixed cost per unit + Variable cost per unit
Total cost per unit = ($53,200 ÷ 2,800 units) + $28.00 per unit = $47 per unit

62) C
Variable cost per unit = Total variable cost ÷ Number of units
Variable cost per unit = $50,000 ÷ 4,000 units = $12.50 per unit
Total cost per unit = Fixed cost per unit + Variable cost per unit
Total cost per unit = ($40,000 ÷ 5,000 units) + $12.50 per unit = $20.50 per unit

63) C
Variable cost per unit = Total variable cost ÷ Number of units
Variable cost per unit = $55,000 ÷ 5,000 units = $11.00 per unit
Total cost = Fixed cost + Variable cost
Total cost = $50,000 + ($11.00 per unit × 6,000 units) = $116,000

64) C

Variable cost per unit = Total variable cost ÷ Number of units
Variable cost per unit = $50,000 ÷ 4,000 units = $12.50 per unit
Total cost = Fixed cost + Variable cost
Total cost = $40,000 + ($12.50 per unit × 5,000 units) = $102,500

65) C
Total cost = Fixed cost + Variable cost
Total cost = $46,000 + $46,000 = $92,000
Cost per unit when volume doubles:
Total cost = $46,000 + ($46,000 × 2) = $138,000

66) C
Current cost:
Total cost = Fixed cost + Variable cost
Total cost = $40,000 + $50,000 = $90,000
Cost per unit when volume doubles:
Total cost = $40,000 + ($50,000 × 2) = $140,000

67) A
Since the total cost line intersects the vertical axis at zero, there is no fixed cost component in this total cost. As such, and because the total cost line slopes upward, this line depicts a variable cost.

68) A
Since the per unit cost line is horizontal, the cost per unit is constant. A variable cost per unit *remains constant* regardless of volume changes. As such, this depicts a variable cost.

69) B
Since the total cost line is horizontal, the total cost is constant as the volume changes. As such, this depicts a fixed cost.

70) B
Total cost = Fixed cost + Variable cost
Total cost = $5,700 + (530 units × $2.30 per unit) = $6,919

71) A
Total cost = Fixed cost + Variable cost
Total cost = $4,500 + (800 units × $3.00 per unit) = $6,900

72) B

Net income = Sales revenue − Variable cost − Fixed cost
Before the price change:
Quick Change: Net income = (3,200 × $19 per unit) − $0 − $16,000 = $44,800
Fast Change: Net income = (3,200 × $19 per unit) − (3,200 × $5 per unit) − $0 = $44,800
After the price change:
Quick Change: Net income = (4,400 × $17 per unit) − $0 − $16,000 = $58,800
Fast Change: Net income = (2,000 × $19 per unit) − (2,000 × $5 per unit) − $0 = $28,000

73) A
Net income = Sales revenue − Variable cost − Fixed cost
Before the price change:
Quick Change: Net income = (5,000 × $20 per unit) − $0 − $40,000 = $60,000
Fast Change: Net income = (5,000 × $20 per unit) − (5,000 × $8 per unit) − $0 = $60,000
After the price change:
Quick Change: Net income = (6,000 × $18 per unit) − $0 − $40,000 = $68,000
Fast Change: Net income = (4,000 × $20 per unit) − (4,000 × $8 per unit) − $0 = $48,000

74) A
When sales change, the amount of the corresponding change in net income is directly influenced by the company's cost structure. The more fixed cost, the greater the fluctuation in net income. Since Hard Nails has a fixed cost structure while Bright Nails has a variable cost structure, if sales of both salons increase by an equal amount, Hard Nails will earn a higher profit than Bright Nails.

75) C
The total amount of a fixed cost does not change when volume changes. In contrast, fixed cost per unit is *not* fixed. It changes as the volume changes. The fixed cost per unit decreases when volume increases and the fixed cost per unit increases when volume decreases.

76) A
The behavior pattern of a particular cost may be either fixed or variable, depending on the context. In this context, the total cost of rent increases proportionately with the number of shops while cost per shop remains constant. The rent is therefore variable relative to the number of shops.

77) B

When sales change, the amount of the corresponding change in net income is directly influenced by the company's cost structure. The more fixed cost, the greater the fluctuation in net income. Since Company A's net income is substantially higher than Company B's when both companies experience an equal increase in sales, Company A has a fixed cost structure while Company B has a variable cost structure.

78) D
Operating leverage is the cost structure condition that produces a proportionately larger percentage change in net income for a given percentage change in revenue. Business managers apply operating leverage to magnify small changes in revenue into dramatic changes in profitability.

79) C
% change = (Alternative measure − Base measure) ÷ Base measure
% change = ($111,000 − $91,000) ÷ $91,000 = 21.98%

80) C
% change = (Alternative measure − Base measure) ÷ Base measure
% change = ($200,000 − $160,000) ÷ $160,000 = 25%

81) C
Note that operating leverage magnifies the impact that changes in volume have on revenue and net income. In this case, a 20% increase in units sold results in a 28% increase in net income. Supporting computations are shown below.

Net income at base point:	
Revenue ($390 × 1,450 students)	$ 565,500
Fixed expenses	155,000
Net income	$ 410,500
Net income after 20% increase:	
Increase in volume 1,450 × 1.20 = 1,740	
Revenue ($390 × 1,740 students)	$ 678,600
Fixed expenses	155,000
Net income	$ 523,600

% change ($523,600 − $410,500) ÷ $410,500 = 28%

82) B

Note that operating leverage magnifies the impact that changes in volume have on revenue and net income. In this case, a 10% increase in units sold results in a 16% increase in net income. Supporting computations are shown below.

Net income at base point:	
Revenue ($300 × 1,000 students)	$ 300,000
Fixed expenses	110,000
Net income	$ 190,000
Net income after 10% increase:	
Increase in volume 1,000 × 1.10 = 1,100	
Revenue ($300 × 1,100 students)	$ 330,000
Fixed expenses	110,000
Net income	$ 220,000

% change ($220,000 − $190,000) ÷ $190,000 = 16%

83) B

Note that operating leverage magnifies the impact of decreases as well as increases in volume. In this case, a 10% decrease in units sold results in a 14% decrease in net income. Supporting computations are shown below.

Net income at base point:	
Revenue ($380 × 1,400 students)	$ 532,000
Fixed expenses	150,000
Net income	$ 382,000
Net income after 10% decrease:	
Revenue ($380 × 1,260* students)	$ 478,800
Fixed expenses	150,000
Net income	$ 328,800

*Decrease in volume 1,400 × 0.10 = 140; Number of students served: 1,400 − 140 = 1,260

% change ($328,800 − $382,000) ÷ $382,000 = (14%)

84) D

Note that operating leverage magnifies the impact of decreases as well as increases in volume. In this case, a 10% decrease in units sold results in a 16% decrease in net income. Supporting computations are shown below.

Net income at base point:	
Revenue ($300 × 1,000 students)	$ 300,000
Fixed expenses	110,000
Net income	$ 190,000
Net income after 10% decrease:	
Revenue ($300 × 900* students)	$ 270,000
Fixed expenses	110,000
Net income	$ 160,000

*Decrease in volume 1,000 × 0.10 = 100; Number of students served: 1,000 − 100 = 900

% change ($160,000 − $190,000) ÷ $190,000 = (16%)

85) A

% change = (Alternative measure − Base measure) ÷ Base measure

% change = (170 − 32) ÷ 32 = 431%

86) D

% change = (Alternative measure − Base measure) ÷ Base measure

% change = (150 − 30) ÷ 30 = 400%

87) C

Shifting the cost structure from fixed to variable reduces not only the level of risk but also the operating leverage and potential for profits.

88) B

Shifting the cost structure from fixed to variable reduces not only the level of risk but also the operating leverage and potential for profits.

89) D

Since total fixed costs do not change as volume increases, they act as a lever that causes small changes in revenue to have disproportionate effects on net income. A small percentage increase in revenue will cause a larger percentage increase in net income. A small percentage decrease in revenue will cause a larger percentage decrease net income. This phenomenon is called operating leverage. Since Finley Company has a fixed cost structure, it has operating leverage and a 40% percentage increase revenue results in a greater than 40% percentage increase in net income.

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90) A
A manager who expects revenues to increase should use a fixed cost structure. On the other hand, if future sales growth is uncertain or if the manager believes revenue is likely to decline, a variable cost structure makes more sense. Shifting the cost structure from fixed to variable reduces not only the level of risk but also the potential for profits.

91) D
Recall that contribution margin equals sales revenue minus variable costs. As such, in a pure fixed cost structure, because variable costs are zero, the unit selling price equals the unit contribution margin. Shifting the cost structure from fixed to variable reduces not only the level of risk but also the potential for profits.

92) C
Shifting the cost structure from fixed to variable reduces not only the level of risk but also the potential for profits.

93) C
94) B
Shifting the cost structure from fixed to variable reduces not only the level of risk but also the potential for profits. As a result, the more variable cost, the lower the fluctuation in income as sales fluctuate.

95) C
The higher the proportion of fixed cost to total costs, the greater the operating leverage. A manager who expects revenues to increase should use a fixed cost structure. While the variable cost structure reduces risk, it also limits the opportunity to benefit from operating leverage.

96) A
Magnitude of operating leverage = Contribution margin ÷ Net income
Soft drinks: Magnitude of operating leverage = $48,000 ÷ $10,080 = 4.8
Bottled water: Magnitude of operating leverage = $56,000 ÷ $8,080 = 6.9
Fruit juices: Magnitude of operating leverage = $28,000 ÷ $17,920 = 1.6

97) A
Magnitude of operating leverage = Contribution margin ÷ Net income
Soft drinks: Magnitude of operating leverage = $40,000 ÷ $10,000 = 4.0
Bottled water: Magnitude of operating leverage = $45,000 ÷ $5,000 = 9.0
Fruit juices: Magnitude of operating leverage = $20,000 ÷ $10,000 = 2.0

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98) A
Magnitude of operating leverage = Contribution margin ÷ Net income
Felix: Magnitude of operating leverage = $154,160 ÷ $73,997 = 2.083
Jinx: Magnitude of operating leverage = $107,837 ÷ $73,997 = 1.457
Impact of an increase in sales of $940 or 0.5% (= $940 ÷ $188,000):
Increase in net income = Sales × Percentage increase × Magnitude of degree of operating leverage
Felix: Increase in net income = $73,997 × (0.5% × 2.083) = $770.80
Jinx: Increase in net income = $73,997 × (0.5% × 1.457) = $539.18

99) A
Magnitude of operating leverage = Contribution margin ÷ Net income
Felix: Magnitude of operating leverage = $175,000 ÷ $105,000 = 1.6667
Jinx: Magnitude of operating leverage = $130,000 ÷ $105,000 = 1.2381
Impact of an increase in sales of $1,000 or 0.5% (= $1,000 ÷ $200,000):
Increase in net income = Sales × Percentage increase × Magnitude of operating leverage
Felix: Increase in net income = $105,000 × (0.5% × 1.6667) = $875
Jinx: Increase in net income = $105,000 × (0.5% × 1.2381) = $650

100) C
101) B
The contribution margin represents the amount available to cover fixed expenses and thereafter to provide company profits.

102) C
Gross margin is a subtotal calculated by subtracting cost of goods sold from sales. Gross margin is listed on an income statement prepared under GAAP for external reporting. However, for internal purposes, companies use a contribution margin approach. The contribution margin income statement subtracts variable costs from sales to arrive at the contribution margin, then subtracts fixed costs to arrive at net income.

103) C
Contribution margin = Revenues − Variable expenses
Contribution margin = $47,760 − ($18,960 + $4,560) = $24,240

104) A
Contribution margin = Revenues − Variable expenses
Contribution margin = $100,000 − ($40,000 + $10,000) = $50,000

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105) A

Revenue − Variable Cost = Contribution Margin: $117,600 − $54,600 − $8,400 = $54,600.

106) C

Revenue − Variable Cost = Contribution Margin: $245,000 − $140,000 − $14,000 = $91,000.

107) A

Income Statement: Gross Margin Format	
Revenue	$ 328,000
Cost of Goods Sold	214,000
Gross Margin	$ 114,000
Operating Expenses	(81,000)
Net Income	$ 33,000

Income Statement: Contribution Margin Format	
Revenue	$ 328,000
Variable Cost of Goods Sold	(214,000)
Variable Operating Expenses	(47,000)
Contribution Margin	$ 67,000
Fixed Expenses	34,000
Net Income	$ 33,000

108) D

Income Statement: Gross Margin Format	
Revenue	$ 320,000
Cost of Goods Sold	210,000
Gross Margin	$ 110,000
Operating Expenses	(75,000)
Net Income	$ 35,000

Income Statement: Contribution Margin Format	
Revenue	$ 320,000
Variable Cost of Goods Sold	(210,000)
Variable Operating Expenses	(45,000)
Contribution Margin	$ 65,000
Fixed Expenses	30,000
Net Income	$ 35,000

109) C

Contribution margin = Revenues − Variable expenses
Contribution margin = ($15 sales price per unit × 190 units) − ($6 variable cost per unit × 190 units) = $1,710

110) B
Contribution margin = Revenues − Variable expenses
Contribution margin = ($9 sales price per unit × 100 units) − ($4 variable cost per unit × 100 units) = $500

111) C
Contribution margin = Revenues − Variable expenses
Contribution margin = $2,580,000 − $308,000 = $2,272,000

112) C
Contribution margin = Revenues − Variable expenses
Contribution margin = $2,500,000 − $300,000 = $2,200,000

113) C
114) A
Contribution margin = Revenues − Variable expenses

115) A
Contribution margin = Revenues − Variable expenses
Contribution margin = $292,000 − ($99,000 + $44,000) = $149,000

116) D
Contribution margin = Revenues − Variable expenses
Contribution margin = $125,000 − ($42,500 + $15,000) = $67,500

117) C
Magnitude of operating leverage = Contribution margin ÷ Net income

118) C
Contribution margin = Revenues − Variable expenses
Contribution margin = $39,000 − ($19,000 + $3,000) = $17,000
Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage = $17,000 ÷ $3,500 = 4.86

119) C

Contribution margin = Revenues − Variable expenses
Contribution margin = $150,000 − ($50,000 + $10,000) = $90,000
Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage = $90,000 ÷ $30,000 = 3.00

120) A
Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage = ($32,760 − $15,960) ÷ $12,000 = 1.40

121) D
Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage = ($45,000 − $21,000) ÷ $8,000 = 3.00

122) A
Revenue − Variable Cost = Contribution Margin
$141,600 − $69,600 − $12,000 = $60,000

Magnitude of Operating Leverage:
Contribution Margin ÷ Net Income
$60,000 ÷ $44,400 = 1.35 times.

123) A
Revenue − Variable Cost = Contribution Margin
$245,000 − $140,000 − $14,000 = $91,000
Magnitude of Operating Leverage:
Contribution Margin ÷ Net Income
$91,000 ÷ $76,000 = 1.20 times.

124) D
% Increase in Net Income = % Increase in Revenue × Magnitude of Operating Leverage
% Increase in Net Income = 15% × 4.00 = 60.00%

125) C
% Increase in Net Income = % Increase in Revenue × Magnitude of Operating Leverage
% Increase in Net Income = 15% × 3.80 = 57.00%

126) C

Income Statement: Contribution Margin Format	
Revenue	$ 470,000
Variable Cost of Goods Sold	(285,000)
Variable Operating Expenses	(57,000)
Contribution Margin	$ 128,000
Fixed Expenses	37,000
Net Income	$ 91,000

Magnitude of Operating Leverage: Contribution Margin ÷ Net Income: $128,000 ÷ $91,000 = 1.41 times
% Increase in Net Income = % Increase in Revenue × Magnitude of Operating Leverage
% Increase in Net Income = 22.75% × 1.41 = 32.1%

127) A

Income Statement: Contribution Margin Format	
Revenue	$ 400,000
Variable Cost of Goods Sold	(250,000)
Variable Operating Expenses	(50,000)
Contribution Margin	$ 100,000
Fixed Expenses	30,000
Net Income	$ 70,000

Magnitude of Operating Leverage: Contribution Margin ÷ Net Income: $100,000 ÷ $70,000 = 1.43 times
% Increase in Net Income = % Increase in Revenue × Magnitude of Operating Leverage
% Increase in Net Income = 17.50% × 1.43 = 25.0%

128) B
Expected net income = Net income + (Net income × Percentage increase in sales × Magnitude of operating leverage)
Expected net income = $34,000 + ($34,000 × 0.05 × 3.8) = $40,460

129) B
Expected net income = Net income + (Net income × Percentage increase in sales × Magnitude of operating leverage)
Expected net income = $24,000 + ($24,000 × 0.05 × 1.8) = $26,160

130) D

Decrease in net income = Net income × Percentage decrease in sales × Magnitude of operating leverage
Decrease in net income = $43,000 × 0.06 × 3.9 = $10,062

131) B
Decrease in net income = Net income × Percentage decrease in sales × Magnitude of operating leverage
Decrease in net income = $36,000 × 0.06 × 3.5 = $7,560

132) C
Percentage increase in net income = Percentage increase in sales × Magnitude of operating leverage

Percentage increase in net income = [($125,400 – $110,000) ÷ $110,000] × 3.6 = 50.4%

133) C
Percentage increase in net income = Percentage increase in sales × Magnitude of operating leverage
Percentage increase in net income = [($110,000 – $100,000) ÷ $100,000] × 4.5 = 45.0%

134) A
Given that all three companies have the same sales revenue and the same net income, the company with the greatest contribution margin will have the highest degree of operating leverage.
Alternatively, the answer can be obtained by calculating the degree of operating leverage for each company:
Magnitude of operating leverage = Contribution margin ÷ Net income
Alpha: Magnitude of operating leverage = $119,000 ÷ $39,000 = 3.1
Beta: Magnitude of operating leverage = $59,000 ÷ $39,000 = 1.5
Gamma: Magnitude of operating leverage = $89,000 ÷ $39,000 = 2.3

135) A

Given that all three companies have the same sales revenue and the same net income, the company with the greatest contribution margin will have the highest degree of operating leverage.
Alternatively, the answer can be obtained by calculating the degree of operating leverage for each company:
Magnitude of operating leverage = Contribution margin ÷ Net income
Alpha: Magnitude of operating leverage = $105,000 ÷ $25,000 = 4.2
Beta: Magnitude of operating leverage = $45,000 ÷ $25,000 = 1.8
Gamma: Magnitude of operating leverage = $75,000 ÷ $25,000 = 3.0

136) A
Net income = Sales − Variable expenses − Fixed expenses
Net income = ($50 × 2,000 units) − ($50 × 0.40 × 2,000 units) − $40,000 = $60,000 − $40,000 = $20,000
Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage =$60,000 ÷ $20,000 = 3.00

137) B
Net income = Sales − Variable expenses − Fixed expenses
Net income = ($60 × 2,000 units) − ($60 × 0.60 × 2,000 units) − $40,000 = $48,000 − $40,000 = $8,000
Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage = $48,000 ÷ $8,000 = 6.00

138) A
139) C
140) B
The behavior pattern of a particular cost may be either fixed or variable, depending on the context. In this context, the total cost of rent remains the same relative to the number of customers in a particular shop and also remains the same relative to the number of customers in the entire chain of shops. As such, in both situations, the rent is a fixed cost.

141) D
Within the relevant range, the total cost per unit will decrease as volume increases.

142) B

Total costs for the year = Variable costs + Fixed costs
Total costs for the year = [(125 clients + 155 clients + 175 clients + 115 clients) × $130 per client] + ($5,300 × 12) = $74,100 + $63,600 = $137,700
Average quarterly costs = $137,700 ÷ 4 = $34,425

143) B
Total costs for the year = Variable costs + Fixed costs
Total costs for the year = [(110 clients + 140 clients + 150 clients + 100 clients) × $100 per client] + ($4,000 × 12) = $50,000 + $48,000 = $98,000
Average quarterly costs = $98,000 ÷ 4 = $24,500

144) A
Cost per unit = (Total variable cost + Total fixed cost) ÷ Number of units
Cost per unit = [(1,300 units × $620 variable cost per unit) + $91,000 total fixed cost] ÷ 1,300 units = $690

145) A
Cost per unit = (Total variable cost + Total fixed cost) ÷ Number of units
Cost per unit = [(1,000 units × $600 variable cost per unit) + $50,000 total fixed cost] ÷ 1,000 units = $650

146) A
Computation of average fixed cost per attendee = ($7,800 × 12) ÷ 13,000 attendees = $7.20
Price = Fixed cost per attendee + Variable cost per attendee + profit
Price = $7.20 + $2.00 + $6.00 = $15.20

147) A
Computation of average fixed cost per attendee = ($6,000 × 12) ÷ 10,000 attendees = $7.20
Price = Fixed cost per attendee + Variable cost per attendee + profit
Price = $7.20 + $2.00 + $5.00 = $14.20

148) B

Total costs for the year = Variable costs + Fixed costs
Total costs for the year = [(1,000 customers + 3,000 customers) × $550 per customer] +
$220,000 = 4,000 customers × $550 per customer + $220,000 = $2,420,000
Average costs per customer = $2,420,000 ÷ 4,000 customers = $605
Net income per customer = Price per customer − Average cost per customer
$250 per customer = Price per customer − $605 per customer
Price per customer = $250 per customer + $605 per customer = $855 per customer

149) C
Total costs for the year = Variable costs + Fixed costs
Total costs for the year = [(500 customers + 1,500 customers) × $500 per customer] + $100,000
= 2,000 customers × $500 per customer + $100,000 = $1,100,000
Average costs per customer = $1,100,000 ÷ 2,000 customers = $550
Net income per customer = Price per customer − Average cost per customer
$100 per customer = Price per customer − $550 per customer
Price per customer = $100 per customer + $550 per customer = $650 per customer

150) D
151) C

Average costs for 5-year period = $508,000 ÷ 55,000 lessons = $9.24
Average costs for today = $600 ÷ 50 lessons = $12.00
Since the demand for driving lessons may vary from day-to-day, significant differences in the cost per driving lesson may occur when calculated on a daily basis. A cost average approach averages costs over a longer span of time, such as a year. Distortions can occur when the time period, such as a 5-year period, is too long; if older costs are mixed with newer costs, the average does not represent current conditions.

152) D
Cost per unit = (Total variable cost + Total fixed cost) ÷ Number of units
Cost per unit at 100 units = [(100 × $520) + $9,000] ÷ 100 = $610
Cost per unit at 50 units = [(50 × $520) + $9,000] ÷ 50 = $700
Cost per unit at 25 units = [(25 × $520) + $9,000] ÷ 25 = $880

153) D
Cost per unit = (Total variable cost + Total fixed cost) ÷ Number of units
Cost per unit at 100 units = [(100 × $500) + $8,000] ÷ 100 = $580
Cost per unit at 50 units = [(50 × $500) + $8,000] ÷ 50 = $660
Cost per unit at 25 units = [(25 × $500) + $8,000] ÷ 25 = $820

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154) A

The price per student based only on January data is $659.60 [($945 total variable cost plus $7,300 of total fixed cost) ÷ 15 students] = $550. Based on this cost, the price is $550 × 1.20 = $659.60. The price per student based on the data for the three-month span of time is $338.40 [($6,300 total variable cost plus $21,900 total fixed cost) ÷ 100 students] = $282. Based on this cost, the price is $282 × 1.20 = $338.40. Using the January data only produces a significantly higher price ($659.60) than the price determined when the costs are averaged over the full three months ($338.40). Since it makes little sense to charge more for the course in the month of January when demand for enrollment is weak, the accountant should use the three-month average.

155) D

The price per student based only on January data is $658.33 [($900 total variable cost plus $7,000 of total fixed cost) ÷ 15 students] = $527. Based on this cost, the price is $527 × 1.25 = $658.75. The price per student based on the data for the three-month span of time is $337.50 [($6,000 total variable cost plus $21,000 total fixed cost) ÷ 100 students] = $270. Based on this cost, the price is $270 × 1.25 = $337.50. Using the January data only produces a significantly higher price ($658.75) than the price determined when the costs are averaged over the full three months ($337.50). Since it makes little sense to charge more for the course in the month of January when demand for enrollment is weak, the accountant should use the three-month average.

156) A

157) C

158) A

The total compensation cost is comprised of the cost of the manager salaries, which is a fixed monthly cost, and the cost of the other employees, which is a variable cost based on the hours worked. A cost that contains both fixed and variable elements is referred to as a mixed cost.

159) C

Variable cost per unit = Change in costs ÷ Change in activity
Variable cost per unit = ($640,000 − $344,000) ÷ (44 units − 19 units) = $11,840 per unit
Total cost = Variable cost + Fixed cost
Fixed cost = Total cost − Variable cost
Fixed cost = $640,000 − (44 units × $11,840 per unit) = $119,040

160) B

Variable cost per unit = Change in costs ÷ Change in activity
Variable cost per unit = ($800,000 − $440,000) ÷ (80 units − 20 units) = $6,000 per unit
Total cost = Variable cost + Fixed cost
Fixed cost = Total cost − Variable cost
Fixed cost = $800,000 − (80 units × $6,000 per unit) = $320,000

161) B
Variable cost per unit = Change in costs ÷ Change in activity
Variable cost per unit = ($43,000 − $39,000) ÷ (3,600 units − 3,200 units) = $10.00 per unit

162) B
Variable cost per unit = Change in costs ÷ Change in activity
Variable cost per unit = ($68,000 − $60,000) ÷ (3,500 units − 3,000 units) = $16.00 per unit

163) D
Use the highest points ($690 and 890) and lowest points ($320 and 790). Change in cost/Change in activity = ($690 − $320) ÷ (890 − 790) = $370 ÷ 100 = $3.70

164) B

Use the highest points ($350 and 720) and lowest points ($150 and 620). Change in cost/Change in activity = ($350 − $150) ÷ (720 − 620) = $200 ÷ 100 = $2

165) C
Total cost = Fixed Cost + Variable cost per unit × Number of Units
Total cost = $208,000 + ($13 × 10,800 units) = $348,400

166) C
Total cost = Fixed Cost + Variable cost per unit × Number of Units
Total cost = $200,000 + ($15 × 10,000 units) = $350,000

167) C
Variable cost per unit = ($2,100 − $940)/ (240 − 95) = $8.00.
$8.00 variable cost per unit × 240 units = $1,920 total variable cost
$2,100 total cost − $1,920 total variable cost = $180 total fixed cost

168) B

Variable cost per unit = ($2,100 − $900)/ (200 − 75) = $9.60.
$9.60 variable cost per unit × 200 units = $1,920 total variable cost
$2,100 total cost − $1,920 total variable cost = $180 total fixed cost

169) B
$152,000 total cost − $38,000 fixed cost = $114,000 variable cost
$114,000 / 38,000 units = $3 variable cost per unit

170) B
$100,000 total cost − $20,000 fixed cost = $80,000 variable cost
$80,000 / 20,000 units = $4 variable cost per unit

171) A
Variable cost per unit = Change in costs ÷ Change in activity
Variable cost per unit = ($41,700 − $38,000) ÷ (4,600 units − 4,100 units) = $7.40 per unit
Total cost = Variable cost + Fixed cost
Fixed cost = Total cost − Variable cost
Fixed cost = $41,700 − (4,600 units × $7.40 per unit) = $7,660

172) A
Variable cost per unit = Change in costs ÷ Change in activity
Variable cost per unit = ($68,000 − $60,000) ÷ (3,500 units − 3,000 units) = $16.00 per unit
Total cost = Variable cost + Fixed cost
Fixed cost = Total cost − Variable cost
Fixed cost = $68,000 − (3,500 units × $16.00 per unit) = $12,000

173) B
Variable cost per unit = Change in costs ÷ Change in activity
Variable cost per unit = (9,700 − 8,420) ÷ (4,000 units − 3,200 units) = $1.60 per unit
Total cost = Variable cost + Fixed cost
Fixed cost = Total cost − Variable cost
Fixed cost = $9,700 − (4,000 units × $1.60 per unit) = $3,300

174) B

Variable cost per unit = Change in costs ÷ Change in activity
Variable cost per unit = ($13,000 − $12,000) ÷ (3,500 units − 3,000 units) = $2.00 per unit
Total cost = Variable cost + Fixed cost
Fixed cost = Total cost − Variable cost
Fixed cost = $13,000 − (3,500 units × $2.00 per unit) = $6,000

175) A
Variable cost per unit = Change in costs ÷ Change in activity
Cost of goods sold:
Variable cost per unit = ($27,000 − $23,000) ÷ (3,800 units − 3,000 units) = $5.00 per unit
Selling and administrative expense:
Variable cost per unit = ($8,520 − $7,400) ÷ (3,800 units − 3,000 units) = $1.40 per unit
Contribution margin in Year 2:
Contribution margin = Sales revenue − Variable costs
Contribution margin = $44,100 − [3,000 units × ($5.00 per unit + $1.40 per unit)] = $24,900

176) A
Variable cost per unit = Change in costs ÷ Change in activity
Cost of goods sold:

Variable cost per unit = ($68,000 − $60,000) ÷ (3,500 units − 3,000 units) = $16.00 per unit
Selling and administrative expense:
Variable cost per unit = ($13,000 − $12,000) ÷ (3,500 units − 3,000 units) = $2.00 per unit
Contribution margin in Year 2:
Contribution margin = Sales revenue − Variable costs
Contribution margin = $87,000 − [3,000 units × ($16.00 per unit + $2.00 per unit)] = $33,000

177) C
Variable cost per unit = Change in total cost ÷ Change in total volume
Variable cost per unit = ($202,250 − $96,500) ÷ (5,800 − 4,300) = $70.50

178) D
Variable cost per unit = Change in total cost ÷ Change in total volume
Variable cost per unit = ($162,250 − $92,500) ÷ (5,000 − 3,500) = $46.50

179) C

Variable cost per unit = Change in total cost ÷ Change in total volume
Variable cost per unit = ($180,000 − $94,500) ÷ (5,400 − 2,452) = $29
Computed at the high point:
Total cost − Variable cost = Fixed cost
$180,000 − (5,400 units × $29) = $23,385

180) C
Variable cost per unit = Change in total cost ÷ Change in total volume
Variable cost per unit = ($160,000 − $92,500) ÷ (5,000 − 2,300) = $25
Computed at the high point:
Total cost − Variable cost = Fixed cost
$160,000 − (5,000 units × $25) = $35,000

181) B
Cost per unit in Year 1: $11,250 ÷ 4,500 units = $2.50
Cost per unit in Year 2: $12,000 ÷ 4,800 units = $2.50
When the volume increases, the cost per unit stayed the same; as such, the cost is a variable cost.

182) A

Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage = $361,000 ÷ $222,000 = 1.63

183) B
Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage = $220,000 ÷ $40,000 = 5.5

184) B
Magnitude of operating leverage = Contribution margin ÷ Net income
Gable: Magnitude of operating leverage = $520,000 ÷ $320,000 = 1.6
Harlowe: Magnitude of operating leverage = $720,000 ÷ $320,000 = 2.3

185) B
Magnitude of operating leverage = Contribution margin ÷ Net income
Gable: Magnitude of operating leverage = $400,000 ÷ $200,000 = 2.0
Harlowe: Magnitude of operating leverage = $600,000 ÷ $200,000 = 3.0

186) C

Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage = $554,400 ÷ $161,700 = 3.4
Increase in net income = Net income + (Net income × Percentage increase in sales × Magnitude of operating leverage)
Increase in net income = $161,700 + ($161,700 × 0.1 × 3.4) = $217,140

187) C
Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage = $600,000 ÷ $200,000 = 3.0
Increase in net income = Net income + (Net income × Percentage increase in sales × Magnitude of operating leverage)
Increase in net income = $200,000 + ($200,000 × 0.10 × 3.0) = $260,000

188) B
As shown below, the salary cost is a mixed cost since it differs in total and also differs on a per unit basis.
$6,000 ÷ 20 = $300.00
$7,800 ÷ 40 = $195.00
$9,200 ÷ 60 = $153.33

189) A
190) A
Magnitude of operating leverage = Contribution margin ÷ Net income
Company M: Magnitude of operating leverage = ($590,000 – $354,000) ÷ $177,000 = 1.3
Company N: Magnitude of operating leverage = ($590,000 – $236,000) ÷ $177,000 = 2.0.
Given the above, N's magnitude of operating leverage is higher than M's.
Since it has relatively higher fixed costs, Company N would suffer more than M from an equal drop in sales revenue.
Shifting the cost structure from fixed (Company N) to variable (Company M) reduces not only the level of risk but also the potential for profits.
If N's sales increased by 20%, its net income would increase by 40% (= 20% × 2.0)

191) A

Magnitude of operating leverage = Contribution margin ÷ Net income
Company M: Magnitude of operating leverage = ($500,000 − $300,000) ÷ $150,000 = 1.33
Company N: Magnitude of operating leverage = ($500,000 − $200,000) ÷ $150,000 = 2.0.
Given the above, N's magnitude of operating leverage is higher than M's.
Since it has relatively higher fixed costs, Company N would suffer more than M from an equal drop in sales revenue.
Shifting the cost structure from fixed (Company N) to variable (Company M) reduces not only the level of risk but also the potential for profits.
If N's sales increased by 20%, its net income would increase by 40% (= 20% × 2.0)

192) A
% change = (Alternative measure – Base measure) ÷ Base measure
% change = ($780,000 – $600,000) ÷ $600,000 = 30%

193) A
% change = (Alternative measure − Base measure) ÷ Base measure
% change = ($600,000 − $500,000) ÷ $500,000 = 20%

194) C

Contribution margin = Revenues − Variable expenses
Contribution margin = ($281 × 15,600 jackets) − ($131 × 15,600 jackets) = $2,340,000

195) B
Contribution margin = Revenues − Variable expenses
Contribution margin = ($275 × 15,000 jackets) − ($175 × 15,000 jackets) = $1,500,000

196) C
Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage = $33,600 ÷ $6,700 = 5.01

197) C
Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage = $20,000 ÷ $4,000 = 5.0

198) B
199) A
Variable cost per unit remains constant within the relevant range.

200) C

% change = (Alternative measure – Base measure) ÷ Base measure
% change = (500 – 400) ÷ 400 = 25%
Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage = $1,000 ÷ $480 = 2.1
Increase in net income = Net income + (Net income × Percentage increase in sales × Magnitude of operating leverage)
Increase in net income = $480 + ($480 × 0.25 × 2.1) = $730

201) C
% change = (Alternative measure – Base measure) ÷ Base measure
% change = (500 – 400) ÷ 400 = 25%
Magnitude of operating leverage = Contribution margin ÷ Net income
Magnitude of operating leverage = $800 ÷ $500 = 1.6
Increase in net income = Net income + (Net income × Percentage increase in sales × Magnitude of operating leverage)
Increase in net income = $500 + ($500 × 0.25 × 1.6) = $700

202) C
203) C

The R Square (R^2) is the most commonly used measure of reliability. The R^2 statistic represents the percentage of change in the dependent variable (total cost) that is explained by a change in the independent variable (units sold). The R^2 values vary between zero and 100 percent. Higher R^2 values suggest that the independent variable more strongly influences the dependent variable.

204) Essay

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	Cost Behavior		
Cost	Fixed	Variable	Mixed
Insurance on executive offices	X		
Lens caps for digital cameras		X	
Depreciation on manufacturing equipment	X		
Shipping cost to deliver products to customers			X
Salary of company president	X		
Wages of assembly workers		X	
Product advertising	X		
Utilities: electricity to run machines and for heat and lights in factory			X

205) Essay
Answers will vary.

Total fixed cost is constant (does not change) when volume increases.

206) Essay
Answers will vary.

Fixed cost per unit increases when volume decreases because the same amount of fixed costs is spread over (allocated to) fewer units.

207) Essay
Answers will vary.

Total variable cost would increase in direct proportion to volume. A 5% increase in volume would mean a 5% increase in total variable costs.

208) Essay
Answers will vary.

Variable cost per unit is constant when volume decreases.

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209) Essay
Answers will vary.

With a fixed cost structure, a given dollar increase in sales would result in an equal increase in net income.

210) Essay
Answers will vary.

A mixed or semivariable cost has a fixed component and a variable component. Examples would be utilities or compensation of sales staff. For example, if sales personnel receive a salary and a commission, their compensation has a variable part (the commission, which varies with sales) and a fixed part (the salary).

211) Essay
Answers will vary.

Operating leverage exists when a company achieves a disproportionate change in profit from a small increase in sales. For example, a 5% increase in sales could result in a 25 or 50% increase in profit. A company achieves operating leverage through having fixed costs in its cost structure.

212) Essay
Answers will vary.

"Cost structure" refers to the amount of fixed cost and variable cost a company has. For example, a company's managers may be able to make a change that would increase fixed costs and decrease variable costs. Such a change would increase the company's operating leverage.

213) Essay
Answers will vary.

Cost structure refers to the proportion of a company's fixed and variable costs. A company that has a more fixed cost structure will have high operating leverage. That means that for a given change in sales volume, it will have a greater change in net income than a company with a more variable cost structure.

214) Essay

Answers will vary.

An income statement that uses the contribution margin approach begins with revenue. Variable costs are subtracted, resulting in contribution margin. The amount of fixed costs is then subtracted from contribution margin to calculate net income.

215) Essay
Answers will vary.

With magnitude of operating leverage of 3.5, a given percentage increase or decrease in revenue would result in a change in profits that is 3.5 times as great. For example, a 10% decrease in sales revenue would result in a 35% decrease in profit.

216) Essay
Answers will vary.

Contribution margin and net income would be equal. In other words, every dollar of contribution margin would be a dollar of profit. Magnitude of operating leverage would be 1.0 (which really means the absence of operating leverage) because the company would have no fixed costs. Net income would equal contribution margin.

217) Essay
Answers will vary.

The relevant range is a range of activity over which definitions of fixed and variable costs are valid. For a fixed cost, the relevant range is the range of activity over which the cost does not change.

218) Essay
Answers will vary.

Outside the relevant range, the cost may be more or less than $15 per hour. A cost relationship or behavior that applies within a specified range may not apply outside that range.

219) Essay

Answers will vary.

An activity base is a measure or definition of activity. Examples include number of stores, sales, number of employees, etc. A variable cost varies in direct proportion to the activity base. A cost that varies with one activity base may not vary with a different activity base.

220) Essay
Answers will vary.

When a company provides many products or services that are similar, calculating the actual cost of each might be difficult and expensive and of little benefit. Average costs may be used in setting the price to charge customers and in evaluating performance and making other managerial decisions.

221) Essay
Answers will vary.

Mixed costs (semivariable costs) include both fixed and variable components; mixed costs should be broken down into these components for decision-making. For example, if sales are expected to increase by 5%, managers will want to be able to estimate the increase in total costs. Analysis of mixed costs is required for budgeting, evaluating performance, deciding whether to expand operations, and other important decisions.

222) Essay
Answers will vary.

The high-low method is used to estimate the fixed and variable parts of a mixed cost.

223) Essay
Answers will vary.

The steps in the high-low method are:
1. Assemble cost and volume information for a given period of time (several months, perhaps)
2. Select the high volume point and the low volume point in the data set
3. Determine the estimated variable cost per unit. Estimated variable cost = difference in total cost divided by difference in volume
4. Use the estimated variable cost per unit and either the high point or the low point to estimate the fixed cost

224) Essay

Answers will vary.

The high-low method uses just two data points, the high point and the low point, out of a set of several. If either point is not representative of the rest of the data, the results from the method (the variable cost and fixed cost) will be inaccurate.

225) Essay
Answers will vary.

Both methods involve fitting a line to a set of cost and volume data points. Both identify the fixed and variable components of the mixed cost: the fixed component is the y-intercept for the line, and the variable component is the line's slope. The scattergraph method involves subjectivity: the line fitted to the data is the line that "looks best" in the judgment of the cost analyst. The least squares approach is more objective: it is a statistical method of fitting the best line to the data points. The least squares method also generates some statistics that can be used to determine how well the line actually does fit the data.

226) Essay
Answers will vary.

The regression method is more accurate than either the high-low method or the scattergraph method. It uses all the data points in the data set and fits the best straight line to these points. It is an objective method of estimating costs. In comparison, the scattergraph approach is subjective, requiring the analyst to fit to the data the line that he/she judges to be best. Also, with least-squares regression, statistics are generated that enable assessment of the quality of the estimates.

227) Essay
Answers will vary.

The R Square (R^2) is the most commonly used measure of reliability. The R^2 statistic represents the percentage of change in the dependent variable (total cost) that is explained by a change in the independent variable that was chosen. The R^2 values vary between zero and 100 percent. Higher R^2 values suggest that the independent variable more strongly influences the dependent variable.

228) Essay

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Answer	Description	List of terms
5	A. A cost that remains constant in total when volume changes	1. Mixed cost
6	B. The way a cost changes relative to changes in a measure of activity	2. Operating leverage
9	C. A company's cost mix or relative proportion of variable and fixed costs to total costs	3. Scattergraph method
4	D. The difference between a company's sales revenue and its variable costs	4. Contribution margin
1	E. Costs composed of both fixed and variable components	5. Fixed cost
8	F. A cost that changes in total in direct proportion to changes in volume	6. Cost behavior
7	G. A factor that causes (or drives) changes in costs	7. Activity base
2	H. A condition in which a percentage change in revenue will produce a proportionately larger percentage change in net income	8. Variable cost
10	I. A method of estimating the fixed and variable components of mixed cost using two data observations	9. Cost structure
3	J. A method of estimating the fixed and variable components of a mixed cost where data are plotted on a graph and a line is visually fit to the data	10. High-low method

229) Essay

Sales commissions paid to sales associates in a department store	Variable cost
Shipping cost for Amazon	Variable cost
Electricity cost to heat and light a law firm	Fixed cost
Rent on a storeroom used by Turf Pros to store lawn equipment	Fixed cost
Salary of a supervisor in a Best Buy distribution center	Fixed cost
Wages paid to production workers in a General Motors plant	Variable cost
Insurance on a Hershey factory	Fixed cost
Fuel costs for Southwest Airlines	Variable cost
Depreciation of office equipment by Microsoft Corporation	Fixed cost
Dishwashing in an Olive Garden restaurant	Variable cost
Salary of the CEO of Microsoft	Fixed cost
Lubricants used to maintain machinery in a textile factory	Variable cost
Cost of metal cans used in a dog food factory	Variable cost
Cost of pizza boxes for Domino's Pizza	Variable cost
Material handling costs for Frito Lay	Variable cost

230) Essay

	When Activity Increases	When Activity Decreases
Unit fixed costs	Decrease	Increase
Total fixed costs	Remain constant	Remain constant
Unit variable costs	Remain constant	Remain constant
Total variable costs	Increase	Decrease

231) Essay

d. Total manufacturing costs = ($16 × 10,000) + $600,000 = $760,000

e. Cost per unit = $760,000 ÷ 10,000 units = $76 per unit

232) Essay

Number of Units	200,000	250,000	300,000
Total costs			
Fixed	$ 15,000,000	$ 15,000,000	$ 15,000,000
Variable	24,000,000	30,000,000	36,000,000
Total costs	39,000,000	45,000,000	51,000,000
Cost per Unit			
Fixed	$ 75	$ 60	$ 50
Variable	120	120	120
Total cost per unit	$ 195	$ 180	$ 170

233) Essay

Grant Company income statement

Number of customers	280
Sales revenue (280 × $135)	$ 37,800
Less variable costs (30 × $280)	8,400
Contribution margin	$ 29,400
Less fixed costs	19,000
Net income	$ 10,400

Number of customers	280
Sales revenue (280 × $135)	$ 37,800
Less variable costs (90 × $280)	25,200
Contribution margin	$ 12,600
Less fixed costs	7,000
Net income	$ 5,600

234) Essay

Answers will vary.

Income statements

	Company A	Company B	Company C
Sales (21 units)	$ 1,050	$ 1,050	$ 1,050
Less variable costs	630	315	-
Less fixed costs	200	500	800
Net income	$ 220	$ 235	$ 250

235) Essay

Cost behavior of the two offers:
$100,000 fee: Fixed
50% of revenue: Variable
Profit computations:

	Scenario A	Scenario B
Number of guests	350	350
Revenue (350 × $500)	$ 175,000	$ 175,000
Costs	100,000	87,500
Profit	$ 75,000	$ 87,500

	Scenario A	Scenario B
Number of guests	420	420
Revenue (420 × $500)	$ 210,000	$ 210,000
Costs	100,000	105,000
Profit	$ 110,000	$ 105,000
% increase in profit	47%	20%

236) Essay

Fundamental Managerial Accounting Concepts Edition 10 by Edmonds

Contribution margin per unit:

	Microsoft Game	Sony Game
Revenue	150.00	150.00
Less variable costs:		
Direct material	$ 27.00	$ 27.00
Direct labor	7.50	30.00
Overhead	7.50	30.00
Selling and administrative expenses	3.00	3.00
Contribution margin	$ 105.00	$ 60.00

	Microsoft Game	Sony Game
Revenue (8,000 × $ 150)	$ 1,200,000	$ 1,200,000
Less variable costs:		
Direct material	216,000	216,000
Direct labor	60,000	240,000
Overhead	60,000	240,000
Selling and administrative expenses	24,000	24,000
Contribution margin	$ 840,000	$ 480,000
Less fixed costs:		
Overhead	600,000	240,000
Selling and administrative expenses	135,000	135,000
Net income	$ 105,000	$ 105,000

	Microsoft Game	Sony Game
Revenue (8,800 × $ 150)	$ 1,320,000	$ 1,320,000
Less variable costs:		
Direct material	237,600	237,600
Direct labor	66,000	264,000
Overhead	66,000	264,000
Selling and administrative expenses	26,400	26,400
Contribution margin	$ 924,000	$ 528,000

Less fixed costs:		
Overhead	600,000	240,000
Selling and administrative expenses	135,000	135,000
Net income	$ 189,000	$ 153,000

237) Essay

Income Statement

Sales revenue	$ 2,000,000
Less variable expenses:	
Cost of goods sold	(1,200,000)
Employee commissions and bonuses (5% of sales)	(100,000)
Shipping and delivery expense (2% of sales)	(40,000)
Contribution margin	$ 660,000
Less fixed expenses:	
Depreciation expense	(150,000)
Salaries expense	(260,000)
Advertising expense	(80,000)
Net income	$ 170,000

238) Essay

	Yin Company		Yang Company	
Revenue	$ 750,000	100%	$ 750,000	100%
Less variable costs	300,000	40%	525,000	70%
Contribution margin	$ 450,000	60%	$ 225,000	30%
Less fixed costs	405,000	54%	180,000	24%
Net income	$ 45,000	6%	$ 45,000	6%

239) Essay

Answers will vary

f. Average tutoring cost per hour: $2,083,000 ÷ 178,000 hours = $11.70 per hour $2,083,000 = total tutoring costs for the 6-month period; 178,000 = total number of hours

g. High-Low method of analyzing mixed costs: Total costs = a + bX where a = total fixed costs and b = unit variable cost, and X is the cost driver or independent variable Variable cost per hour (b) = (February costs − June costs) ÷ (February hours − June hours) b = ($420,000 − 252,000) ÷ (41,000 − 18,000) = $7.30 per hour Total fixed costs: If total costs = a + bX then a = $420,000 − ($7.30 × 41,000) = $120,700 (note that answers are affected by rounding) Thus, the cost equation would be defined as total costs = $120,700 + 7.30X, where X is the number of tutoring hours.

h. An advantage of the high-low method is its simplicity of use. The primary disadvantage is its vulnerability to inaccuracy.

i. Under the scattergraph approach, data are plotted on a graph and a visual fit line is visually drawn through the points so that the total distance between the data points and the line is minimized.

240) Essay

The salaries and commissions cost is mixed.

The variable cost per unit: ($25,000 – $20,000) ÷ (30,000 – 20,000) = $0.50 per unit

The total fixed cost = $25,000 – (30,000 × $0.50) = $10,000

Contribution margin income statement:

Unit volume	**20,000 units**
Revenue	$ 150,000
Less variable costs	
Cost of goods sold	60,000
Salaries and commissions	10,000
Total variable costs	$ 70,000
Contribution margin	$ 80,000
Less fixed costs	
Salaries and commissions	10,000
Advertising expense	30,000
Administrative expense	12,500
Total fixed costs	$ 52,500
Net income	$ 27,500