

Fundamental Managerial Accounting Concepts, 9e (Edmonds)
Chapter 2 Cost Behavior, Operating Leverage, and Profitability Analysis

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 are correct.

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 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

7) Based on the following cost data, what conclusions can you make about the costs of 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) 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.

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:

	Unit Sold			
	50	100	150	200
Cost #1	\$ 300Per unit	\$ 150Per unit	\$ 100Per unit	\$ 75Per unit
Cost #2	\$ 2Per unit	\$ 2Per unit	\$ 2Per unit	\$ 2Per unit

Cost #1 and Cost #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

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:

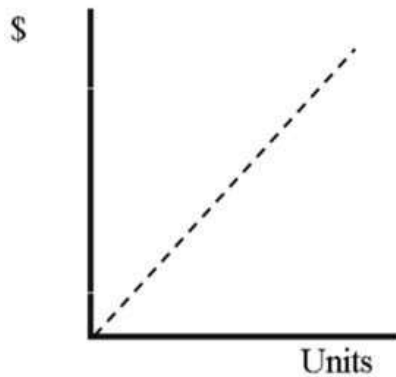
- A) \$100,000
- B) \$90,000
- C) \$102,500
- D) \$80,000

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:

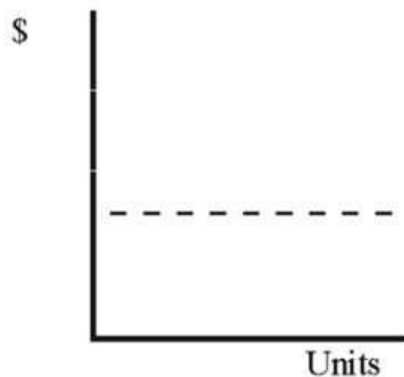
- A) stay the same.
- B) double as well.
- C) increase but will not double.
- D) decrease.

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



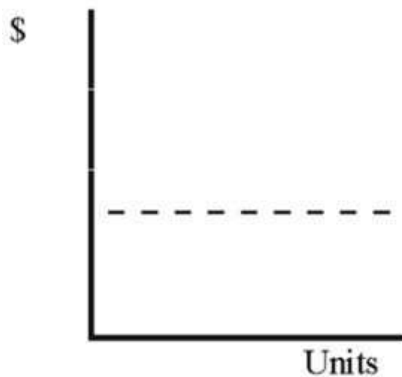
- A) Variable cost
- B) Fixed cost
- C) Mixed cost
- D) None of these

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:

	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

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 operating leverage cost structure.
- B) medium operating leverage cost structure.
- C) high operating leverage cost structure.
- D) no operating 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	<u>(10,000)</u>	<u>(5,000)</u>	<u>(30,000)</u>
Contribution margin	40,000	45,000	20,000
Fixed costs	<u>(30,000)</u>	<u>(40,000)</u>	<u>(10,000)</u>
Net income	<u>\$ 10,000</u>	<u>\$ 5,000</u>	<u>\$ 10,000</u>

- 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	<u>(25,000)</u>	<u>(70,000)</u>
Contribution margin	175,000	130,000
Fixed costs	<u>(70,000)</u>	<u>(25,000)</u>
Net income	<u>\$ 105,000</u>	<u>\$ 105,000</u>

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%.

33) The excess of revenue over 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 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	<u>52,000</u>
Administrative salaries	(12,000)
Depreciation	(8,000)
Supplies (2,500 units × \$4 per unit)	(10,000)
Net income	<u>\$ 22,000</u>

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, 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.

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 × \$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	<u>92,000</u>
Administrative salaries	(42,000)
Depreciation	(10,000)
Supplies (2,500 units × \$4 per unit)	(10,000)
Net income	<u>\$ 30,000</u>

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	16,000
Net income	<u>\$ 8,000</u>

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) 6.00
- 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) activity based used.
- B) cost structure of the company.
- C) industry.
- D) significance of the dollar amount of the cost.

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 and fixed cost
- B) Fixed cost and fixed cost
- C) Fixed cost and variable cost
- D) Variable cost and 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 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? **(Round your answer to the 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:

	TODAY	Length of Time	
		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 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

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

	<u>Year 1</u>	<u>Year 2</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	<u>\$ 20,500</u>	<u>\$ 15,000</u>

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>Year 1</u>	<u>Year 2</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	<u>\$ 20,500</u>	<u>\$ 15,000</u>

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>Year 1</u>	<u>Year 2</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	<u>\$ 20,500</u>	<u>\$ 15,000</u>

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>Year 1</u>	<u>Year 2</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	<u>\$ 20,500</u>	<u>\$ 15,000</u>

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

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

	<u>Year 1</u>	<u>Year 2</u>
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	<u>\$ 40,000</u>

- 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	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, 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	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, 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, 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%.

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
- B) 11.25
- C) 5.00
- D) 6.25

74) 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.

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	<u>1,200</u>
Contribution Margin	\$ 800
Fixed Cost	<u>300</u>
Net Income	<u>\$ 500</u>

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.

78) 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.

- 79) The variable cost per unit increases in direct proportion to the activity base.
- 80) 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.
- 81) For a mixed cost, total cost increases in direct proportion to volume.
- 82) The total variable cost increases in direct proportion to volume.
- 83) If a company had a mixed cost structure, every dollar of revenue after covering the fixed costs would be pure profit.
- 84) As activity increases, the fixed cost per unit increases while the variable cost per unit remains constant.
- 85) Risk refers to the possibility that sacrifices may exceed benefits.
- 86) Operating leverage enables a company to convert small changes in fixed costs into dramatic changes in profitability.
- 87) 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.
- 88) If revenues are expected to decline, management should attempt to convert its variable costs into fixed costs.
- 89) Companies with low operating leverage will experience lower profits when sales increase than will companies with higher operating leverage.
- 90) A company with a completely fixed cost structure will have operating leverage of 1.
- 91) Contribution margin represents the amount available to cover fixed expenses and then provide company profits.
- 92) 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.
- 93) The contribution margin format income statement is **not** widely used for external financial reporting, but is allowed by GAAP.
- 94) The contribution margin format income statement classifies costs according to their behavior patterns.
- 95) Contribution margin can only be determined if costs are separated into product and period costs.

- 96) If a profitable company has both fixed and variable costs, its operating leverage will always be greater than 1.
- 97) The higher the magnitude of a company's operating leverage, the more benefit the company will receive from a given percentage increase in revenue.
- 98) The higher the magnitude of a company's operating leverage, the smaller the decrease in profit for a given percentage decrease in revenue.
- 99) A low magnitude of operating leverage is best for most companies.
- 100) 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.
- 101) Descriptions of cost behavior as fixed or variable pertain to a particular range of activity.
- 102) Variable costs will become fixed outside the relevant range.
- 103) Within the relevant range, the fixed cost per unit can be expected to decrease with increases in volume.
- 104) The activity base selected determines whether a cost behaves as a variable cost or fixed cost.
- 105) A cost that is considered variable for one activity base may be considered fixed for a different activity base.
- 106) One reason for computing the average cost for a product rather than the actual cost is that average cost is easier to compute.
- 107) 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.
- 108) Potential problems associated with cost averaging can be reduced by averaging the cost over a shorter span of time.
- 109) A cost that is part selling cost and part manufacturing cost is referred to as a mixed cost.
- 110) 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).
- 111) 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.

112) 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.

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

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

115) 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.

116) 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	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			
Utilities: electricity to run machines and for heat and lights in factory			

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

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

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

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

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

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

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

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

- 125) How is operating leverage related to cost structure?
- 126) Describe the format of an income statement prepared using the contribution margin approach.
- 127) 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.
- 128) 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?
- 129) What is meant by the phrase, "relevant range"? How does the concept of relevant range affect fixed costs?
- 130) 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?
- 131) What is an activity base, and how does the activity base relate to a variable cost?
- 132) Why would a company often calculate and use average costs of its products and services rather than actual costs?
- 133) Why would a company need to estimate the fixed and variable components of a mixed cost?
- 134) What is the high-low method used for?
- 135) Describe the steps in the high-low method.
- 136) What is a primary disadvantage of the high-low method of analyzing a mixed cost?
- 137) Compare least squares regression and the scattergraph method of analyzing mixed costs.
- 138) What advantages does the regression method of cost estimation offer, compared to the high-low and scattergraph methods of estimating mixed costs?
- 139) 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.

140) 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

141) 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 (V) or fixed (F) with respect to volume or level of activity.

142) 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		

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

Required:

1. Calculate Sandford's total manufacturing costs if it produces 10,000 units.
2. What would be the total cost per unit (including both fixed and variable costs) assuming that Sandford produces 10,000 units?
3. Calculate Sandford's total manufacturing costs if it produces 20,000 units.
4. What would be the total cost per unit assuming that Sandford produces 20,000 units?
5. Compare your answers from parts 2 and 4. If the cost per unit is different at 10,000 units than at 20,000 units, explain why.

144) 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	<u>39,000,000</u>		
Cost per Unit			
Fixed	\$ 75		
Variable	120		
Total Cost per unit	<u>\$ 195</u>		

Required:

1. Complete the preceding table by filling the missing amounts for 250,000 and 300,000 units.
2. Assume that Phoenix actually makes 280,000 units. What would be the total costs and the cost per unit at this level of activity? **(Round the cost per unit to two decimal points.)**
3. If Phoenix sells each unit for \$220, what is Phoenix's magnitude of operating leverage at sales of 280,000 units? **(Round to two decimal points.)**

145) 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	<u>\$ 24,000</u>	<u>\$ 12,000</u>
Less fixed costs	19,000	7,000
Net income	<u>\$ 5,000</u>	<u>\$ 5,000</u>

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?

146) 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	<u>\$ 200</u>	<u>\$ 200</u>	<u>\$ 200</u>

Required:

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

(b) Briefly describe the effect of cost structure on profitability.

147) 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 vs. 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 vs. 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). **(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. **(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.

148) 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?

149) 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	<u>\$ 800,000</u>
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	<u>(80,000)</u>
Net income	<u>\$ 170,000</u>

Required:

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

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

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

Required:

(1) Show each company's cost structure by inserting the percentage of the company's revenue represented by each item on the contribution income statement.

(2) Compute each company's magnitude of operating leverage.

(3) Using the operating leverage measures computed in requirement 2, determine the increase in each company's net income (percentage and amount) if each company experiences a 10 percent increase in sales.

(4) Assume that sales are expected to continue to increase for the foreseeable future, which company probably has more desirable cost structure? Why?

151) 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:

- 1) Compute the average tutoring cost per hour for the six-month period. **(Round the average tutoring cost per hour to two decimal points.)**
- 2) Use the high-low method to estimate the total fixed cost and the variable cost per hour. **(Round the variable cost per hour to two decimal points.)**
- 3) Name one advantage and one disadvantage of the high-low method.
- 4) Describe the scattergraph method that can be used to analyze mixed costs.

152) 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	<u>60,000</u>	<u>90,000</u>
Gross margin	\$ 90,000	\$ 135,000
Less operating expenses		
Salaries and commissions	20,000	25,000
Advertising expenses	30,000	30,000
Administrative expenses	<u>12,500</u>	<u>12,500</u>
Total operating expenses	<u>62,500</u>	<u>67,500</u>
Net income	<u>\$ 27,500</u>	<u>\$ 67,500</u>

Required:

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