

Cost Behavior, Operating Leverage, and Profitability Analysis

**Multiple Choice Questions**

1. 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
  
2. 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.

3. 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

4. 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.

5. 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

6. 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 salespersons' commissions are an example of:

- A. a fixed cost.
  - B. a variable cost.
  - C. a mixed cost.
  - D. None of these
7. Based on the following cost data, what conclusions can you make about Product A and Product B?

|             | Total Cost |           |
|-------------|------------|-----------|
| Production: | Product A  | Product B |
| 10 units    | \$100      | ?         |
| 100 units   | \$1,000    | ?         |
| 1,000 units | \$10,000   | ?         |
|             | Unit Cost  |           |
| Production: | Product A  | Product B |
| 10 units    | ?          | \$10,000  |
| 100 units   | ?          | \$1,000   |
| 1,000 units | ?          | \$100     |

- A. Product A is a fixed cost and Product B is a variable cost.
- B. Product A is a variable cost and Product B is a fixed cost.
- C. Product A and Product B are both variable costs.
- D. Product A and Product B are both mixed costs.

8. 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
9. Two different costs incurred by Ruiz Company exhibit the following behavior pattern per unit:

|          | Units Sold     |                |                |               |
|----------|----------------|----------------|----------------|---------------|
|          | 50             | 100            | 150            | 200           |
| Cost # 1 | \$300 per unit | \$150 per unit | \$100 per unit | \$75 per unit |
| Cost # 2 | \$2 per unit   | \$2 per unit   | \$2 per unit   | \$2 per unit  |

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

- A. Fixed/Variable  
 B. Variable/Variable  
 C. Fixed/Fixed  
 D. Variable/Fixed

10. 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.

11. 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.

12. 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:

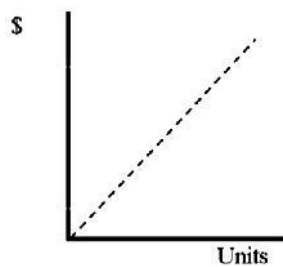
- A. \$100,000
- B. \$90,000
- C. \$102,500
- D. \$80,000

13. 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:

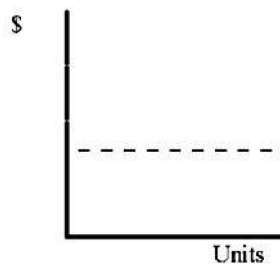
- A. stay the same.
- B. double as well.
- C. increase but will not double.
- D. decrease.

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

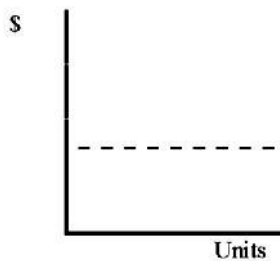


- A. Variable cost
- B. Fixed cost
- C. Mixed cost
- D. None of these

15. 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
16. 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

17. 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

18. 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 is able to lure 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.



19. 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.

20. 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.

21. 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

22. 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.

23. 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.

24. For the last two years BRC Company had net income as follows:

|            | 2012      | 2013      |
|------------|-----------|-----------|
| Net Income | \$160,000 | \$200,000 |

What was the percentage change in income from 2012 to 2013?

- A. 20% increase
- B. 20% decrease
- C. 25% increase
- D. 25% decrease

25. 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.

26. Select the **incorrect** 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.

27. 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.

28. 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.

29. 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.

30. 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 leverage cost structure.
- B. medium leverage cost structure.
- C. high leverage cost structure.
- D. no leverage cost structure.

31. 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.

32. 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. Both companies will experience an increase in profit.
- C. Felix's net income will increase by \$250.
- D. Jinx's net income will increase by 6%.

33. The excess of a product's selling price over its variable costs is referred to as:
- A. gross profit
  - B. gross margin
  - C. contribution margin
  - D. manufacturing margin
34. 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.
35. 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

36. The following income statement is provided for Ramirez Company in 2013:

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

What amount was the company's contribution margin?

- A. \$50,000
- B. \$22,000
- C. \$52,000
- D. \$60,000

37. In order to prepare a contribution format income statement:

- A. costs must be separated into manufacturing and selling, general, and administrative costs.
- B. costs must be separated into cost of goods sold and operating expenses.
- C. costs must be separated into variable and fixed costs.
- D. costs must be separated into mixed, variable and fixed costs.

38. 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

39. 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
40. 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



41. The following income statement is provided for Vargas, Inc.

|  |                 |
|--|-----------------|
| Sales revenue (2,500 units x \$60 per unit)                | \$ 150,000      |
| Cost of goods sold (variable: 2,500 units x \$20 per unit) | (50,000)        |
| Cost of goods sold (fixed)                                 | <u>(8,000)</u>  |
| Gross margin   | 92,000          |
| Administrative salaries                                    | (42,000)        |
| Depreciation   | (10,000)        |
| Supplies (2,500 units x \$4 per unit)                      | <u>(10,000)</u> |
| 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

42. The following income statement is provided for Grant, Inc.

|  |               |
|--|---------------|
| Sales revenue (1,500 @ \$30 per unit)  | \$ 45,000     |
| Variable costs (1,500 @ \$14 per unit) | 21,000        |
| Fixed costs                            | <u>16,000</u> |
| 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

43. 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
44. 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
45. 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%
  - D. 10%

46. 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
47. 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. 6.0
- C. 2.25
- D. None of these
48. Whether a cost behaves as a fixed cost or as a variable cost depends upon the:
- A. presence of fixed costs.
- B. cost structure of the company.
- C. industry.
- D. activity base used.

49. Craft, Inc. 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.
50. 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/fixed cost
  - B. Fixed cost/fixed cost
  - C. Fixed cost/variable cost
  - D. Variable cost/variable cost
51. 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.

52. 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
53. 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 - 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? (round to nearest dollar)
- A. \$450
- B. \$500
- C. \$650
- D. \$700

54. 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.

55. 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.

56. 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.
57. 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
58. 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

59. Production in 2013 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 2013 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

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

|   | <u>2012</u>   | <u>2013</u>   |
|---|---------------|---------------|
| Number of units produced and sold             | 3,500         | 3,000         |
| Sales revenue                                 | \$ 101,500    | \$ 87,000     |
| Cost of goods sold                            | <u>68,000</u> | <u>60,000</u> |
| Gross margin                                  | 33,500        | 27,000        |
| General, selling, and administrative expenses | <u>13,000</u> | <u>12,000</u> |
| 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



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

|   | <u>2012</u>   | <u>2013</u>   |
|---|---------------|---------------|
| Number of units produced and sold             | 3,500         | 3,000         |
| Sales revenue                                 | \$ 101,500    | \$ 87,000     |
| Cost of goods sold                            | <u>68,000</u> | <u>60,000</u> |
| Gross margin                                  | 33,500        | 27,000        |
| General, selling, and administrative expenses | <u>13,000</u> | <u>12,000</u> |
| 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

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

|   | <u>2012</u>   | <u>2013</u>   |
|---|---------------|---------------|
| Number of units produced and sold             | 3,500         | 3,000         |
| Sales revenue                                 | \$ 101,500    | \$ 87,000     |
| Cost of goods sold                            | <u>68,000</u> | <u>60,000</u> |
| Gross margin                                  | 33,500        | 27,000        |
| General, selling, and administrative expenses | <u>13,000</u> | <u>12,000</u> |
| 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

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

|   | <u>2012</u>   | <u>2013</u>   |
|---|---------------|---------------|
| Number of units produced and sold             | 3,500         | 3,000         |
| Sales revenue                                 | \$ 101,500    | \$ 87,000     |
| Cost of goods sold                            | <u>68,000</u> | <u>60,000</u> |
| Gross margin                                  | 33,500        | 27,000        |
| General, selling, and administrative expenses | <u>13,000</u> | <u>12,000</u> |
| 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 2013?

- A. \$33,000
- B. \$32,000
- C. \$39,000
- D. \$69,000

64. The results below represent what form of cost behavior?

|            | 2012      | 2013      |
|------------|-----------|-----------|
| Units      | 4,500     | 4,800     |
| Total Cost | \$ 11,250 | \$ 12,000 |

- A. Fixed Cost
- B. Variable Cost
- C. Mixed Cost
- D. Opportunity Cost

65. Based on the following operating data, the operating leverage is:

|                        |                |
|------------------------|----------------|
| Sales                  | \$ 500,000     |
| Variable costs         | <u>280,000</u> |
| Contribution margin    | 220,000        |
| Fixed costs            | <u>180,000</u> |
| Income from operations | \$ 40,000      |

- A. 0.18
- B. 5.50
- C. 1.22
- D. 12.5

66. The following information is for Gable, Inc. and Harlowe, Inc. for the recent year.

|                        | Gable, Inc.    | Harlowe, Inc.  |
|------------------------|----------------|----------------|
| Sales                  | \$ 800,000     | \$ 800,000     |
| Variable costs         | <u>400,000</u> | <u>200,000</u> |
| Contribution margin    | 400,000        | 600,000        |
| Fixed costs            | <u>200,000</u> | <u>400,000</u> |
| Income from operations | \$ 200,000     | \$ 200,000     |

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

- A. Gable, Inc.
- B. Harlowe, Inc.
- C. Operating leverage is the same for both companies
- D. Cannot be determined

67. The following information is for Gable, Inc. and Harlowe, Inc. for the recent year.

|                        | Gable, Inc.    | Harlowe, Inc.  |
|------------------------|----------------|----------------|
| Sales                  | \$ 800,000     | \$ 800,000     |
| Variable costs         | <u>400,000</u> | <u>200,000</u> |
| Contribution margin    | 400,000        | 600,000        |
| Fixed costs            | <u>200,000</u> | <u>400,000</u> |
| Income from operations | \$ 200,000     | \$ 200,000     |

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

- A. \$180,000
- B. \$80,000
- C. \$260,000
- D. \$20,000

68.

|                            |          |          |          |
|----------------------------|----------|----------|----------|
| 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    |

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.

69. 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.

70. 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, select the **incorrect** statement

- A. M's magnitude of operating leverage was lower than N's.
  - B. N would suffer more than M from an equal drop in sales revenue.
  - C. M'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%.
71. 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%

72. 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

73. Mark Company, Inc. 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 times
- B. 11.25 times
- C. 5 times
- D. 6.25 times

74. Which characteristic is true of the scatter graph method, high-low 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 is true.

75. Taste of the Town, Inc. 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

76. 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

77. 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



## True / False Questions

78. The variable cost per unit increases in direct proportion to the activity base.

True False

79. 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

80. For a mixed cost, total cost increases in direct proportion to volume.

True False

81. The total variable cost increases in direct proportion to volume.

True False

82. If a company had a mixed cost structure, every dollar of revenue after covering the fixed costs would be pure profit.

True False

83. As activity increases, the fixed cost per unit increases while the variable cost per unit remains constant.

True False

84. Risk refers to the possibility that sacrifices may exceed benefits.

True False

85. Operating leverage enables a company to convert small changes in fixed costs into dramatic changes in profitability.

True False

86. 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

87. If revenues are expected to decline, management should attempt to convert its variable costs into fixed costs.

True False

88. Companies with low operating leverage will experience lower profits when sales increase than will companies with higher operating leverage.

True False

89. A company with a completely fixed cost structure will have operating leverage of 1.

True False

90. Contribution margin represents the amount available to cover fixed expenses and then provide company profits.

True False

91. 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

92. The contribution margin format income statement is **not** widely used for external financial reporting, but is allowed by GAAP.

True False

93. The contribution margin format income statement classifies costs according to their behavior patterns.

True False

94. Contribution margin can only be determined if costs are separated into product and period costs.

True False

95. If a company has both fixed and variable costs, their operating leverage will always be greater than 1.

True False

96. 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

97. 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

98. A low magnitude of operating leverage is best for most companies.

True False

99. 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

100. Descriptions of cost behavior as fixed or variable pertain to a particular range of activity.

True False

101. Variable costs will become fixed outside the relevant range.

True False

102. Within the relevant range, the fixed cost per unit can be expected to decrease with increases in volume.

True False

103. The activity base selected determines whether a cost behaves as a variable cost or fixed cost.

True False

104. A cost that is considered variable for one activity base may be considered fixed for a different activity base.

True False

105. 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

106. 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

107. Potential problems associated with cost averaging can be reduced by averaging the cost over a shorter span of time.

True False

108. A cost that is part selling cost and part manufacturing cost is referred to as a mixed cost.

True False

109. 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

110. 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

111. 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

112. Multiple regression analysis should be performed when a single independent variable influences multiple dependent variables.

True False

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

True False

114. 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

## Essay Questions

115. Blackstock Company manufactures digital cameras. Indicate whether the cost is a product cost or period cost AND 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 a period cost and variable.

| Cost   | Product Cost | Period Cost | Cost Behavior |          |       |
|--|--------------|-------------|---------------|----------|-------|
|  |              |             | 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<br>Utilities: electricity to run machines and for heat and lights in factory |              |             |               |          |       |

116. How does total fixed cost behave when volume increases?

117. How does fixed cost per unit behave when volume decreases?

118. How does total variable cost respond when volume increases?



119. How does variable cost per unit behave when volume decreases?

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

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

122. What is operating leverage, and how does a company achieve operating leverage?

123. What is meant by the phrase, "cost structure?"

124. How is operating leverage related to cost structure?

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

126. For Marvin Company in 2013, the magnitude of operating leverage was 3.5. Demonstrate what this magnitude of operating leverage would mean for the company's profitability by creating an example.

127. 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?

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

129. 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?

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

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

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

133. What is the high-low method used for?

134. Describe the steps in the high-low method.

135. What is a primary disadvantage of the high-low method of analyzing a mixed cost?

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

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

138. 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 a 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    |



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

**Required:**

Classify each cost as variable (V) or fixed (F) with respect to volume or level of activity.

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

140. 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."

|                      | <b>When Activity<br/>Increases</b> | <b>When Activity<br/>Decreases</b> |
|----------------------|------------------------------------|------------------------------------|
| Unit fixed costs     |                                    |                                    |
| Total fixed costs    |                                    |                                    |
| Unit variable costs  |                                    |                                    |
| Total variable costs |                                    |                                    |