Test Bank for Managerial Accounting for Managers 6th Edition by Noreen

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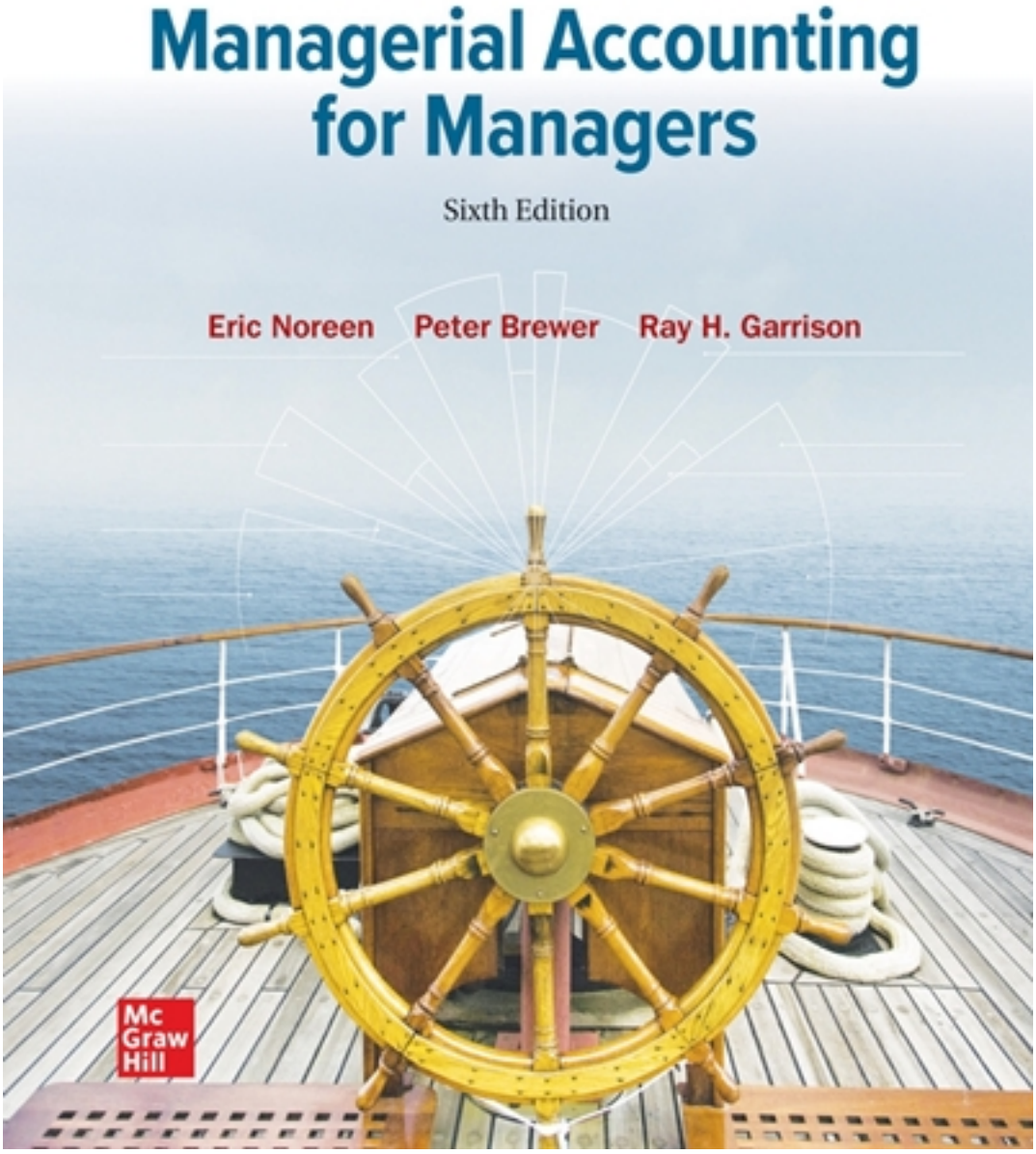

Test Bank

Managerial Accounting for Managers Edition 6 by Noreen

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

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

1) Which of the following statements is true?
   1. Incremental analysis is an analytical approach that focuses only on those revenues and costs that will not change as a result of a decision.
   2. When expressed on a per unit basis, fixed costs can mislead decision makers into thinking of them as variable costs.
   3. To estimate what the profit will be at various levels of sales volume, multiply the number of units to be sold above or below the break-even point by the unit contribution margin.

   A) Statements I and III are true.
   B) Statements II and III are true.
   C) All of the statements are true.
   D) None of the statements are true.

2) Which of the following statements is true?
   1. In a CVP graph (sometimes called a break-even chart), unit volume is represented on the horizontal (X) axis and dollars on the vertical (Y) axis.
   2. On a CVP graph for a profitable company, the total expense line will be steeper than the total revenue line.
   3. In a CVP graph, the anticipated profit or loss at any given level of sales is measured by the vertical distance between the total revenue line (sales) and the total fixed expense line.

   A) Only statement I is true.
   B) Only statement III is true.
   C) All of the statements are true.
   D) None of the statements are true.

3) Which of the following statements is true?
   1. In two companies making the same product and with the same total sales and total expenses, the contribution margin ratio will be lower in the company with a higher proportion of fixed expenses in its cost structure.
   2. For a given level of sales, a low contribution margin ratio will produce more net operating income than a high contribution margin ratio.

   A) Only statement I is true.
   B) Only statement II is true.
   C) Both statements are true.
   D) Neither statement is true.

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4) Which of the following statements is true?
   1. If the variable expense per unit decreases, and all other factors remain the same, the contribution margin ratio will increase.
   2. The smaller the contribution margin ratio, the smaller the amount of sales required to cover a given amount of fixed expenses.
      A) Only statement I is true.
      B) Only statement II is true.
      C) Both statements are true.
      D) Neither statement is true.

5) Which of the following statements is true?
   1. If fixed expenses increase by $10,000 per year, then the sales needed to break even will generally increase by more than $10,000.
   2. The break-even point in units can be obtained by dividing total fixed expenses by the unit contribution margin.
   3. An increase in the number of units sold will decrease a company's break-even point.
      A) Only statement I is true.
      B) Statements I and II are true.
      C) All of the statements are true.
      D) None of the statements are true.

6) Which of the following statements is true?
   1. A decrease in the number of units sold will decrease the break-even point.
   2. The break-even point can be determined by simply adding together all of the expenses from the income statement.
      A) Only statement I is true.
      B) Only statement II is true.
      C) Both statements are true.
      D) Neither statement is true.

7) Which of the following statements is true?
   1. For a capital intensive, automated company the break-even point will tend to be higher and the margin of safety will be lower than for a less capital intensive company with the same sales.
   2. The total volume in sales dollars that would be required to attain a given target profit is determined by dividing the target profit by the contribution margin ratio.
      A) Only statement I is true.
      B) Only statement II is true.
      C) Both statements are true.
      D) Neither statement is true.

8) Which of the following statements is true?
   1. Two companies with the same margin of safety in dollars will also have the same total contribution margin.
   2. Fawn Company's margin of safety is $90,000. If the company's sales drop by $80,000, it will still have positive net operating income.
      A) Only statement I is true.
      B) Only statement II is true.
      C) Both statements are true.
      D) Neither statement is true.

9) Which of the following statements is true?
   1. The margin of safety is the amount by which sales can decrease before losses are incurred by the company.
   2. The margin of safety percentage is equal to the margin of safety in dollars divided by total contribution margin.
      A) Only statement I is true.
      B) Only statement II is true.
      C) Both statements are true.
      D) Neither statement is true.

10) Which of the following statements is true?

   1. The degree of operating leverage in a company is smallest at the break-even point and increases as sales volumes rise.
   2. The degree of operating leverage is computed by dividing sales by the contribution margin.
   3. A company with high operating leverage will experience a larger reduction in net operating income in a period of declining sales volume than a company with low operating leverage.
      A) Only statement I is true.
      B) Only statement III is true.
      C) All of the statements are true.
      D) None of the statements are true.

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11) Which of the following statements is true?

1. A shift in the sales mix from low-margin items to high-margin items will decrease total profits even though total sales increase.
2. A shift in the sales mix from high-margin items to low-margin items can cause total profits to decrease even though total sales may increase.
3. A shift in the sales mix from products with high contribution margin ratios toward products with low contribution margin ratios will raise the break-even point for the company as a whole.

A) Statements I and III are true.
B) Statements II and III are true.
C) All of the statements are true.
D) None of the statements are true.

12) If the contribution margin is not sufficient to cover fixed expenses:

A) total profit equals total expenses.
B) contribution margin is negative.
C) a loss occurs.
D) variable expenses equal contribution margin.

13) Which of the following statements is correct with regard to a CVP graph?

A) A CVP graph shows the maximum possible profit.
B) A CVP graph shows the break-even point as the intersection of the total sales revenue line and the total expense line.
C) A CVP graph assumes that total expense varies in direct proportion to unit sales.
D) A CVP graph shows the operating leverage as the gap between total sales revenue and total expense at the actual level of sales.

14) Which of the following is correct? The break-even point occurs on the CVP graph where:

A) total profit equals total expenses.
B) total profit equals total fixed expenses.
C) total contribution margin equals total fixed expenses.
D) total variable expenses equal total contribution margin.

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15) Which of the following is true regarding the contribution margin ratio of a company that produces only a single product?
A) As fixed expenses decrease, the contribution margin ratio increases.
B) The contribution margin ratio multiplied by the selling price per unit equals the contribution margin per unit.
C) The contribution margin ratio will decline as unit sales decline.
D) The contribution margin ratio equals the selling price per unit less the variable expense ratio.

16) Mossfeet Shoe Corporation is a single product firm. The company is predicting that a price increase next year will not cause unit sales to decrease. What effect would this price increase have on the following items for next year?

	Contribution Margin Ratio	Break-even Point
A)	Increase	Decrease
B)	Decrease	Decrease
C)	Increase	No effect
D)	Decrease	No effect

A) Choice A
B) Choice B
C) Choice C
D) Choice D

17) If a company increases its selling price by $2 per unit due to an increase in its variable labor cost of $2 per unit, the break-even point in units will:
A) decrease.
B) increase.
C) not change.
D) change but direction cannot be determined.

18) Break-even analysis assumes that:
A) Total revenue is constant.
B) Unit variable expense is constant.
C) Unit fixed expense is constant.
D) Selling prices must fall in order to generate more revenue.

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19) Which of the following would not affect the break-even point?
A) number of units sold
B) variable expense per unit
C) total fixed expense
D) selling price per unit

20) A $2.00 increase in a product's variable expense per unit accompanied by a $2.00 increase in its selling price per unit will:
A) decrease the degree of operating leverage.
B) decrease the contribution margin.
C) have no effect on the break-even volume.
D) have no effect on the contribution margin ratio.

21) To obtain the dollar sales volume necessary to attain a given target profit, which of the following formulas should be used?
A) (Fixed expenses + Target net profit)/Total contribution margin
B) (Fixed expenses + Target net profit)/Contribution margin ratio
C) Fixed expenses/Contribution margin per unit
D) Target net profit/Contribution margin ratio

22) If sales volume increases and all other factors remain constant, then the:
A) contribution margin ratio will increase.
B) break-even point will decrease.
C) margin of safety will increase.
D) net operating income will decrease.

23) If the degree of operating leverage is 4, then a one percent change in quantity sold should result in a four percent change in:
A) unit contribution margin.
B) revenue.
C) variable expense.
D) net operating income.

24) Which of the following is an assumption underlying standard CVP analysis?
A) In multiproduct companies, the sales mix is constant.
B) In manufacturing companies, inventories always change.
C) The price of a product or service is expected to change as volume changes.
D) Fixed expenses will change as volume increases.

25) Rovinsky Corporation, a company that produces and sells a single product, has provided its contribution format income statement for November.

Sales (7,600 units)	$ 387,600
Variable expenses	235,600
Contribution margin	152,000
Fixed expenses	103,500
Net operating income	$ 48,500

If the company sells 7,500 units, its net operating income should be closest to:

Note: Do not round intermediate calculations.

A) $47,979
B) $46,500
C) $48,500
D) $44,000

26) Rovinsky Corporation, a company that produces and sells a single product, has provided its contribution format income statement for November.

Sales (5,700 units)	$ 319,200
Variable expenses	188,100
Contribution margin	131,100
Fixed expenses	106,500
Net operating income	$ 24,600

If the company sells 5,300 units, its net operating income should be closest to:

A) $24,600
B) $2,200
C) $22,874
D) $15,400

27) Sorin Incorporated, a company that produces and sells a single product, has provided its contribution format income statement for January.

Sales (3,400 units)	$ 112,200
Variable expenses	50,490
Contribution margin	61,710
Fixed expenses	45,700
Net operating income	$ 16,010

If the company sells 3,900 units, its total contribution margin should be closest to:

Note: Do not round intermediate calculations.

A) $61,710
B) $70,785
C) $92,700
D) $18,364

28) Sorin Incorporated, a company that produces and sells a single product, has provided its contribution format income statement for January.

Sales (4,200 units)	$ 155,400
Variable expenses	100,800
Contribution margin	54,600
Fixed expenses	42,400
Net operating income	$ 12,200

If the company sells 4,600 units, its total contribution margin should be closest to:

A) $54,600
B) $59,800
C) $69,400
D) $13,362

29) Schister Systems uses the following data in its Cost-Volume-Profit analyses:

	Total
Sales	$ 305,000
Variable expenses	183,000
Contribution margin	122,000
Fixed expenses	101,000
Net operating income	$ 21,000

What is total contribution margin if sales volume increases by 20%?

A) $122,000
B) $25,200
C) $146,400
D) $16,800

30) Schister Systems uses the following data in its Cost-Volume-Profit analyses:

	Total
Sales	$ 400,000
Variable expenses	280,000
Contribution margin	120,000
Fixed expenses	100,000
Net operating income	$ 20,000

What is total contribution margin if sales volume increases by 20%?

A) $80,000
B) $158,400
C) $200,000
D) $144,000

31) Kelchner Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (3,000 units)	$ 180,000
Variable expenses	108,000
Contribution margin	72,000
Fixed expenses	62,400
Net operating income	$ 9,600

The contribution margin ratio is closest to:

A) 67%
B) 40%
C) 33%
D) 60%

32) Nocum Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (3,000 units)	$ 120,000
Variable expenses	90,000
Contribution margin	30,000
Fixed expenses	21,000
Net operating income	$ 9,000

If sales volumes decline to 2,900 units, the net operating income would be closest to:

A) $29,000
B) $1,000
C) $8,700
D) $8,000

33) Stauffer Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (8,000 units)	$ 320,000
Variable expenses	192,000
Contribution margin	128,000
Fixed expenses	118,400
Net operating income	$ 9,600

The variable expense ratio is closest to:

A) 60%
B) 40%
C) 67%
D) 33%

34) Carver Corporation produces a product which sells for $40. Variable manufacturing costs are $18 per unit. Fixed manufacturing costs are $5 per unit based on the current level of sales volume, and fixed selling and administrative costs are $4 per unit. A selling commission of 15% of the selling price is paid on each unit sold. The contribution margin per unit is:

A) $7
B) $17
C) $22
D) $16

35) Coultrap Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (3,000 units)	$ 180,000
Variable expenses	117,000
Contribution margin	63,000
Fixed expenses	48,300
Net operating income	$ 14,700

The contribution margin per unit is closest to:

A) $21.00
B) $60.00
C) $39.00
D) $4.90

36) Escareno Corporation has provided its contribution format income statement for June. The company produces and sells a single product.

Sales (8,400 units)	$ 764,400
Variable expenses	445,200
Contribution margin	319,200
Fixed expenses	250,900
Net operating income	$ 68,300

If the company sells 8,200 units, its total contribution margin should be closest to:

A) $301,000
B) $311,600
C) $319,200
D) $66,674

37) Decaprio Incorporated produces and sells a single product. The company has provided its contribution format income statement for June.

Sales (5,600 units)	$ 224,000
Variable expenses	117,600
Contribution margin	106,400
Fixed expenses	86,700
Net operating income	$ 19,700

If the company sells 5,800 units, its net operating income should be closest to:

Note: Do not round intermediate calculations.

A) $23,500
B) $19,700
C) $27,700
D) $20,404

38) Decaprio Incorporated produces and sells a single product. The company has provided its contribution format income statement for June.

Sales (8,800 units)	$ 528,000
Variable expenses	290,400
Contribution margin	237,600
Fixed expenses	211,700
Net operating income	$ 25,900

If the company sells 9,200 units, its net operating income should be closest to:

A) $27,077
B) $49,900
C) $36,700
D) $25,900

39) Warrix Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (3,000 units)	$ 120,000
Variable expenses	90,000
Contribution margin	30,000
Fixed expenses	27,000
Net operating income	$ 3,000

If sales volumes increase to 3,020 units, the increase in net operating income would be closest to:

A) $800.00
B) $20.00
C) $600.00
D) $200.00

40) Thomason Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (1,000 units)	$ 40,000
Variable expenses	30,000
Contribution margin	10,000
Fixed expenses	7,000
Net operating income	$ 3,000

If the variable cost per unit increases by $1, spending on advertising increases by $2,000, and unit sales increase by 50 units, the net operating income would be closest to:

A) $450
B) $1,000
C) $2,150
D) $9,450

41) Duve Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (2,000 units)	$ 40,000
Variable expenses	24,000
Contribution margin	16,000
Fixed expenses	11,200
Net operating income	$ 4,800

If the selling price increases by $4 per unit and the sales volume decreases by 200 units, the net operating income would be closest to:

A) $7,200
B) $12,800
C) $10,400
D) $11,520

42) Duve Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (2,000 units)	$ 40,000
Variable expenses	24,000
Contribution margin	16,000
Fixed expenses	11,200
Net operating income	$ 4,800

If the selling price increases by $4 per unit and the sales volume decreases by 200 units, the net operating income would be closest to:

A) $234,000
B) $237,900
C) $156,000
D) $0

43) The following information pertains to Nova Co.'s cost-volume-profit relationships:

Breakeven point in units sold	1,000
Variable expenses per unit	$ 500
Total fixed expenses	$ 150,000

How much will be contributed to net operating income by the 1,001st unit sold?

A) $650
B) $500
C) $150
D) $0

44) Mishoe Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (1,000 units)	$ 50,000
Variable expenses	32,500
Contribution margin	17,500
Fixed expenses	12,250
Net operating income	$ 5,250

The break-even point in unit sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) 0 units
B) 895 units
C) 700 units
D) 650 units

45) Stockmaster Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (8,000 units)	$ 320,000
Variable expenses	192,000
Contribution margin	128,000
Fixed expenses	121,600
Net operating income	$ 6,400

The margin of safety in dollars is closest to:

A) $6,400
B) $16,000
C) $121,600
D) $128,000

46) Hedman Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (9,000 units)	$ 270,000
Variable expenses	202,500
Contribution margin	67,500
Fixed expenses	63,750
Net operating income	$ 3,750

The margin of safety percentage is closest to:

A) 75%
B) 1%
C) 6%
D) 24%

47) Cassius Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (7,000 units)	$ 210,000
Variable expenses	136,500
Contribution margin	73,500
Fixed expenses	67,200
Net operating income	$ 6,300

The number of units that must be sold to achieve a target profit of $31,500 is closest to:

A) 42,000 units
B) 16,400 units
C) 35,000 units
D) 9,400 units

48) Goodman Corporation has sales volumes of 3,000 units at $80 per unit. Variable costs are 35% of the sales price. If total fixed costs are $66,000, the degree of operating leverage is:

A) 0.79
B) 0.93
C) 2.67
D) 1.73

49) Jilk Incorporated's contribution margin ratio is 60% and its fixed monthly expenses are $51,000. Assuming that the fixed monthly expenses do not change, what is the best estimate of the company's net operating income in a month when sales are $144,000?

A) $86,400
B) $6,600
C) $35,400
D) $93,000

50) Jilk Incorporated's contribution margin ratio is 58% and its fixed monthly expenses are $36,000. Assuming that the fixed monthly expenses do not change, what is the best estimate of the company's net operating income in a month when sales are $103,000?

A) $23,740
B) $59,740
C) $67,000
D) $7,260

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51) Gayne Corporation's contribution margin ratio is 19% and its fixed monthly expenses are $54,000. If the company's sales for a month are $319,000, what is the best estimate of the company's net operating income? Assume that the fixed monthly expenses do not change.
A) $204,390
B) $6,610
C) $265,000
D) $60,610

52) Gayne Corporation's contribution margin ratio is 12% and its fixed monthly expenses are $84,000. If the company's sales for a month are $738,000, what is the best estimate of the company's net operating income? Assume that the fixed monthly expenses do not change.
A) $565,440
B) $654,000
C) $88,560
D) $4,560

53) Creswell Corporation's fixed monthly expenses are $25,000 and its contribution margin ratio is 67%. Assuming that the fixed monthly expenses do not change, what is the best estimate of the company's net operating income in a month when sales are $82,000?
A) $2,060
B) $54,940
C) $29,940
D) $57,000

54) Creswell Corporation's fixed monthly expenses are $29,000 and its contribution margin ratio is 56%. Assuming that the fixed monthly expenses do not change, what is the best estimate of the company's net operating income in a month when sales are $95,000?
A) $12,800
B) $24,200
C) $53,200
D) $66,000

55) Northern Pacific Fixtures Corporation sells a single product for $28 per unit. If variable expenses are 65% of sales and fixed expenses total $9,800, the break-even point is:
Note: Round your intermediate calculations to 2 decimal places.
A) $15,077
B) $18,200
C) $9,800
D) $28,000

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56) Variable expenses for Alpha Corporation are 40% of sales. What are sales at the break-even point, assuming that fixed expenses total $150,000 per year:
A) $250,000
B) $375,000
C) $600,000
D) $150,000

57) Moyas Corporation sells a single product for $25 per unit. Last year, the company's sales revenue was $315,000 and its net operating income was $63,250. If fixed expenses totaled $110,000 for the year, the break-even point in unit sales was:
A) 12,600 units
B) 5,670 units
C) 15,130 units
D) 8,000 units

58) Moyas Corporation sells a single product for $20 per unit. Last year, the company's sales revenue was $300,000 and its net operating income was $24,000. If fixed expenses totaled $96,000 for the year, the break-even point in unit sales was:
A) 12,000 units
B) 9,900 units
C) 15,000 units
D) 14,100 units

59) Sabv Corporation's break-even-point in sales is $800,000, and its variable expenses are 70% of sales. If the company lost $30,000 last year, sales must have amounted to:
A) $770,000
B) $740,000
C) $700,000
D) $530,000

60) Sabv Corporation's break-even-point in sales is $675,000, and its variable expenses are 75% of sales. If the company lost $24,000 last year, sales must have amounted to:
A) $651,000
B) $579,000
C) $603,000
D) $471,000

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61) Last year Easton Corporation reported sales of $840,000, a contribution margin ratio of 40% and a net loss of $36,000. Based on this information, the break-even point was:
A) $750,000
B) $1,020,000
C) $876,000
D) $930,000

62) Last year Easton Corporation reported sales of $480,000, a contribution margin ratio of 25% and a net loss of $16,000. Based on this information, the break-even point was:
A) $435,000
B) $544,000
C) $506,000
D) $600,000

63) Black Corporation's sales are $600,000, its fixed expenses are $150,000, and its variable expenses are 60% of sales. The margin of safety is:
A) $90,000
B) $190,000
C) $225,000
D) $240,000

64) Awtis Corporation has a margin of safety percentage of 25% based on its actual sales. The break-even point is $322,800 and the variable expenses are 45% of sales. Given this information, the actual profit is:
A) $86,080
B) $59,180
C) $16,140
D) $44,385

65) Awtis Corporation has a margin of safety percentage of 20% based on its actual sales. The break-even point is $500,000 and the variable expenses are 60% of sales. Given this information, the actual profit is:
A) $65,000
B) $55,000
C) $50,000
D) $41,500

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66) Tropp Corporation sells a product for $10 per unit. The fixed expenses are $420,000 per month and the unit variable expenses are 60% of the selling price. What sales would be necessary in order for Tropp to realize a profit of 10% of sales?

Note: Round your intermediate calculations to 2 decimal places.

A) $1,050,000
B) $945,000
C) $1,400,000
D) $840,000

67) Hopi Corporation expects the following operating results for next year:

Sales	$ 400,000
Margin of safety	$ 100,000
Contribution margin ratio	75%
Degree of operating leverage	4

What is Hopi expecting total fixed expenses to be next year?

A) $75,000
B) $100,000
C) $200,000
D) $225,000

68) Iverson Corporation's variable expenses are 60% of sales. At a $400,000 sales level, the degree of operating leverage is 5. If sales increase by $40,000, the new degree of operating leverage will be (rounded):

A) 3.67
B) 2.86
C) 5.25
D) 5.00

69) Data concerning Dorazio Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 160	100%
Variable expenses	48	30%
Contribution margin	$ 112	70%

Fixed expenses are $87,000 per month. The company is currently selling 1,000 units per month. Management is considering using a new component that would increase the unit variable cost by $28. Since the new component would increase the features of the company's product, the marketing manager predicts that monthly sales would increase by 400 units. What should be the overall effect on the company's monthly net operating income of this change?

A) increase of $5,600
B) increase of $33,600
C) decrease of $5,600
D) decrease of $33,600

70) Kuzio Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 140	100%
Variable expenses	70	50%
Contribution margin	$ 70	50%

The company is currently selling 5,600 units per month. Fixed expenses are $204,000 per month. The marketing manager believes that a $7,000 increase in the monthly advertising budget would result in a 110 unit increase in monthly sales. What should be the overall effect on the company's monthly net operating income of this change?

A) increase of $700
B) increase of $7,700
C) decrease of $7,000
D) decrease of $700

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71) Kuzio Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 130	100%
Variable expenses	78	60%
Contribution margin	$ 52	40%

The company is currently selling 6,000 units per month. Fixed expenses are $263,000 per month. The marketing manager believes that a $5,000 increase in the monthly advertising budget would result in a 140 unit increase in monthly sales volume. What should be the overall effect on the company's monthly net operating income of this change?

A) increase of $2,280
B) increase of $7,280
C) decrease of $5,000
D) decrease of $2,280

72) Data concerning Pellegren Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 200	100%
Variable expenses	40	20%
Contribution margin	$ 160	80%

Fixed expenses are $531,000 per month. The company is currently selling 4,000 units per month. The marketing manager would like to cut the selling price by $14 and increase the advertising budget by $35,000 per month. The marketing manager predicts that these two changes would increase monthly sales volume by 500 units. What should be the overall effect on the company's monthly net operating income of this change?

A) decrease of $18,000
B) increase of $38,000
C) decrease of $38,000
D) increase of $58,000

73) Warbler Gift's reported the following information for the sales of their single product:

	Total	Per Unit
Sales	$ 300,000	$ 10
Variable expenses	180,000	6
Contribution margin	120,000	$ 4
Fixed expenses	100,000	
Net operating income	$ 20,000	

Warbler's salesmen have proposed to decrease the selling price by 50 cents per unit. How many units will need to be sold for Warbler to earn at least the same net operating income?
Note: Round your intermediate calculations to 2 decimal places.

A) 5,715 units
B) 36,000 units
C) 34,286 units
D) 28,572 units

74) Data concerning Bazin Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 100	100%
Variable expenses	20	20%
Contribution margin	$ 80	80%

Fixed expenses are $384,000 per month. The company is currently selling 6,000 units per month. The marketing manager would like to introduce sales commissions as an incentive for the sales staff. The marketing manager has proposed a commission of $9 per unit. In exchange, the sales staff would accept a decrease in their salaries of $46,000 per month. (This is the company's savings for the entire sales staff.) The marketing manager predicts that introducing this sales incentive would increase monthly sales by 500 units. What should be the overall effect on the company's monthly net operating income of this change?

A) increase of $27,500
B) decrease of $64,500
C) increase of $41,500
D) increase of $507,500

Managerial Accounting for Managers Edition 6 by Noreen

75) Chovanec Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 170	100%
Variable expenses	68	40%
Contribution margin	$ 102	60%

Fixed expenses are $521,000 per month. The company is currently selling 7,000 units per month. Management is considering using a new component that would increase the unit variable cost by $6. Since the new component would increase the features of the company's product, the marketing manager predicts that monthly sales would increase by 500 units. What should be the overall effect on the company's monthly net operating income of this change?

A) decrease of $48,000
B) decrease of $6,000
C) increase of $48,000
D) increase of $6,000

76) How much will a company's net operating income change if it undertakes an advertising campaign given the following data:

Cost of advertising campaign	$ 25,000
Variable expense as a percentage of sales	42%
Increase in sales	$ 60,000

A) $200 increase
B) $25,200 increase
C) $15,000 increase
D) $9,800 increase

Managerial Accounting for Managers Edition 6 by Noreen

77) Data concerning Kardas Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 140	100%
Variable expenses	28	20%
Contribution margin	$ 112	80%

The company is currently selling 8,000 units per month. Fixed expenses are $719,000 per month. The marketing manager believes that a $20,000 increase in the monthly advertising budget would result in a 180 unit increase in monthly sales. What should be the overall effect on the company's monthly net operating income of this change?

A) decrease of $160
B) increase of $20,160
C) decrease of $20,000
D) increase of $160

78) Cobble Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$160	100%
Variable expenses	48	30%
Contribution margin	$112	70%

Fixed expenses are $499,000 per month. The company is currently selling 5,000 units per month. The marketing manager would like to cut the selling price by $13 and increase the advertising budget by $33,000 per month. The marketing manager predicts that these two changes would increase monthly sales by 900 units. What should be the overall effect on the company's monthly net operating income of this change?

A) increase of $56,100
B) decrease of $8,900
C) increase of $99,300
D) decrease of $56,100

79) Sannella Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 220	100%
Variable expenses	66	30%
Contribution margin	$ 154	70%

Fixed expenses are $991,000 per month. The company is currently selling 8,000 units per month. The marketing manager would like to introduce sales commissions as an incentive for the sales staff. The marketing manager has proposed a commission of $11 per unit. In exchange, the sales staff would accept a decrease in their salaries of $74,000 per month. (This is the company's savings for the entire sales staff.) The marketing manager predicts that introducing this sales incentive would increase monthly sales by 200 units. What should be the overall effect on the company's monthly net operating income of this change?

A) increase of $1,246,600
B) increase of $14,600
C) decrease of $133,400
D) increase of $71,800

80) Wenstrom Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 130.00
Variable expense per unit	$ 41.60
Fixed expense per month	$ 109,616

The break-even in monthly dollar sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $342,550
B) $204,455
C) $109,616
D) $161,200

81) Borich Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 150.00
Variable expense per unit	$ 73.50
Fixed expense per month	$ 308,295

The break-even in monthly unit sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) 2,055
B) 4,030
C) 4,194
D) 3,426

82) Data concerning Follick Corporation's single product appear below:

Selling price per unit	$ 160.00
Variable expense per unit	$ 64.00
Fixed expense per month	$ 124,800

The break-even in monthly dollar sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $208,000
B) $291,200
C) $124,800
D) $416,000

83) Data concerning Follick Corporation's single product appear below:

Selling price per unit	$ 110.00
Variable expense per unit	$ 30.80
Fixed expense per month	$ 321,552

The break-even in monthly dollar sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $1,148,400
B) $638,851
C) $321,552
D) $446,600

84) Wimpy Incorporated produces and sells a single product. The selling price of the product is $160.00 per unit and its variable cost is $48.00 per unit. The fixed expense is $399,420 per month.

The break-even in monthly dollar sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $1,331,400
B) $931,980
C) $570,600
D) $399,420

85) Wimpy Incorporated produces and sells a single product. The selling price of the product is $150.00 per unit and its variable cost is $58.50 per unit. The fixed expense is $366,915 per month.

The break-even in monthly dollar sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $601,500
B) $366,915
C) $636,408
D) $940,808

86) Given the following data:

Selling price per unit	$ 2.00
Variable production cost per unit	$ 0.30
Fixed production cost	$ 3,000
Sales commission per unit	$ 0.20
Fixed selling expenses	$ 1,500

The break-even point in dollars is:

Note: Round your intermediate calculations to 2 decimal places.

A) $6,000
B) $4,500
C) $2,647
D) $4,000

87) Hevesy Incorporated produces and sells a single product. The selling price of the product is $200.00 per unit and its variable cost is $80.00 per unit. The fixed expense is $300,000 per month. The break-even in monthly unit sales is closest to:

A) 2,500
B) 1,500
C) 3,750
D) 2,583

Managerial Accounting for Managers Edition 6 by Noreen

88) Singapore Candy Cane Corporation is a single product firm with the following cost structure for next year:

Selling price per unit	$ 1.20
Variable expenses per unit	$ 0.72
Total fixed expenses for the year	$ 64,800

What is the company's break-even point next year in sales dollars?

Note: Round your intermediate calculations to 2 decimal places.

A) $90,000
B) $108,000
C) $135,000
D) $162,000

89) Bear Publishing sells a nature guide. The following information was reported for a typical month:

	Total	Per Unit
Sales	$ 17,600	$ 16.00
Variable expenses	9,680	
Contribution margin	7,920	
Fixed expenses	3,600	
Net operating income	$ 4,320	

What is Bear's current break-even point in unit and dollars?

Note: Round your intermediate calculations to 2 decimal places.

A) 1,100 units and $17,600
B) 1,100 units and $8,000
C) 8,000 units and $500
D) 500 units and $8,000

90) Mason Corporation's selling price was $20 per unit. Fixed expenses totaled $54,000, variable expenses were $14 per unit, and the company reported a profit of $9,000 for the year. The break-even point for Mason Corporation is:

A) 10,500 units
B) 4,500 units
C) 8,500 units
D) 9,000 units

Managerial Accounting for Managers Edition 6 by Noreen

91) Derst Incorporated sells a particular textbook for $38. Variable expenses are $30 per book. At the current volume of 59,000 books sold per year the company is just breaking even. Given these data, the annual fixed expenses associated with the textbook total:

A) $472,000
B) $2,242,000
C) $2,714,000
D) $1,770,000

92) Derst Incorporated sells a particular textbook for $140. Variable expenses are $25 per book. At the current volume of 6,000 books sold per year the company is just breaking even. Given these data, the annual fixed expenses associated with the textbook total:

A) $400,000
B) $690,000
C) $840,000
D) $150,000

93) Data concerning Buchenau Corporation's single product appear below:

Selling price per unit	$ 150.00
Variable expense per unit	$ 34.50
Fixed expense per month	$ 466,620

The break-even in monthly unit sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) 3,111
B) 6,892
C) 4,040
D) 13,525

94) Sufra Corporation is planning to sell 125,000 units for $3.00 per unit and will break even at this level of sales. Fixed expenses will be $105,000. What are the company's variable expenses per unit?

A) $0.84
B) $2.52
C) $2.16
D) $1.32

95) Sufra Corporation is planning to sell 100,000 units for $8.00 per unit and will break even at this level of sales. Fixed expenses will be $300,000. What are the company's variable expenses per unit?

A) $5.00
B) $4.00
C) $3.00
D) $4.50

96) Mio Canoe Livery rents canoes and transports canoes and customers to and from their canoe trip on a local river. The trip is priced at $20 per person and has a CM ratio of 30%. Mio's fixed expenses are $84,000. Last year, sales were $400,000 and profit was $36,000. How many units need to be sold to break-even, and how many need to be sold to earn a profit of $42,000?

A) 1,800 and 2,100
B) 6,000 and 8,143
C) 14,000 and 21,000
D) 4,200 and 6,300

97) A company makes a single product that it sells for $16 per unit. Fixed costs are $76,800 per month and the product has a contribution margin ratio of 40%. If the company's actual sales are $224,000, its margin of safety is:

A) $32,000
B) $96,000
C) $128,000
D) $192,000

98) The following data are available for the Phelps Corporation for a recent month:

	Product A	Product B	Product C	Total
Sales	$ 150,000	$ 130,000	$ 90,000	$ 370,000
Variable expenses	91,000	104,000	27,000	222,000
Contribution margin	$ 59,000	$ 26,000	$ 63,000	148,000
Fixed expenses				55,000
Net operating income				$ 93,000

The break-even sales for the month for the company is closest to:

A) $91,667
B) $203,000
C) $148,000
D) $137,500

99) Ferkil Corporation manufacturers a single product that has a selling price of $30.00 per unit. Fixed expenses total $63,000 per year, and the company must sell 7,000 units to break even. If the company has a target profit of $13,500, sales in units must be:

A) 7,864 units
B) 7,450 units
C) 8,500 units
D) 9,100 units

100) Ferkil Corporation manufacturers a single product that has a selling price of $100 per unit. Fixed expenses total $225,000 per year, and the company must sell 5,000 units to break even. If the company has a target profit of $67,500, sales in units must be:

A) 6,000 units
B) 5,750 units
C) 7,925 units
D) 6,500 units

Managerial Accounting for Managers Edition 6 by Noreen

101) Corporation X sold 25,000 units of product last year. The contribution margin per unit was $2, and fixed expenses totaled $40,000 for the year. This year fixed expenses are expected to increase to $45,000, but the contribution margin per unit will remain unchanged at $2. How many units must be sold this year to earn the same net operating income as was earned last year?

A) 22,500
B) 27,500
C) 35,000
D) 2,500

102) Data concerning Bedwell Enterprises Corporation's single product appear below:

Selling price per unit	$ 165.00
Variable expense per unit	$ 92.00
Fixed expense per month	$ 431,040

The unit sales to attain the company's monthly target profit of $20,000 is closest to:
Note: Do not round intermediate calculations.

A) 5,905
B) 2,734
C) 4,903
D) 6,179

103) Data concerning Bedwell Enterprises Corporation's single product appear below:

Selling price per unit	$ 160.00
Variable expense per unit	$ 65.60
Fixed expense per month	$ 387,040

The unit sales to attain the company's monthly target profit of $17,000 is closest to:
Note: Round your intermediate calculations to 2 decimal places.

A) 6,159
B) 4,280
C) 2,525
D) 4,321

104) The contribution margin ratio of Mountain Corporation's only product is 52%. The company's monthly fixed expense is $296,400 and the company's monthly target profit is $7,000. The dollar sales to attain that target profit is closest to:

A) $570,000
B) $157,768
C) $583,462
D) $154,128

105) Hettrick International Corporation's only product sells for $120.00 per unit and its variable expense is $52.80. The company's monthly fixed expense is $396,480 per month. The unit sales to attain the company's monthly target profit of $13,000 is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) 7,755
B) 6,093
C) 5,753
D) 3,412

106) Data concerning Bedwell Enterprises Corporation's single product appear below:

Selling price per unit	$ 160.00
Variable expense per unit	$ 65.60
Fixed expense per month	$ 387,040

The unit sales to attain the company's monthly target profit of $17,000 is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) 7,896
B) 12,769
C) 6,578
D) 4,341

107) Product Y sells for $15 per unit, and has variable expenses of $9 per unit. Fixed expenses total $300,000 per year. How many units of Product Y must be sold each year to yield an annual profit of $90,000?

A) 50,000 units
B) 65,000 units
C) 15,000 units
D) 43,333 units

108) Logsdon Corporation produces and sells a single product whose contribution margin ratio is 63%. The company's monthly fixed expense is $720,720 and the company's monthly target profit is $28,000. The dollar sales to attain that target profit is closest to:

A) $471,694
B) $454,054
C) $1,188,444
D) $1,144,000

109) Mcmurtry Corporation sells a product for $270 per unit. The product's current sales are 13,800 units and its break-even sales are 10,488 units. The margin of safety as a percentage of sales is closest to:

A) 24%
B) 32%
C) 76%
D) 68%

110) Mcmurtry Corporation sells a product for $170 per unit. The product's current sales are 10,000 units and its break-even sales are 8,100 units. The margin of safety as a percentage of sales is closest to:

A) 23%
B) 81%
C) 19%
D) 77%

111) Cubie Corporation has provided the following data concerning its only product:

Selling price	$ 105 per unit
Current sales	12,300 units
Break-even sales	8,610 units

What is the margin of safety in dollars?

A) $1,291,500
B) $387,450
C) $904,050
D) $632,835

112) Cubie Corporation has provided the following data concerning its only product:

Selling price	$ 100 per unit
Current sales	10,600 units
Break-even sales	9,540 units

What is the margin of safety in dollars?

A) $1,060,000
B) $106,000
C) $954,000
D) $706,667

113) Ensley Corporation has provided the following data concerning its only product:

Selling price	$ 200 per unit
Current sales	30,300 units
Break-even sales	21,816 units

The margin of safety as a percentage of sales is closest to:

A) 61%
B) 28%
C) 72%
D) 39%

114) Evan's Electronics Boutique sells a digital camera. The following information was reported for the digital camera last month:

Sales	$ 17,600
Variable expenses	9,680
Contribution margin	7,920
Fixed expenses	3,600
Net operating income	$ 4,320

Evan's margin of safety in dollars and percentage are closest to:

A) $8,000 and 83%
B) $9,600 and 120%
C) $8,000 and 45%
D) $9,600 and 55%

115) Majid Corporation sells a product for $170 per unit. The product's current sales are 41,800 units and its break-even sales are 33,900 units.
What is the margin of safety in dollars?
A) $4,673,821
B) $7,106,000
C) $5,763,000
D) $1,343,000

116) Majid Corporation sells a product for $240 per unit. The product's current sales are 41,300 units and its break-even sales are 36,757 units.
What is the margin of safety in dollars?
A) $8,821,680
B) $6,608,000
C) $9,912,000
D) $1,090,320

117) Rushenberg Corporation's operating leverage is 10.8. If the company's sales volume increases by 14%, its net operating income should increase by about:
A) 151.2%
B) 14.0%
C) 77.1%
D) 10.8%

118) Evan's Electronics Boutique sells a digital camera. The following information was reported for the digital camera last month:

Sales	$ 17,600
Variable expenses	9,680
Contribution margin	7,920
Fixed expenses	3,600
Net operating income	$ 4,320

Evan's margin of safety in dollars and percentage are closest to:
A) 0.27
B) 6.79
C) 3.70
D) 0.15

Managerial Accounting for Managers Edition 6 by Noreen

119) Sales at East Corporation declined from $100,000 to $80,000, while net operating income declined by 300%. Given these data, the company must have had an operating leverage of:
A) 15
B) 2.7
C) 30
D) 12

120) Gamma Corporation has sales of $120,000, a contribution margin of $48,000, and a net operating income of $12,000. The company's degree of operating leverage is:
A) 2.5
B) 4.0
C) 10.0
D) 4.8

121) Bendel Incorporated has an operating leverage of 4.8. If the company's sales volume increases by 13%, its net operating income should increase by about:
A) 62.4%
B) 2.7%
C) 13.0%
D) 47.8%

122) Bendel Incorporated has an operating leverage of 7.3. If the company's sales volume increases by 3%, its net operating income should increase by about:
A) 243.3%
B) 7.3%
C) 21.9%
D) 3.0%

123) Alpha Corporation reported the following data for its most recent year: sales, $630,000; variable expenses, $280,000; and fixed expenses, $280,000. The company's degree of operating leverage is closest to:
A) 9.00
B) 1.00
C) 5.00
D) 1.80

124) Alpha Corporation reported the following data for its most recent year: sales, $1,000,000; variable expenses, $600,000; and fixed expenses, $300,000. The company's degree of operating leverage is closest to:

A) 0.25
B) 2.0
C) 4.0
D) 3.3

125) Lofft Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (2,000 units)	$ 120,000
Variable expenses	90,000
Contribution margin	30,000
Fixed expenses	16,500
Net operating income	$ 13,500

Using the degree of operating leverage, the estimated percent increase in net operating income as the result of a 10% increase in sales volume is closest to:

Note: Round your intermediate calculations to 1 decimal place.

A) 1.13%
B) 88.89%
C) 22.22%
D) 4.50%

126) Serfass Corporation's contribution format income statement for July appears below:

Sales	$ 388,800
Variable expenses	213,840
Contribution margin	174,960
Fixed expenses	83,980
Net operating income	$ 90,980

The degree of operating leverage is closest to:

A) 0.23
B) 0.52
C) 2.22
D) 1.92

127) Serfass Corporation's contribution format income statement for July appears below:

Sales	$ 260,000
Variable expenses	176,000
Contribution margin	84,000
Fixed expenses	71,800
Net operating income	$ 12,200

The degree of operating leverage is closest to:

A) 0.05
B) 0.15
C) 21.31
D) 6.89

128) Bristo Corporation has sales of 2,000 units at $40 per unit. Variable expenses are 35% of the selling price. If total fixed expenses are $42,000, the degree of operating leverage is:

A) 2.80
B) 8.00
C) 2.97
D) 5.20

129) Bristo Corporation has sales of 2,000 units at $35 per unit. Variable expenses are 40% of the selling price. If total fixed expenses are $22,000, the degree of operating leverage is:

A) 0.79
B) 1.40
C) 2.10
D) 3.50

130) Lydic Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (4,000 units)	$ 160,000
Variable expenses	112,000
Contribution margin	48,000
Fixed expenses	38,400
Net operating income	$ 9,600

The degree of operating leverage is closest to:

A) 5.00
B) 0.20
C) 16.67
D) 0.06

Managerial Accounting for Managers Edition 6 by Noreen

131) A company sells two products--J and K. The sales mix is expected to be $3 of sales of Product K for every $1 of sales of Product J. Product J has a contribution margin ratio of 40% whereas Product K has a contribution margin ratio of 50%. Annual fixed expenses are expected to be $120,000. The overall break-even point for the company in dollar sales is expected to be closest to:

A) $196,000
B) $200,000
C) $252,632
D) $263,420

132) Roddam Corporation produces and sells two products. Data concerning those products for the most recent month appear below:

	Product K09E	Product G17B
Sales	$ 28,000	$ 38,000
Variable expenses	$ 11,200	$ 8,600

The fixed expenses of the entire company were $41,970. If the sales mix were to shift toward Product K09E with total dollar sales remaining constant, the overall break-even point for the entire company:

A) would increase.
B) could increase or decrease.
C) would not change.
D) would decrease.

133) Steffen Corporation has three products with the following characteristics:

	Product A	Product B	Product C
Monthly sales in dollars	$ 120,000	$ 160,000	$ 200,000
Contribution margin ratio	20%	40%	16%

The overall contribution margin ratio for the company as a whole is closest to:

A) 35.3%
B) 75.0%
C) 25.0%
D) 28.5%

134) Mcdale Incorporated produces and sells two products. Data concerning those products for the most recent month appear below:

	Product I49V	Product Z50U
Sales	$ 37,000	$ 42,000
Variable expenses	$ 12,500	$ 28,580

The fixed expenses of the entire company were $39,090. The break-even point for the entire company is closest to:

A) $80,170
B) $81,438
C) $39,090
D) $46,210

135) Mcdale Incorporated produces and sells two products. Data concerning those products for the most recent month appear below:

	Product I49V	Product Z50U
Sales	$ 15,000	$ 14,000
Variable expenses	$ 3,300	$ 2,790

The fixed expenses of the entire company were $18,460. The break-even point for the entire company is closest to:

A) $23,367
B) $10,540
C) $24,550
D) $18,460

136) Sunnripe Corporation manufactures and sells two types of beach towels, standard and deluxe. Sunnripe expects the following operating results next year:

	Standard	Deluxe
Total sales	$ 450,000	$ 50,000
Total variable expenses	$ 360,000	$ 20,000

Sunnripe expects to have a total of $57,600 in fixed expenses next year. What is Sunnripe's overall break-even point next year in sales dollars?

A) $72,000
B) $144,000
C) $192,000
D) $240,000

Managerial Accounting for Managers Edition 6 by Noreen

137) Flesch Corporation produces and sells two products. In the most recent month, Product C90B had sales of $29,140 and variable expenses of $7,285. Product Y45E had sales of $26,100 and variable expenses of $10,440. The fixed expenses of the entire company were $24,800. If the sales mix were to shift toward Product C90B with total dollar sales remaining constant, the overall break-even point for the entire company:

A) would decrease.
B) would increase.
C) could increase or decrease.
D) would not change.

138) Flesch Corporation produces and sells two products. In the most recent month, Product C90B had sales of $24,000 and variable expenses of $6,480. Product Y45E had sales of $29,000 and variable expenses of $11,010. The fixed expenses of the entire company were $32,280. If the sales mix were to shift toward Product C90B with total dollar sales remaining constant, the overall break-even point for the entire company:

A) would decrease.
B) would increase.
C) could increase or decrease.
D) would not change.

139) Newham Corporation produces and sells two products. In the most recent month, Product R10L had sales of $42,000 and variable expenses of $11,880. Product X96N had sales of $55,000 and variable expenses of $15,280. The fixed expenses of the entire company were $46,170. The break-even point for the entire company is closest to:

A) $69,840
B) $73,330
C) $64,125
D) $46,170

140) Newham Corporation produces and sells two products. In the most recent month, Product R10L had sales of $28,000 and variable expenses of $6,440. Product X96N had sales of $22,000 and variable expenses of $7,560. The fixed expenses of the entire company were $32,710. The break-even point for the entire company is closest to:

A) $32,710
B) $45,431
C) $46,710
D) $17,290

141) Keomuangtai Corporation produces and sells a single product. The company has provided its contribution format income statement for October.

Sales (4,600 units)	$ 266,800
Variable expenses	179,400
Contribution margin	87,400
Fixed expenses	62,200
Net operating income	$ 25,200

If the company sells 4,500 units, its total contribution margin should be closest to:

A) $85,500
B) $24,652
C) $87,400
D) $81,600

142) Keomuangtai Corporation produces and sells a single product. The company has provided its contribution format income statement for October.

Sales (4,600 units)	$ 266,800
Variable expenses	179,400
Contribution margin	87,400
Fixed expenses	62,200
Net operating income	$ 25,200

If the company sells 4,200 units, its net operating income should be closest to:

A) $17,600
B) $23,009
C) $25,200
D) $2,000

143) Wight Corporation has provided its contribution format income statement for June. The company produces and sells a single product.

Sales (3,800 units)	$ 95,000
Variable expenses	38,000
Contribution margin	57,000
Fixed expenses	43,600
Net operating income	$ 13,400

If the company sells 3,900 units, its total contribution margin should be closest to:

Note: Do not round intermediate calculations.

A) $13,753
B) $57,000
C) $58,500
D) $59,500

144) Wight Corporation has provided its contribution format income statement for June. The company produces and sells a single product.

Sales (9,600 units)	$ 336,000
Variable expenses	144,000
Contribution margin	192,000
Fixed expenses	137,000
Net operating income	$ 55,000

If the company sells 9,100 units, its total contribution margin should be closest to:

A) $174,500
B) $192,000
C) $52,135
D) $182,000

145) Wight Corporation has provided its contribution format income statement for June. The company produces and sells a single product.

Sales (9,600 units)	$ 336,000
Variable expenses	144,000
Contribution margin	192,000
Fixed expenses	137,000
Net operating income	$ 55,000

If the company sells 9,700 units, its net operating income should be closest to:

A) $57,000
B) $55,000
C) $55,573
D) $58,500

146) Lister Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (3,000 units)	$ 90,000
Variable expenses	58,500
Contribution margin	31,500
Fixed expenses	21,000
Net operating income	$ 10,500

If sales increase to 3,040 units, the increase in net operating income would be closest to:
Note: Round your intermediate calculations to 2 decimal places.

A) $420.00
B) $140.00
C) $1,200.00
D) $780.00

147) Lister Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (3,000 units)	$ 90,000
Variable expenses	58,500
Contribution margin	31,500
Fixed expenses	21,000
Net operating income	$ 10,500

If sales decline to 2,900 units, the net operating income would be closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $1,050
B) $30,450
C) $10,150
D) $9,450

148) Souza Incorporated, which produces and sells a single product, has provided its contribution format income statement for October.

Sales (4,000 units)	$ 88,000
Variable expenses	40,000
Contribution margin	48,000
Fixed expenses	41,700
Net operating income	$ 6,300

If the company sells 3,600 units, its total contribution margin should be closest to:

A) $39,200
B) $5,670
C) $43,200
D) $48,000

149) Souza Incorporated, which produces and sells a single product, has provided its contribution format income statement for October.

Sales (4,000 units)	$ 88,000
Variable expenses	40,000
Contribution margin	48,000
Fixed expenses	41,700
Net operating income	$ 6,300

If the company sells 3,500 units, its net operating income should be closest to:

A) $5,513
B) $6,300
C) $300
D) −$4,700

150) Kelsay Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (9,000 units)	$ 540,000
Variable expenses	405,000
Contribution margin	135,000
Fixed expenses	130,500
Net operating income	$ 4,500

The contribution margin per unit is closest to:

A) $15.00
B) $0.50
C) $45.00
D) $60.00

151) Kelsay Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (9,000 units)	$ 540,000
Variable expenses	405,000
Contribution margin	135,000
Fixed expenses	130,500
Net operating income	$ 4,500

The contribution margin ratio is closest to:

A) 75%
B) 67%
C) 25%
D) 33%

152) Kelsay Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (9,000 units)	$ 540,000
Variable expenses	405,000
Contribution margin	135,000
Fixed expenses	130,500
Net operating income	$ 4,500

The variable expense ratio is closest to:

A) 33%
B) 67%
C) 25%
D) 75%

Managerial Accounting for Managers Edition 6 by Noreen

153) A cement manufacturer has supplied the following data:

Tons of cement produced and sold	245,000
Sales revenue	$ 1,053,500
Variable manufacturing expense	$ 427,000
Fixed manufacturing expense	$ 286,000
Variable selling and administrative expense	$ 63,000
Fixed selling and administrative expense	$ 226,000
Net operating income	$ 51,500

What is the company's unit contribution margin?

Note: Round your intermediate calculations to 2 decimal places.

A) $2.00 per unit
B) $0.32 per unit
C) $4.30 per unit
D) $2.30 per unit

154) A cement manufacturer has supplied the following data:

Tons of cement produced and sold	680,000
Sales revenue	$ 2,788,000
Variable manufacturing expense	$ 1,156,000
Fixed manufacturing expense	$ 760,000
Variable selling and administrative expense	$ 272,000
Fixed selling and administrative expense	$ 294,000
Net operating income	$ 306,000

What is the company's unit contribution margin?

Note: Round your intermediate calculations to 2 decimal places.

A) $0.45 per unit
B) $2.10 per unit
C) $2.00 per unit
D) $4.10 per unit

Managerial Accounting for Managers Edition 6 by Noreen

155) A cement manufacturer has supplied the following data:

Tons of cement produced and sold	280,000
Sales revenue	$ 984,000
Variable manufacturing expense	$ 233,000
Fixed manufacturing expense	$ 316,000
Variable selling and administrative expense	$ 190,120
Fixed selling and administrative expense	$ 94,000
Net operating income	$ 150,880

The company's contribution margin ratio is closest to:

A) 44.2%
B) 57.0%
C) 67.9%
D) 15.3%

156) A cement manufacturer has supplied the following data:

Tons of cement produced and sold	680,000
Sales revenue	$ 2,788,000
Variable manufacturing expense	$ 1,156,000
Fixed manufacturing expense	$ 760,000
Variable selling and administrative expense	$ 272,000
Fixed selling and administrative expense	$ 294,000
Net operating income	$ 306,000

The company's contribution margin ratio is closest to:

A) 39.0%
B) 51.2%
C) 11.0%
D) 48.8%

157) A cement manufacturer has supplied the following data:

Tons of cement produced and sold	680,000
Sales revenue	$ 2,788,000
Variable manufacturing expense	$ 1,156,000
Fixed manufacturing expense	$ 760,000
Variable selling and administrative expense	$ 272,000
Fixed selling and administrative expense	$ 294,000
Net operating income	$ 306,000

If the company increases its unit sales volume by 4% without increasing its fixed expenses, then total net operating income should be closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $12,240
B) $318,240
C) $360,400
D) $311,973

158) A tile manufacturer has supplied the following data:

Boxes of tiles produced and sold	520,000
Sales revenue	$ 2,132,000
Variable manufacturing expense	$ 650,000
Fixed manufacturing expense	$ 464,000
Variable selling and administrative expense	$ 260,000
Fixed selling and administrative expense	$ 312,000
Net operating income	$ 446,000

What is the company's unit contribution margin?

Note: Round your intermediate calculations to 2 decimal places.

A) $0.86 per unit
B) $2.35 per unit
C) $4.10 per unit
D) $1.75 per unit

Managerial Accounting for Managers Edition 6 by Noreen

159) A tile manufacturer has supplied the following data:

Boxes of tiles produced and sold	520,000
Sales revenue	$ 2,132,000
Variable manufacturing expense	$ 650,000
Fixed manufacturing expense	$ 464,000
Variable selling and administrative expense	$ 260,000
Fixed selling and administrative expense	$ 312,000
Net operating income	$ 446,000

The company's contribution margin ratio is closest to:

A) 42.7%
B) 57.3%
C) 45.8%
D) 21.0%

160) A tile manufacturer has supplied the following data:

Boxes of tiles produced and sold	520,000
Sales revenue	$ 2,132,000
Variable manufacturing expense	$ 650,000
Fixed manufacturing expense	$ 464,000
Variable selling and administrative expense	$ 260,000
Fixed selling and administrative expense	$ 312,000
Net operating income	$ 446,000

If the company increases its unit sales volume by 3% without increasing its fixed expenses, then total net operating income should be closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $459,380
B) $453,667
C) $13,380
D) $482,660

161) Sjostrom Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (7,000 units)	$ 280,000
Variable expenses	182,000
Contribution margin	98,000
Fixed expenses	84,000
Net operating income	$ 14,000

If the selling price increases by $3 per unit and the sales volume decreases by 600 units, the net operating income would be closest to:

A) $24,800
B) $35,000
C) $19,200
D) $32,000

162) Sjostrom Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (7,000 units)	$ 280,000
Variable expenses	182,000
Contribution margin	98,000
Fixed expenses	84,000
Net operating income	$ 14,000

If the variable cost per unit increases by $10, spending on advertising increases by $1,500, and unit sales increase by 15,800 units, the net operating income would be closest to:

A) $12,500
B) $114,100
C) $91,200
D) $5,700

163) Sjostrom Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (7,000 units)	$ 280,000
Variable expenses	182,000
Contribution margin	98,000
Fixed expenses	84,000
Net operating income	$ 14,000

If the variable cost per unit increases by $10, spending on advertising increases by $1,500, and unit sales increase by 15,800 units, the net operating income would be closest to:

A) $1,000.00
B) $800.00
C) $200.00
D) $3.33

164) Remmel Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (6,000 units)	$ 300,000
Variable expenses	240,000
Contribution margin	60,000
Fixed expenses	59,000
Net operating income	$ 1,000

If the selling price increases by $3 per unit and the sales volume decreases by 400 units, the net operating income would be closest to:

A) $19,000
B) $16,800
C) $13,800
D) $17,733

165) Valdez Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (6,000 units)	$ 240,000
Variable expenses	180,000
Contribution margin	60,000
Fixed expenses	54,000
Net operating income	$ 6,000

The break-even point in unit sales is closest to:

A) 5,850 units
B) 4,500 units
C) 0 units
D) 5,400 units

166) Valdez Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (6,000 units)	$ 240,000
Variable expenses	180,000
Contribution margin	60,000
Fixed expenses	54,000
Net operating income	$ 6,000

The number of units that must be sold to achieve a target profit of $24,000 is closest to:

A) 30,000 units
B) 7,800 units
C) 13,800 units
D) 24,000 units

167) Nussbaum Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (9,000 units)	$ 180,000
Variable expenses	117,000
Contribution margin	63,000
Fixed expenses	56,700
Net operating income	$ 6,300

The break-even point in unit sales is closest to:

A) 0 units
B) 5,850 units
C) 8,100 units
D) 8,685 units

168) Nussbaum Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (9,000 units)	$ 180,000
Variable expenses	117,000
Contribution margin	63,000
Fixed expenses	56,700
Net operating income	$ 6,300

The break-even point in dollar sales is closest to:

A) $162,000
B) $117,000
C) $0
D) $173,700

169) Nussbaum Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (9,000 units)	$ 180,000
Variable expenses	117,000
Contribution margin	63,000
Fixed expenses	56,700
Net operating income	$ 6,300

The number of units that must be sold to achieve a target profit of $16,100 is closest to:

A) 32,000 units
B) 19,400 units
C) 10,400 units
D) 23,000 units

170) Maruca Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (9,000 units)	$ 270,000
Variable expenses	175,500
Contribution margin	94,500
Fixed expenses	86,100
Net operating income	$ 8,400

The break-even point in dollar sales is closest to:

A) $175,500
B) $261,600
C) $246,000
D) $0

171) Maruca Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (9,000 units)	$ 270,000
Variable expenses	175,500
Contribution margin	94,500
Fixed expenses	86,100
Net operating income	$ 8,400

The margin of safety in dollars is closest to:

A) $86,100
B) $8,400
C) $24,000
D) $94,500

172) Golebiewski Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (5,000 units)	$ 150,000
Variable expenses	112,500
Contribution margin	37,500
Fixed expenses	35,250
Net operating income	$ 2,250

The margin of safety in dollars is closest to:

A) $2,250
B) $9,000
C) $35,250
D) $37,500

173) Golebiewski Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (5,000 units)	$ 150,000
Variable expenses	112,500
Contribution margin	37,500
Fixed expenses	35,250
Net operating income	$ 2,250

The margin of safety percentage is closest to:

A) 2%
B) 24%
C) 75%
D) 6%

174) Shambo Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (3,000 units)	$ 60,000
Variable expenses	42,000
Contribution margin	18,000
Fixed expenses	13,200
Net operating income	$ 4,800

The margin of safety percentage is closest to:

A) 27%
B) 70%
C) 22%
D) 8%

175) Shambo Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (3,000 units)	$ 60,000
Variable expenses	42,000
Contribution margin	18,000
Fixed expenses	13,200
Net operating income	$ 4,800

Using the degree of operating leverage, the estimated percent increase in net operating income as the result of a 20% increase in sales volume is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) 75.00%
B) 1.60%
C) 250.00%
D) 5.33%

Managerial Accounting for Managers Edition 6 by Noreen

176) A company that makes organic fertilizer has supplied the following data:

Bags produced and sold	200,000
Sales revenue	$ 1,560,000
Variable manufacturing expense	$ 660,000
Fixed manufacturing expense	$ 448,000
Variable selling and administrative expense	$ 180,000
Fixed selling and administrative expense	$ 214,000
Net operating income	$ 58,000

The company's margin of safety in units is closest to:

Note: Round per unit calculations to 2 decimal places.

A) 115,128 units
B) 16,111 units
C) 168,986 units
D) 100,444 units

177) A company that makes organic fertilizer has supplied the following data:

Bags produced and sold	200,000
Sales revenue	$ 1,560,000
Variable manufacturing expense	$ 660,000
Fixed manufacturing expense	$ 448,000
Variable selling and administrative expense	$ 180,000
Fixed selling and administrative expense	$ 214,000
Net operating income	$ 58,000

The company's unit contribution margin is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $4.50 per unit
B) $6.90 per unit
C) $3.60 per unit
D) $4.20 per unit

Managerial Accounting for Managers Edition 6 by Noreen

178) A company that makes organic fertilizer has supplied the following data:

Bags produced and sold	200,000
Sales revenue	$ 1,560,000
Variable manufacturing expense	$ 660,000
Fixed manufacturing expense	$ 448,000
Variable selling and administrative expense	$ 180,000
Fixed selling and administrative expense	$ 214,000
Net operating income	$ 58,000

The company's degree of operating leverage is closest to:

A) 1.27
B) 26.90
C) 3.45
D) 12.41

179) A manufacturer of premium wire strippers has supplied the following data:

Units produced and sold	580,000
Sales revenue	$ 4,176,000
Variable manufacturing expense	$ 2,871,000
Fixed manufacturing expense	$ 778,000
Variable selling and administrative expense	$ 348,000
Fixed selling and administrative expense	$ 104,000
Net operating income	$ 75,000

The company's margin of safety in units is closest to:

Note: Round per unit calculations to 2 decimal places.

A) 234,222 units
B) 564,242 units
C) 45,455 units
D) 457,500 units

Managerial Accounting for Managers Edition 6 by Noreen

180) A manufacturer of premium wire strippers has supplied the following data:

Units produced and sold	580,000
Sales revenue	$ 4,176,000
Variable manufacturing expense	$ 2,871,000
Fixed manufacturing expense	$ 778,000
Variable selling and administrative expense	$ 348,000
Fixed selling and administrative expense	$ 104,000
Net operating income	$ 75,000

The company's unit contribution margin is closest to:

A) $2.25 per unit
B) $5.55 per unit
C) $1.65 per unit
D) $6.60 per unit

181) A manufacturer of premium wire strippers has supplied the following data:

Units produced and sold	580,000
Sales revenue	$ 4,176,000
Variable manufacturing expense	$ 2,871,000
Fixed manufacturing expense	$ 778,000
Variable selling and administrative expense	$ 348,000
Fixed selling and administrative expense	$ 104,000
Net operating income	$ 75,000

The company's degree of operating leverage is closest to:

A) 55.68
B) 3.65
C) 7.73
D) 12.76

Managerial Accounting for Managers Edition 6 by Noreen

182) A manufacturer of cedar shingles has supplied the following data:

Bundles of cedar shakes produced and sold	360,000
Sales revenue	$ 2,412,000
Variable manufacturing expense	$ 1,170,000
Fixed manufacturing expense	$ 714,000
Variable selling and administrative expense	$ 414,000
Fixed selling and administrative expense	$ 82,000
Net operating income	$ 32,000

The company's break-even in unit sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) 118,806
B) 206,957
C) 346,087
D) 14,775

183) A manufacturer of cedar shingles has supplied the following data:

Bundles of cedar shakes produced and sold	360,000
Sales revenue	$ 2,412,000
Variable manufacturing expense	$ 1,170,000
Fixed manufacturing expense	$ 714,000
Variable selling and administrative expense	$ 414,000
Fixed selling and administrative expense	$ 82,000
Net operating income	$ 32,000

The company's contribution margin ratio is closest to:

A) 72.6%
B) 65.7%
C) 34.3%
D) 27.4%

Managerial Accounting for Managers Edition 6 by Noreen

184) A manufacturer of cedar shingles has supplied the following data:

Bundles of cedar shakes produced and sold	360,000
Sales revenue	$ 2,412,000
Variable manufacturing expense	$ 1,170,000
Fixed manufacturing expense	$ 714,000
Variable selling and administrative expense	$ 414,000
Fixed selling and administrative expense	$ 82,000
Net operating income	$ 32,000

The company's degree of operating leverage is closest to:

A) 11.25
B) 25.88
C) 1.99
D) 75.38

185) A manufacturer of tiling grout has supplied the following data:

Kilograms produced and sold	380,000
Sales revenue	$ 2,736,000
Variable manufacturing expense	$ 1,349,000
Fixed manufacturing expense	$ 336,000
Variable selling and administrative expense	$ 399,000
Fixed selling and administrative expense	$ 372,000
Net operating income	$ 280,000

The company's break-even in unit sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) 272,308
B) 98,333
C) 92,055
D) 60,488

Managerial Accounting for Managers Edition 6 by Noreen

186) A manufacturer of tiling grout has supplied the following data:

Kilograms produced and sold	470,000
Sales revenue	$ 1,840,000
Variable manufacturing expense	$ 943,000
Fixed manufacturing expense	$ 232,000
Variable selling and administrative expense	$ 355,000
Fixed selling and administrative expense	$ 198,000
Net operating income	$ 112,000

The company's contribution margin ratio is closest to:

A) 48.8%
B) 80.7%
C) 29.5%
D) 76.6%

187) A manufacturer of tiling grout has supplied the following data:

Kilograms produced and sold	380,000
Sales revenue	$ 2,736,000
Variable manufacturing expense	$ 1,349,000
Fixed manufacturing expense	$ 336,000
Variable selling and administrative expense	$ 399,000
Fixed selling and administrative expense	$ 372,000
Net operating income	$ 280,000

The company's contribution margin ratio is closest to:

A) 28.9%
B) 63.9%
C) 71.1%
D) 36.1%

Managerial Accounting for Managers Edition 6 by Noreen

188) A manufacturer of tiling grout has supplied the following data:

Kilograms produced and sold	380,000
Sales revenue	$ 2,736,000
Variable manufacturing expense	$ 1,349,000
Fixed manufacturing expense	$ 336,000
Variable selling and administrative expense	$ 399,000
Fixed selling and administrative expense	$ 372,000
Net operating income	$ 280,000

The company's degree of operating leverage is closest to:

A) 9.77
B) 1.36
C) 3.53
D) 2.47

189) Houpe Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 140	100%
Variable expenses	42	30%
Contribution margin	$ 98	70%

Fixed expenses are $490,000 per month. The company is currently selling 6,000 units per month.

The marketing manager believes that a $14,000 increase in the monthly advertising budget would result in a 150 unit increase in monthly sales. What should be the overall effect on the company's monthly net operating income of this change?

A) increase of $700
B) increase of $14,700
C) decrease of $14,000
D) decrease of $700

190) Houpe Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 140	100%
Variable expenses	42	30%
Contribution margin	$ 98	70%

Fixed expenses are $490,000 per month. The company is currently selling 6,000 units per month.

Management is considering using a new component that would increase the unit variable cost by $5. Since the new component would increase the features of the company's product, the marketing manager predicts that monthly sales would increase by 300 units. What should be the overall effect on the company's monthly net operating income of this change?

A) decrease of $2,100
B) decrease of $27,900
C) increase of $2,100
D) increase of $27,900

191) Houpe Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 140	100%
Variable expenses	42	30%
Contribution margin	$ 98	70%

Fixed expenses are $490,000 per month. The company is currently selling 6,000 units per month.

The marketing manager would like to cut the selling price by $7 and increase the advertising budget by $28,000 per month. The marketing manager predicts that these two changes would increase monthly sales by 500 units. What should be the overall effect on the company's monthly net operating income of this change?

A) decrease of $17,500
B) increase of $17,500
C) decrease of $24,500
D) increase of $38,500

Managerial Accounting for Managers Edition 6 by Noreen

192) Houpe Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 140	100%
Variable expenses	42	30%
Contribution margin	$ 98	70%

Fixed expenses are $490,000 per month. The company is currently selling 6,000 units per month.

The marketing manager would like to introduce sales commissions as an incentive for the sales staff. The marketing manager has proposed a commission of $11 per unit. In exchange, the sales staff would accept a decrease in their salaries of $58,000 per month. (This is the company's savings for the entire sales staff.) The marketing manager predicts that introducing this sales incentive would increase monthly sales by 100 units. What should be the overall effect on the company's monthly net operating income of this change?

A) increase of $700
B) increase of $56,900
C) decrease of $115,300
D) increase of $588,700

193) Data concerning Lemelin Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 230	100%
Variable expenses	115	50%
Contribution margin	$ 115	50%

The company is currently selling 7,000 units per month. Fixed expenses are $581,000 per month.

Management is considering using a new component that would increase the unit variable cost by $3. Since the new component would increase the features of the company's product, the marketing manager predicts that monthly sales would increase by 200 units. What should be the overall effect on the company's monthly net operating income of this change?

A) decrease of $22,400
B) decrease of $1,400
C) increase of $22,400
D) increase of $1,400

Managerial Accounting for Managers Edition 6 by Noreen

194) Data concerning Lemelin Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 230	100%
Variable expenses	115	50%
Contribution margin	$ 115	50%

The company is currently selling 7,000 units per month. Fixed expenses are $581,000 per month.

The marketing manager believes that an $11,000 increase in the monthly advertising budget would result in a 100 unit increase in monthly sales. What should be the overall effect on the company's monthly net operating income of this change?

A) decrease of $11,000
B) increase of $11,500
C) decrease of $500
D) increase of $500

195) Data concerning Lemelin Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 230	100%
Variable expenses	115	50%
Contribution margin	$ 115	50%

The company is currently selling 7,000 units per month. Fixed expenses are $581,000 per month.

The marketing manager would like to introduce sales commissions as an incentive for the sales staff. The marketing manager has proposed a commission of $20 per unit. In exchange, the sales staff would accept a decrease in their salaries of $113,000 per month. (This is the company's savings for the entire sales staff.) The marketing manager predicts that introducing this sales incentive would increase monthly sales by 300 units. What should be the overall effect on the company's monthly net operating income of this change?

A) decrease of $224,500
B) increase of $107,000
C) increase of $1,500
D) increase of $806,500

196) Data concerning Lemelin Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 230	100%
Variable expenses	115	50%
Contribution margin	$ 115	50%

The company is currently selling 7,000 units per month. Fixed expenses are $581,000 per month.

The marketing manager would like to cut the selling price by $18 and increase the advertising budget by $37,000 per month. The marketing manager predicts that these two changes would increase monthly sales by 1,600 units. What should be the overall effect on the company's monthly net operating income of this change?

A) increase of $118,200
B) increase of $302,200
C) decrease of $118,200
D) decrease of $7,800

197) Thornbrough Corporation produces and sells a single product with the following characteristics:

	Per Unit	Percent of Sales
Selling price	$ 220	100%
Variable expenses	44	20%
Contribution margin	$ 176	80%

The company is currently selling 7,000 units per month. Fixed expenses are $901,000 per month.

Management is considering using a new component that would increase the unit variable cost by $11. Since the new component would increase the features of the company's product, the marketing manager predicts that monthly sales would increase by 500 units. What should be the overall effect on the company's monthly net operating income of this change?

A) increase of $82,500
B) decrease of $5,500
C) decrease of $82,500
D) increase of $5,500

Managerial Accounting for Managers Edition 6 by Noreen

198) Thornbrough Corporation produces and sells a single product with the following characteristics:

	Per Unit	Percent of Sales
Selling price	$ 220	100%
Variable expenses	44	20%
Contribution margin	$ 176	80%

The company is currently selling 7,000 units per month. Fixed expenses are $901,000 per month.

The marketing manager believes that a $28,000 increase in the monthly advertising budget would result in a 190 unit increase in monthly sales. What should be the overall effect on the company's monthly net operating income of this change?

A) decrease of $28,000
B) increase of $33,440
C) increase of $5,440
D) decrease of $5,440

199) Thornbrough Corporation produces and sells a single product with the following characteristics:

	Per Unit	Percent of Sales
Selling price	$ 220	100%
Variable expenses	44	20%
Contribution margin	$ 176	80%

The company is currently selling 7,000 units per month. Fixed expenses are $901,000 per month.

The marketing manager would like to cut the selling price by $18 and increase the advertising budget by $53,000 per month. The marketing manager predicts that these two changes would increase monthly sales by 1,000 units. What should be the overall effect on the company's monthly net operating income of this change?

A) decrease of $105,000
B) increase of $149,000
C) increase of $105,000
D) decrease of $21,000

Managerial Accounting for Managers Edition 6 by Noreen

200) Thornbrough Corporation produces and sells a single product with the following characteristics:

	Per Unit	Percent of Sales
Selling price	$ 220	100%
Variable expenses	44	20%
Contribution margin	$ 176	80%

The company is currently selling 7,000 units per month. Fixed expenses are $901,000 per month.

The marketing manager would like to introduce sales commissions as an incentive for the sales staff. The marketing manager has proposed a commission of $11 per unit. In exchange, the sales staff would accept a decrease in their salaries of $65,000 per month. (This is the company's savings for the entire sales staff.) The marketing manager predicts that introducing this sales incentive would increase monthly sales by 300 units. What should be the overall effect on the company's monthly net operating income of this change?

A) increase of $1,269,500
B) increase of $37,500
C) increase of $61,700
D) decrease of $92,500

201) Heathman Incorporated produces and sells a single product. The selling price of the product is $230.00 per unit and its variable cost is $89.70 per unit. The fixed expense is $308,660 per month.

The break-even in monthly unit sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) 2,328 units
B) 1,342 units
C) 3,441 units
D) 2,200 units

202) Heathman Incorporated produces and sells a single product. The selling price of the product is $230.00 per unit and its variable cost is $89.70 per unit. The fixed expense is $308,660 per month.

The break-even in monthly dollar sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $791,436
B) $535,365
C) $506,000
D) $308,660

203) Data concerning Sinisi Corporation's single product appear below:

Selling price per unit	$ 200.00
Variable expense per unit	$ 58.00
Fixed expense per month	$ 407,540

The break-even in monthly unit sales is closest to:

A) 2,038 units
B) 7,027 units
C) 2,870 units
D) 3,978 units

204) Data concerning Sinisi Corporation's single product appear below:

Selling price per unit	$ 200.00
Variable expense per unit	$ 58.00
Fixed expense per month	$ 407,540

The break-even in monthly dollar sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $407,600
B) $1,405,400
C) $574,000
D) $795,600

205) Zanetti Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 110.00
Variable expense per unit	$ 34.10
Fixed expense per month	$ 132,066

The break-even in monthly unit sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) 3,873 units
B) 1,740 units
C) 1,201 units
D) 2,271 units

206) Zanetti Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 110.00
Variable expense per unit	$ 34.10
Fixed expense per month	$ 132,066

The break-even in monthly dollar sales is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $191,400
B) $249,810
C) $426,030
D) $132,110

207) Junior Bodway, Incorporated, has provided the following budgeted data:

Sales	10,000 units
Selling price	$ 50 per unit
Variable expense	$ 30 per unit
Fixed expense	$ 180,000

What is the company's break-even point in sales dollars?

A) $450,000
B) $180,000
C) $300,000
D) $500,000

208) Junior Bodway, Incorporated, has provided the following budgeted data:

Sales	10,000 units
Selling price	$ 50 per unit
Variable expense	$ 30 per unit
Fixed expense	$ 180,000

How many units would the company have to sell in order to have a net operating income of $40,000?

A) 20,000 units
B) 9,000 units
C) 11,000 units
D) 7,333 units

209) Junior Bodway, Incorporated, has provided the following budgeted data:

Sales	10,000 units
Selling price	$ 50 per unit
Variable expense	$ 30 per unit
Fixed expense	$ 180,000

At the budgeted sales level of 10,000 units, what is the company's degree of operating leverage?

A) 10.0
B) 6.0
C) 22.5
D) 5.0

210) Maziarz Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 220.00
Variable expense per unit	$ 72.60
Fixed expense per month	$ 548,328

Assume the company's target profit is $14,000. The unit sales to attain that target profit is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) 7,746 units
B) 2,556 units
C) 4,706 units
D) 3,815 units

211) Maziarz Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 220.00
Variable expense per unit	$ 72.60
Fixed expense per month	$ 548,328

Assume the company's target profit is $16,000. The dollar sales to attain that target profit is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $564,328
B) $1,710,085
C) $1,038,898
D) $842,281

212) Speckman Enterprises, Incorporated, produces and sells a single product whose selling price is $200.00 per unit and whose variable expense is $68.00 per unit. The company's monthly fixed expense is $514,800.

Assume the company's target profit is $11,000. The unit sales to attain that target profit is closest to:

A) 2,629 units
B) 3,983 units
C) 4,781 units
D) 7,732 units

213) Speckman Enterprises, Incorporated, produces and sells a single product whose selling price is $200.00 per unit and whose variable expense is $68.00 per unit. The company's monthly fixed expense is $514,800.

Assume the company's target profit is $12,000. The dollar sales to attain that target profit is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $1,549,412
B) $798,182
C) $526,800
D) $958,131

214) Data concerning Strite Corporation's single product appear below:

Selling price per unit	$ 150.00
Variable expense per unit	$ 42.00
Fixed expense per month	$ 421,200

Assume the company's target profit is $17,000. The unit sales to attain that target profit is closest to:

A) 5,804 units
B) 2,921 units
C) 4,057 units
D) 10,433 units

215) Data concerning Strite Corporation's single product appear below:

Selling price per unit	$ 150.00
Variable expense per unit	$ 42.00
Fixed expense per month	$ 421,200

Assume the company's target profit is $8,000. The dollar sales to attain that target profit is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $429,200
B) $596,111
C) $1,532,857
D) $852,723

216) Highjinks, Incorporated, has provided the following budgeted data:

Sales	20,000 units
Selling price	$ 100 per unit
Variable expense	$ 70 per unit
Fixed expense	$ 450,000

What is the company's margin of safety as a percentage of sales?

A) 50%
B) 25%
C) 75%
D) 100%

217) Highjinks, Incorporated, has provided the following budgeted data:

Sales	20,000 units
Selling price	$ 100 per unit
Variable expense	$ 70 per unit
Fixed expense	$ 450,000

How many units would the company have to sell in order to have a net operating income equal to 5% of total sales dollars?

A) 18,000 units
B) 20,000 units
C) 15,333 units
D) 14,286 units

218) Jerrel Corporation sells a product for $230 per unit. The product's current sales are 24,000 units and its break-even sales are 17,280 units.
What is the margin of safety in dollars?
A) $5,520,000
B) $1,545,600
C) $3,974,400
D) $3,680,000

219) Jerrel Corporation sells a product for $230 per unit. The product's current sales are 24,000 units and its break-even sales are 17,280 units.
The margin of safety as a percentage of sales is closest to:
A) 61%
B) 28%
C) 72%
D) 39%

220) Maruska Corporation has provided the following data concerning its only product:

Selling price	$ 180 per unit
Current sales	29,800 units
Break-even sales	25,032 units

What is the margin of safety in dollars?

A) $4,505,760
B) $858,240
C) $3,576,000
D) $5,364,000

221) Maruska Corporation has provided the following data concerning its only product:

Selling price	$ 180 per unit
Current sales	29,800 units
Break-even sales	25,032 units

The margin of safety as a percentage of sales is closest to:
A) 19%
B) 16%
C) 84%
D) 81%

222) Bois Corporation has provided its contribution format income statement for January.

Sales	$ 426,400
Variable expenses	260,000
Contribution margin	166,400
Fixed expenses	120,900
Net operating income	$ 45,500

The degree of operating leverage is closest to:

A) 0.11
B) 9.37
C) 0.27
D) 3.66

223) Bois Corporation has provided its contribution format income statement for January.

Sales	$ 426,400
Variable expenses	260,000
Contribution margin	166,400
Fixed expenses	120,900
Net operating income	$ 45,500

If the company's sales volume increases by 7%, its net operating income should increase by about:

A) 26%
B) 7%
C) 66%
D) 11%

224) Sebree Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (7,000 units)	$ 280,000
Variable expenses	168,000
Contribution margin	112,000
Fixed expenses	105,600
Net operating income	$ 6,400

The degree of operating leverage is closest to:

A) 0.06
B) 17.50
C) 43.75
D) 0.02

225) Sebree Corporation has provided the following contribution format income statement. Assume that the following information is within the relevant range.

Sales (7,000 units)	$ 280,000
Variable expenses	168,000
Contribution margin	112,000
Fixed expenses	105,600
Net operating income	$ 6,400

Using the degree of operating leverage, the estimated percent increase in net operating income as the result of a 5% increase in sales volume is closest to:

Note: Round your intermediate calculations to 1 decimal place.

A) 0.29%
B) 87.50%
C) 0.11%
D) 218.75%

226) The July contribution format income statement of Doxtater Corporation appears below:

Sales	$ 564,400
Variable expenses	312,800
Contribution margin	251,600
Fixed expenses	193,800
Net operating income	$ 57,800

The degree of operating leverage is closest to:

A) 0.23
B) 0.10
C) 4.35
D) 9.76

227) The July contribution format income statement of Doxtater Corporation appears below:

Sales	$ 564,400
Variable expenses	312,800
Contribution margin	251,600
Fixed expenses	193,800
Net operating income	$ 57,800

If the company's sales volume increases by 19%, its net operating income should increase by about:

A) 10%
B) 19%
C) 83%
D) 186%

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228) Dietrick Corporation produces and sells two products. Data concerning those products for the most recent month appear below:

	Product B32L	Product K84B
Sales	$ 46,000	$ 27,000
Variable expenses	$ 13,800	$ 14,670

Fixed expenses for the entire company were $42,550.

The break-even point for the entire company is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $42,550
B) $71,020
C) $69,754
D) $30,450

229) Dietrick Corporation produces and sells two products. Data concerning those products for the most recent month appear below:

	Product B32L	Product K84B
Sales	$ 46,000	$ 27,000
Variable expenses	$ 13,800	$ 14,670

Fixed expenses for the entire company were $42,550.

If the sales mix were to shift toward Product B32L with total sales remaining constant, the overall break-even point for the entire company:

A) could increase or decrease.
B) would decrease.
C) would not change.
D) would increase.

230) Ingrum Corporation produces and sells two products. In the most recent month, Product R38T had sales of $29,000 and variable expenses of $8,040. Product X08S had sales of $50,000 and variable expenses of $28,300. The fixed expenses of the entire company were $34,930.

The break-even point for the entire company is closest to:

A) $79,000
B) $64,685
C) $34,930
D) $40,562

Managerial Accounting for Managers Edition 6 by Noreen

231) Ingrum Corporation produces and sells two products. In the most recent month, Product R38T had sales of $20,000 and variable expenses of $7,400. Product X08S had sales of $39,000 and variable expenses of $6,170. The fixed expenses of the entire company were $41,160.

The break-even point for the entire company is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $41,160
B) $17,840
C) $53,455
D) $54,730

232) Ingrum Corporation produces and sells two products. In the most recent month, Product R38T had sales of $20,000 and variable expenses of $7,400. Product X08S had sales of $39,000 and variable expenses of $6,170. The fixed expenses of the entire company were $41,160.

If the sales mix were to shift toward Product R38T with total sales remaining constant, the overall break-even point for the entire company:

A) would not change.
B) would increase.
C) would decrease.
D) could increase or decrease.

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

233) In July, Meers Corporation sold 3,700 units of its only product. Its total sales were $107,300, its total variable expenses were $66,600, and its total fixed expenses were $34,800.

Required:

a. Construct the company's contribution format income statement for July.
b. Redo the company's contribution format income statement assuming that the company sells 3,400 units.

234) Mcconkey Corporation produces and sells a single product. The company's contribution format income statement for July appears below:

Sales (5,500 units)	$ 357,500
Variable expenses	236,500
Contribution margin	121,000
Fixed expenses	102,200
Net operating income	$ 18,800

Required: Redo the company's contribution format income statement assuming that the company sells 5,800 units.

235) Giannini Incorporated, which produces and sells a single product, has provided the following contribution format income statement for March:

Sales (5,000 units)	$ 315,000
Variable expenses	150,000
Contribution margin	165,000
Fixed expenses	104,600
Net operating income	$ 60,400

Required: Redo the company's contribution format income statement assuming that the company sells 5,200 units.

236) Giannini Incorporated, which produces and sells a single product, has provided the following contribution format income statement for March:

Sales (5,900 units)	$ 477,900
Variable expenses	206,500
Contribution margin	271,400
Fixed expenses	190,800
Net operating income	$ 80,600

Required: Redo the company's contribution format income statement assuming that the company sells 5,500 units.

237) Mechem Corporation produces and sells a single product. In April, the company sold 2,000 units. Its total sales were $155,000, its total variable expenses were $80,100, and its total fixed expenses were $57,000.

Required:

a. Construct the company's contribution format income statement for April. Note: Do not round intermediate calculations.

b. Redo the company's contribution format income statement assuming that the company sells 1,900 units. Note: Do not round intermediate calculations.

238) Mechem Corporation produces and sells a single product. In April, the company sold 2,100 units. Its total sales were $205,800, its total variable expenses were $107,100, and its total fixed expenses were $82,400.

Required:

a. Construct the company's contribution format income statement for April.

b. Redo the company's contribution format income statement assuming that the company sells 2,200 units.

239) Certosimo Corporation has provided the following contribution format income statement. All questions concern situations that are within the relevant range.

Sales (7,000 units)	$ 350,000
Variable expenses	245,000
Contribution margin	105,000
Fixed expenses	97,500
Net operating income	$ 7,500

Required:

a. If sales increase to 7,040 units, what would be the estimated increase in net operating income?

b. If sales decline to 6,900 units, what would be the estimated net operating income?

240) Muzzillo Corporation has provided the following contribution format income statement. All questions concern situations that are within the relevant range.

Sales (3,000 units)	$ 180,000
Variable expenses	126,000
Contribution margin	54,000
Fixed expenses	52,200
Net operating income	$ 1,800

Required:

a. If the selling price increases by $4 per unit and the sales volume decreases by 300 units, what would be the estimated net operating income?

b. If the variable cost per unit increases by $6, spending on advertising increases by $3,000, and unit sales increase by 1,800 units, what would be the estimated net operating income?

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241) Montesdeoca Corporation has provided the following contribution format income statement. All questions concern situations that are within the relevant range.

Sales (2,000 units)	$ 120,000
Variable expenses	72,000
Contribution margin	48,000
Fixed expenses	33,600
Net operating income	$ 14,400

Required:

a. If sales decline to 1,900 units, what would be the estimated net operating income?
b. If the selling price increases by $4 per unit and the sales volume decreases by 200 units, what would be the estimated net operating income?
c. What is the break-even point in dollar sales?

242) Sattler Corporation has provided the following contribution format income statement. All questions concern situations that are within the relevant range.

Sales (8,000 units)	$ 480,000
Variable expenses	336,000
Contribution margin	144,000
Fixed expenses	142,200
Net operating income	$ 1,800

Required:

a. What is the contribution margin per unit?
b. What is the variable expense ratio?
c. If sales decline to 7,900 units, what would be the estimated net operating income?
d. If the variable cost per unit increases by $5, spending on advertising increases by $2,000, and unit sales increase by 3,400 units, what would be the estimated net operating income?
e. What is the break-even point in dollar sales?
f. Estimate how many units must be sold to achieve a target profit of $50,400.
g. What is the margin of safety percentage?
h. Using the degree of operating leverage, what is the estimated percent increase in net operating income of a 15% increase in sales volume?

243) Laraia Corporation has provided the following contribution format income statement. All questions concern situations that are within the relevant range.

Sales (3,000 units)	$ 150,000
Variable expenses	90,000
Contribution margin	60,000
Fixed expenses	48,000
Net operating income	$ 12,000

Required:

a. What is the contribution margin per unit?
b. What is the contribution margin ratio?
c. What is the variable expense ratio?
d. If sales increase to 3,050 units, what would be the estimated increase in net operating income?
e. If sales decline to 2,900 units, what would be the estimated net operating income?
f. If the selling price increases by $4 per unit and the sales volume decreases by 200 units, what would be the estimated net operating income?
g. If the variable cost per unit increases by $5, spending on advertising increases by $3,000, and unit sales increase by 450 units, what would be the estimated net operating income?
h. What is the break-even point in unit sales?
i. What is the break-even point in dollar sales?
j. Estimate how many units must be sold to achieve a target profit of $54,000.
k. What is the margin of safety in dollars?
l. What is the margin of safety percentage?
m. What is the degree of operating leverage?
n. Using the degree of operating leverage, what is the estimated percent increase in net operating income of a 15% increase in sales volume?

244) Zaccaria Corporation has provided the following contribution format income statement. All questions concern situations that are within the relevant range.

Sales (5,000 units)	$ 300,000
Variable expenses	240,000
Contribution margin	60,000
Fixed expenses	58,800
Net operating income	$ 1,200

Required:

a. What is the contribution margin ratio?
b. If sales increase to 5,040 units, what would be the estimated increase in net operating income?
c. If the selling price increases by $4 per unit and the sales volume decreases by 400 units, what would be the estimated net operating income?
d. What is the break-even point in unit sales?
e. What is the margin of safety in dollars?
f. What is the degree of operating leverage?

245) Stonebraker Corporation has provided the following contribution format income statement. All questions concern situations that are within the relevant range.

Sales (9,000 units)	$ 270,000
Variable expenses	189,000
Contribution margin	81,000
Fixed expenses	77,400
Net operating income	$ 3,600

Required:

a. If sales increase to 9,040 units, what would be the estimated increase in net operating income?
b. If the variable cost per unit increases by $6, spending on advertising increases by $3,000, and unit sales increase by 19,200 units, what would be the estimated net operating income?
c. Estimate how many units must be sold to achieve a target profit of $26,100.

246) Mancine Corporation has provided the following contribution format income statement. All questions concern situations that are within the relevant range.

Sales (3,000 units)	$ 150,000
Variable expenses	90,000
Contribution margin	60,000
Fixed expenses	42,000
Net operating income	$ 18,000

Required:

a. What is the break-even point in unit sales?

b. Estimate how many units must be sold to achieve a target profit of $50,000.

247) Sun Corporation has provided the following contribution format income statement. All questions concern situations that are within the relevant range.

Sales (5,000 units)	$ 250,000
Variable expenses	162,500
Contribution margin	87,500
Fixed expenses	71,750
Net operating income	$ 15,750

Required:

a. What is the margin of safety in dollars?

b. What is the degree of operating leverage?

248) Langin Corporation has provided the following contribution format income statement. All questions concern situations that are within the relevant range.

Sales (9,000 units)	$ 540,000
Variable expenses	324,000
Contribution margin	216,000
Fixed expenses	204,000
Net operating income	$ 12,000

Required:

a. What is the margin of safety percentage?

b. Using the degree of operating leverage, what is the estimated percent increase in net operating income of a 15% increase in sales?

249) The management of Merklin Corporation expects sales in May to be $105,000. The company's contribution margin ratio is 70% and its fixed monthly expenses are $48,000.
Required: Estimate the company's net operating income for May, assuming that the fixed monthly expenses do not change.

250) Sarratt Corporation's contribution margin ratio is 70% and its fixed monthly expenses are $50,000. Assume that the company's sales for May are expected to be $109,000.
Required: Estimate the company's net operating income for May, assuming that the fixed monthly expenses do not change.

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251) Sarratt Corporation's contribution margin ratio is 62% and its fixed monthly expenses are $91,000. Assume that the company's sales for May are expected to be $193,000.

Required: Estimate the company's net operating income for May, assuming that the fixed monthly expenses do not change.

252) Huitron Incorporated expects its sales in September to be $143,000. The company's contribution margin ratio is 65% and its fixed monthly expenses are $62,000.

Required: Estimate the company's net operating income for September, assuming that the fixed monthly expenses do not change.

253) Hamiel Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 240	100%
Variable expenses	168	70%
Contribution margin	$ 72	30%

Fixed expenses are $301,000 per month. The company is currently selling 5,000 units per month.

Required: The marketing manager would like to introduce sales commissions as an incentive for the sales staff. The marketing manager has proposed a commission of $16 per unit. In exchange, the sales staff would accept an overall decrease in their salaries of $68,000 per month. The marketing manager predicts that introducing this sales incentive would increase monthly sales by 200 units. What should be the overall effect on the company's monthly net operating income of this change?

254) Data concerning Wislocki Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 160	100%
Variable expenses	40	25%
Contribution margin	$ 120	75%

Fixed expenses are $1,036,000 per month. The company is currently selling 9,500 units per month.

Required: The marketing manager would like to introduce sales commissions as an incentive for the sales staff. The marketing manager has proposed a commission of $10 per unit. In exchange, the sales staff would accept an overall decrease in their salaries of $110,000 per month. The marketing manager predicts that introducing this sales incentive would increase monthly sales by 520 units. What should be the overall effect on the company's monthly net operating income of this change?

255) Data concerning Wislocki Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 130	100%
Variable expenses	26	20%
Contribution margin	$ 104	80%

Fixed expenses are $466,000 per month. The company is currently selling 6,000 units per month.

Required: The marketing manager would like to introduce sales commissions as an incentive for the sales staff. The marketing manager has proposed a commission of $11 per unit. In exchange, the sales staff would accept an overall decrease in their salaries of $55,000 per month. The marketing manager predicts that introducing this sales incentive would increase monthly sales by 100 units. What should be the overall effect on the company's monthly net operating income of this change?

256) Naumann Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 200	100%
Variable expenses	36	18%
Contribution margin	$ 164	82%

Fixed expenses are $130,000 per month. The company is currently selling 1,200 units per month.

Required: Management is considering using a new component that would increase the unit variable cost by $46. Since the new component would improve the company's product, the marketing manager predicts that monthly sales would increase by 400 units. What should be the overall effect on the company's monthly net operating income of this change if fixed expenses are unaffected?

257) Naumann Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 100	100%
Variable expenses	30	30%
Contribution margin	$ 70	70%

Fixed expenses are $234,000 per month. The company is currently selling 4,000 units per month.

Required: Management is considering using a new component that would increase the unit variable cost by $7. Since the new component would improve the company's product, the marketing manager predicts that monthly sales would increase by 500 units. What should be the overall effect on the company's monthly net operating income of this change if fixed expenses are unaffected?

258) Data concerning Neuner Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 220	100%
Variable expenses	88	40%
Contribution margin	$ 132	60%

Fixed expenses are $425,000 per month. The company is currently selling 4,000 units per month.

Required: The marketing manager would like to cut the selling price by $11 and increase the advertising budget by $23,700 per month. The marketing manager predicts that these two changes would increase monthly sales by 400 units. What should be the overall effect on the company's monthly net operating income of this change?

259) Bethard Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 120	100%
Variable expenses	24	20%
Contribution margin	$ 96	80%

Fixed expenses are $354,000 per month. The company is currently selling 5,000 units per month.

Required: The marketing manager would like to cut the selling price by $8 and increase the advertising budget by $23,000 per month. The marketing manager predicts that these two changes would increase monthly sales by 600 units. What should be the overall effect on the company's monthly net operating income of this change?

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260) Data concerning Cavaluzzi Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 110	100%
Variable expenses	44	40%
Contribution margin	$ 66	60%

Fixed expenses are $440,000 per month. The company is currently selling 8,000 units per month.

Required: The marketing manager believes that an $8,000 increase in the monthly advertising budget would result in a 150 unit increase in monthly sales. What should be the overall effect on the company's monthly net operating income of this change?

261) Shelhorse Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 180	100%
Variable expenses	54	30%
Contribution margin	$ 126	70%

Fixed expenses are $360,000 per month. The company is currently selling 5,500 units per month.

Required: The marketing manager believes that a $17,000 increase in the monthly advertising budget would result in a 150 unit increase in monthly sales. What should be the overall effect on the company's monthly net operating income of this change?

262) Shelhorse Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 140	100%
Variable expenses	56	40%
Contribution margin	$ 84	60%

Fixed expenses are $275,000 per month. The company is currently selling 4,000 units per month.

Required: The marketing manager believes that a $13,000 increase in the monthly advertising budget would result in a 150 unit increase in monthly sales. What should be the overall effect on the company's monthly net operating income of this change?

263) Data concerning Milian Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 130	100%
Variable expenses	39	30%
Contribution margin	$ 91	70%

Fixed expenses are $66,000 per month. The company is currently selling 1,000 units per month.

Required: Management is considering using a new component that would increase the unit variable cost by $15. Since the new component would improve the company's product, the marketing manager predicts that monthly sales would increase by 200 units. What should be the overall effect on the company's monthly net operating income of this change if fixed expenses are unaffected?

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264) Cleghorn Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 160.00
Variable expense per unit	$ 70.40
Fixed expense per month	$ 153,216

Required: Determine the monthly break-even in total dollar sales.

265) Hamernik, Incorporated, produces and sells a single product whose selling price is $240.00 per unit and whose variable expense is $72.00 per unit. The company's fixed expense is $372,960 per month.

Required: Determine the monthly break-even in either unit or total dollar sales.

266) Frisch Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 170.00
Variable expense per unit	$ 83.30
Fixed expense per month	$ 138,720

Required: Determine the monthly break-even in either unit or total dollar sales.

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267) Yamakawa Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 200.00
Variable expense per unit	$ 64.00
Fixed expense per month	$ 670,480

Required: Determine the monthly break-even in unit sales.

268) Liz, Incorporated, produces and sells a single product. The product sells for $130.00 per unit and its variable expense is $48.10 per unit. The company's monthly fixed expense is $223,587.

Required: Determine the monthly break-even in unit sales.

269) Malensek International, Incorporated, produces and sells a single product. The product sells for $240.00 per unit and its variable expense is $55.20 per unit. The company's monthly fixed expense is $249,480.

Required: Determine the monthly break-even in total dollar sales.

270) Brihon Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 230.00
Variable expense per unit	$ 103.50
Fixed expense per month	$ 518,650

Required:

a. Assume the company's monthly target profit is $12,650. Determine the unit sales to attain that target profit.

b. Assume the company's monthly target profit is $63,250. Determine the dollar sales to attain that target profit.

271) The contribution margin ratio of Kuck Corporation's only product is 60%. The company's monthly fixed expense is $455,700 and the company's monthly target profit is $41,700.
Required: Determine the dollar sales to attain the company's target profit.

272) The contribution margin ratio of Kuck Corporation's only product is 75%. The company's monthly fixed expense is $585,000 and the company's monthly target profit is $11,250.
Required: Determine the dollar sales to attain the company's target profit.

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273) Rachal Corporation produces and sells a single product whose selling price is $150.00 per unit and whose variable expense is $57.00 per unit. The company's monthly fixed expense is $381,300.

Required:

a. Assume the company's monthly target profit is $9,300. Determine the unit sales to attain that target profit.

b. Assume the company's monthly target profit is $18,600. Determine the dollar sales to attain that target profit.

274) Bussy Corporation produces and sells a single product whose contribution margin ratio is 54%. The company's monthly fixed expense is $561,600 and the company's monthly target profit is $34,560.

Required: Determine the dollar sales to attain the company's target profit.

275) Hawver Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 180.00
Variable expense per unit	$ 81.00
Fixed expense per month	$ 594,000

Required: Assume the company's monthly target profit is $19,800. Determine the unit sales to attain that target profit.

276) The selling price of Old Corporation's only product is $180.00 per unit and its variable expense is $37.80 per unit. The company's monthly fixed expense is $483,480.
Required: Assume the company's monthly target profit is $56,880. Determine the unit sales to attain that target profit.

277) Dickus Corporation's only product sells for $100 per unit. Its current sales are 35,600 units and its break-even sales are 29,192 units.
Required: Compute the margin of safety in both dollars and as a percentage of sales.

278) Haslem Incorporated has provided the following data concerning its only product:

Selling price	$ 100 per unit
Current sales	37,300 units
Break-even sales	26,483 units

Required: Compute the margin of safety in both dollars and as a percentage of sales.

279) Knezevich Corporation makes a product that sells for $230 per unit. The product's current sales are 36,900 units and its break-even sales are 32,103 units.
Required: Compute the margin of safety in both dollars and as a percentage of sales.

280) Lubke Corporation's contribution format income statement for the most recent month follows:

Sales	$ 506,000
Variable expenses	236,500
Contribution margin	269,500
Fixed expenses	241,700
Net operating income	$ 27,800

Required:

a. Compute the degree of operating leverage to two decimal places.
b. Using the degree of operating leverage, estimate the percentage change in net operating income that should result from a 3% increase in sales volume.

281) Mcquage Corporation has provided its contribution format income statement for July.

Sales	$ 558,000
Variable expenses	306,900
Contribution margin	251,100
Fixed expenses	209,800
Net operating income	$ 41,300

Required:

a. Compute the degree of operating leverage to two decimal places.
b. Using the degree of operating leverage, estimate the percentage change in net operating income that should result from a 19% increase in sales volume.

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282) In the most recent month, Sardella Corporation's total contribution margin was $46,200 and its net operating income $13,200.

Required:

a. Compute the degree of operating leverage to two decimal places.

b. Using the degree of operating leverage, estimate the percentage change in net operating income that should result from a 10% increase in sales volume.

283) Brancati Incorporated produces and sells two products. Data concerning those products for the most recent month appear below:

	Product W07C	Product B29Z
Sales	$ 25,000	$ 27,000
Variable expenses	$ 7,000	$ 8,600

Fixed expenses for the entire company were $32,860.

Required:

a. Determine the overall break-even point for the company in total sales dollars.

b. If the sales mix shifts toward Product W07C with no change in total sales, what will happen to the break-even point for the company? Explain.

284) Veren Incorporated produces and sells two products. During the most recent month, Product F73A's sales were $27,000 and its variable expenses were $9,450. Product L75P's sales were $14,000 and its variable expenses were $5,310. The company's fixed expenses were $21,060.

Required:

a. Determine the overall break-even point for the company in total sales dollars.

b. If the sales mix shifts toward Product F73A with no change in total sales, what will happen to the break-even point for the company? Explain.

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285) In July, Meers Corporation sold 3,700 units of its only product. Its total sales were $107,300, its total variable expenses were $66,600, and its total fixed expenses were $34,800.

Required:

a. Construct the company's contribution format income statement for July.

b. Redo the company's contribution format income statement assuming that the company sells 3,400 units.

286) Mcconkey Corporation produces and sells a single product. The company's contribution format income statement for July appears below:

Sales (5,500 units)	$ 357,500
Variable expenses	236,500
Contribution margin	121,000
Fixed expenses	102,200
Net operating income	$ 18,800

Required: Redo the company's contribution format income statement assuming that the company sells 5,800 units.

287) Giannini Incorporated, which produces and sells a single product, has provided the following contribution format income statement for March:

Sales (5,900 units)	$ 477,900
Variable expenses	206,500
Contribution margin	271,400
Fixed expenses	190,800
Net operating income	$ 80,600

Required: Redo the company's contribution format income statement assuming that the company sells 5,500 units.

288) Mechem Corporation produces and sells a single product. In April, the company sold 2,100 units. Its total sales were $205,800, its total variable expenses were $107,100, and its total fixed expenses were $82,400.

Required:

a. Construct the company's contribution format income statement for April.
b. Redo the company's contribution format income statement assuming that the company sells 2,200 units.

289) The management of Merklin Corporation expects sales in May to be $105,000. The company's contribution margin ratio is 70% and its fixed monthly expenses are $48,000.

Required: Estimate the company's net operating income for May, assuming that the fixed monthly expenses do not change.

290) Sarratt Corporation's contribution margin ratio is 62% and its fixed monthly expenses are $91,000. Assume that the company's sales for May are expected to be $193,000.

Required: Estimate the company's net operating income for May, assuming that the fixed monthly expenses do not change.

291) Huitron Incorporated expects its sales in September to be $143,000. The company's contribution margin ratio is 65% and its fixed monthly expenses are $62,000.

Required: Estimate the company's net operating income for September, assuming that the fixed monthly expenses do not change.

292) Hamiel Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 240	100%
Variable expenses	168	70%
Contribution margin	$ 72	30%

Fixed expenses are $301,000 per month. The company is currently selling 5,000 units per month.

Required: The marketing manager would like to introduce sales commissions as an incentive for the sales staff. The marketing manager has proposed a commission of $16 per unit. In exchange, the sales staff would accept an overall decrease in their salaries of $68,000 per month. The marketing manager predicts that introducing this sales incentive would increase monthly sales by 200 units. What should be the overall effect on the company's monthly net operating income of this change?

293) Data concerning Wislocki Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 130	100%
Variable expenses	26	20%
Contribution margin	$ 104	80%

Fixed expenses are $466,000 per month. The company is currently selling 6,000 units per month.

Required: The marketing manager would like to introduce sales commissions as an incentive for the sales staff. The marketing manager has proposed a commission of $11 per unit. In exchange, the sales staff would accept an overall decrease in their salaries of $55,000 per month. The marketing manager predicts that introducing this sales incentive would increase monthly sales by 100 units. What should be the overall effect on the company's monthly net operating income of this change?

294) Naumann Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 100	100%
Variable expenses	30	30%
Contribution margin	$ 70	70%

Fixed expenses are $234,000 per month. The company is currently selling 4,000 units per month.

Required: Management is considering using a new component that would increase the unit variable cost by $7. Since the new component would improve the company's product, the marketing manager predicts that monthly sales would increase by 500 units. What should be the overall effect on the company's monthly net operating income of this change if fixed expenses are unaffected?

295) Data concerning Neuner Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 220	100%
Variable expenses	88	40%
Contribution margin	$ 132	60%

Fixed expenses are $425,000 per month. The company is currently selling 4,000 units per month.

Required: The marketing manager would like to cut the selling price by $11 and increase the advertising budget by $23,700 per month. The marketing manager predicts that these two changes would increase monthly sales by 400 units. What should be the overall effect on the company's monthly net operating income of this change?

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296) Bethard Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 120	100%
Variable expenses	24	20%
Contribution margin	$ 96	80%

Fixed expenses are $354,000 per month. The company is currently selling 5,000 units per month.

Required: The marketing manager would like to cut the selling price by $8 and increase the advertising budget by $23,000 per month. The marketing manager predicts that these two changes would increase monthly sales by 600 units. What should be the overall effect on the company's monthly net operating income of this change?

297) Data concerning Cavaluzzi Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 110	100%
Variable expenses	44	40%
Contribution margin	$ 66	60%

Fixed expenses are $440,000 per month. The company is currently selling 8,000 units per month.

Required: The marketing manager believes that an $8,000 increase in the monthly advertising budget would result in a 150 unit increase in monthly sales. What should be the overall effect on the company's monthly net operating income of this change?

298) Shelhorse Corporation produces and sells a single product. Data concerning that product appear below:

	Per Unit	Percent of Sales
Selling price	$ 140	100%
Variable expenses	56	40%
Contribution margin	$ 84	60%

Fixed expenses are $275,000 per month. The company is currently selling 4,000 units per month.

Required: The marketing manager believes that a $13,000 increase in the monthly advertising budget would result in a 150 unit increase in monthly sales. What should be the overall effect on the company's monthly net operating income of this change?

299) Data concerning Milian Corporation's single product appear below:

	Per Unit	Percent of Sales
Selling price	$ 130	100%
Variable expenses	39	30%
Contribution margin	$ 91	70%

Fixed expenses are $66,000 per month. The company is currently selling 1,000 units per month.

Required: Management is considering using a new component that would increase the unit variable cost by $15. Since the new component would improve the company's product, the marketing manager predicts that monthly sales would increase by 200 units. What should be the overall effect on the company's monthly net operating income of this change if fixed expenses are unaffected?

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300) Cleghorn Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 160.00
Variable expense per unit	$ 70.40
Fixed expense per month	$ 153,216

Required: Determine the monthly break-even in total dollar sales.

301) Hamernik, Incorporated, produces and sells a single product whose selling price is $240.00 per unit and whose variable expense is $72.00 per unit. The company's fixed expense is $372,960 per month.

Required: Determine the monthly break-even in either unit or total dollar sales.

302) Frisch Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 170.00
Variable expense per unit	$ 83.30
Fixed expense per month	$ 138,720

Required: Determine the monthly break-even in either unit or total dollar sales.

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303) Yamakawa Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 200.00
Variable expense per unit	$ 64.00
Fixed expense per month	$ 670,480

Required: Determine the monthly break-even in unit sales.

304) Liz, Incorporated, produces and sells a single product. The product sells for $130.00 per unit and its variable expense is $48.10 per unit. The company's monthly fixed expense is $223,587.

Required: Determine the monthly break-even in unit sales.

305) Malensek International, Incorporated, produces and sells a single product. The product sells for $240.00 per unit and its variable expense is $55.20 per unit. The company's monthly fixed expense is $249,480.

Required: Determine the monthly break-even in total dollar sales.

306) Brihon Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 230.00
Variable expense per unit	$ 103.50
Fixed expense per month	$ 518,650

Required:

a. Assume the company's monthly target profit is $12,650. Determine the unit sales to attain that target profit.

b. Assume the company's monthly target profit is $63,250. Determine the dollar sales to attain that target profit.

307) The contribution margin ratio of Kuck Corporation's only product is 75%. The company's monthly fixed expense is $585,000 and the company's monthly target profit is $11,250.

Required: Determine the dollar sales to attain the company's target profit.

308) Rachal Corporation produces and sells a single product whose selling price is $150.00 per unit and whose variable expense is $57.00 per unit. The company's monthly fixed expense is $381,300.

Required:

a. Assume the company's monthly target profit is $9,300. Determine the unit sales to attain that target profit.

b. Assume the company's monthly target profit is $18,600. Determine the dollar sales to attain that target profit.

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309) Bussy Corporation produces and sells a single product whose contribution margin ratio is 54%. The company's monthly fixed expense is $561,600 and the company's monthly target profit is $34,560.

Required: Determine the dollar sales to attain the company's target profit.

310) Hawver Corporation produces and sells a single product. Data concerning that product appear below:

Selling price per unit	$ 180.00
Variable expense per unit	$ 81.00
Fixed expense per month	$ 594,000

Required: Assume the company's monthly target profit is $19,800. Determine the unit sales to attain that target profit.

311) The selling price of Old Corporation's only product is $180.00 per unit and its variable expense is $37.80 per unit. The company's monthly fixed expense is $483,480.

Required: Assume the company's monthly target profit is $56,880. Determine the unit sales to attain that target profit.

312) Dickus Corporation's only product sells for $100 per unit. Its current sales are 35,600 units and its break-even sales are 29,192 units.

Required: Compute the margin of safety in both dollars and as a percentage of sales.

313) Haslem Incorporated has provided the following data concerning its only product:

Selling price	$ 100 per unit
Current sales	37,300 units
Break-even sales	26,483 units

Required: Compute the margin of safety in both dollars and as a percentage of sales.

314) Knezevich Corporation makes a product that sells for $230 per unit. The product's current sales are 36,900 units and its break-even sales are 32,103 units.

Required: Compute the margin of safety in both dollars and as a percentage of sales.

315) Lubke Corporation's contribution format income statement for the most recent month follows:

Sales	$ 506,000
Variable expenses	236,500
Contribution margin	269,500
Fixed expenses	241,700
Net operating income	$ 27,800

Required:

a. Compute the degree of operating leverage to two decimal places.

b. Using the degree of operating leverage, estimate the percentage change in net operating income that should result from a 3% increase in sales volume.

316) Mcquage Corporation has provided its contribution format income statement for July.

Sales	$ 558,000
Variable expenses	306,900
Contribution margin	251,100
Fixed expenses	209,800
Net operating income	$ 41,300

Required:

a. Compute the degree of operating leverage to two decimal places.
b. Using the degree of operating leverage, estimate the percentage change in net operating income that should result from a 19% increase in sales volume.

317) In the most recent month, Sardella Corporation's total contribution margin was $46,200 and its net operating income $13,200.

Required:

a. Compute the degree of operating leverage to two decimal places.
b. Using the degree of operating leverage, estimate the percentage change in net operating income that should result from a 10% increase in sales volume.

318) Brancati Incorporated produces and sells two products. Data concerning those products for the most recent month appear below:

	Product W07C	Product B29Z
Sales	$ 25,000	$ 27,000
Variable expenses	$ 7,000	$ 8,600

Fixed expenses for the entire company were $32,860.

Required:

a. Determine the overall break-even point for the company in total sales dollars.
b. If the sales mix shifts toward Product W07C with no change in total sales, what will happen to the break-even point for the company? Explain.

319) Veren Incorporated produces and sells two products. During the most recent month, Product F73A's sales were $27,000 and its variable expenses were $9,450. Product L75P's sales were $14,000 and its variable expenses were $5,310. The company's fixed expenses were $21,060.

Required:

a. Determine the overall break-even point for the company in total sales dollars.
b. If the sales mix shifts toward Product F73A with no change in total sales, what will happen to the break-even point for the company? Explain.

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Answer Key

Test name: Chapter 02

1) B
2) A
3) D
4) A
5) B
6) D
7) A
8) B
9) A
10) B
11) B
12) C
13) B
14) C
15) B
16) A
17) C
18) B
19) A
20) C
21) B
22) C
23) D
24) A
25) B

Selling price per unit = Sales ÷ Quantity sold
= $387,600 ÷ 7,600 units = $51 per unit
Variable expenses per unit = Variable expenses ÷ Quantity sold
= $235,600 ÷ 7,600 units = $31 per unit
Unit CM = Selling price per unit − Variable expenses per unit
= $51 per unit − $31 per unit = $20 per unit
Profit = (Unit CM × Q) − Fixed expenses
= ($20 per unit × 7,500 units) − $103,500 = $150,000 − $103,500 = $46,500

26) D

Selling price per unit = Sales ÷ Quantity sold
= $319,200 ÷ 5,700 units = $56 per unit
Variable expenses per unit = Variable expenses ÷ Quantity sold
= $188,100 ÷ 5,700 units = $33 per unit
Unit CM = Selling price per unit − Variable expenses per unit
= $56 per unit − $33 per unit = $23 per unit
Profit = (Unit CM × Q) − Fixed expenses
= ($23 per unit × 5,300 units) − $106,500 = $121,900 − $106,500 = $15,400

27) B
Selling price per unit = Sales ÷ Quantity sold
= $112,200 ÷ 3,400 units = $33 per unit
Variable expenses per unit = Variable expenses ÷ Quantity sold
Variable expenses per unit = $50,490 ÷ 3,400 units = $14.85 per unit
Unit CM = Selling price per unit − Variable expenses per unit
= $33 per unit − $14.85 per unit = $18.15 per unit
Total CM = Unit CM × Quantity sold
= $18.15 per unit × 3,900 units = $70,785

28) B

Selling price per unit = Sales ÷ Quantity sold
= $155,400 ÷ 4,200 units = $37 per unit
Variable expenses per unit = Variable expenses ÷ Quantity sold
Variable expenses per unit = $100,800 ÷ 4,200 units = $24 per unit
Unit CM = Selling price per unit − Variable expenses per unit
= $37 per unit − $24 per unit = $13 per unit
Total CM = Unit CM × Quantity sold
= $13 per unit × 4,600 units = $59,800

29) C
CM ratio = Contribution margin ÷ Sales = $122,000 ÷ $305,000 = 0.40
Contribution margin = CM ratio × Sales
Contribution margin = 0.40 × (1.2 × $305,000) = $146,400

30) D
CM ratio = Contribution margin ÷ Sales = $120,000 ÷ $400,000 = 0.30
Contribution margin = CM ratio × Sales
Contribution margin = 0.30 × (1.2 × $400,000) = $144,000

31) B
CM ratio = Contribution margin ÷ Sales = $72,000 ÷ $180,000 = 40%

32) D

Selling price per unit ($120,000 ÷ 3,000 units)	$ 40	
Variable cost per unit ($90,000 ÷ 3,000 units)	30	
Unit contribution margin	$ 10	
Unit contribution margin (a)		$ 10 per unit
Unit sales (b)		2,900 units
Contribution margin (a) × (b)	$ 29,000	
Fixed expenses	21,000	
Net operating income	$ 8,000	

33) A
Variable expense ratio = Variable expenses ÷ Sales = $192,000 ÷ $320,000 = 60%

34) D

Variable cost per unit = $18 per unit + (0.15 × $40 per unit) = $24 per unit
Unit CM = $40 per unit − $24 per unit = $16 per unit

35) A

Total contribution margin (a)	$ 63,000		
Total unit sales (b)		3,000 units	
Unit contribution margin (a) ÷ (b)		$ 21 per unit	

Alternatively,

Selling price per unit ($180,000 ÷ 3,000 units)	$ 60
Variable cost per unit ($117,000 ÷ 3,000 units)	39
Unit contribution margin	$ 21

36) B

Selling price per unit = Sales ÷ Quantity sold
= $764,400 ÷ 8,400 units = $91 per unit
Variable expenses per unit = Variable expenses ÷ Quantity sold
= $445,200 ÷ 8,400 units = $53 per unit
Unit CM = Selling price per unit − Variable expenses per unit
= $91 per unit − $53 per unit = $38 per unit
Total CM = Unit CM × Quantity sold
= $38 per unit × 8,200 units = $311,600

37) A
Selling price per unit = Sales ÷ Quantity sold
= $224,000 ÷ 5,600 units = $40 per unit
Variable expenses per unit = Variable expenses ÷ Quantity sold
= $117,600 ÷ 5,600 units = $21 per unit
Unit CM = Selling price per unit − Variable expenses per unit
= $40 per unit − $21 per unit = $19 per unit
Profit = (Unit CM × Q) − Fixed expenses
= ($19 per unit × 5,800 units) − $86,700 = $110,200 − $86,700 = $23,500

38) C

Selling price per unit = Sales ÷ Quantity sold
= $528,000 ÷ 8,800 units = $60 per unit
Variable expenses per unit = Variable expenses ÷ Quantity sold
= $290,400 ÷ 8,800 units = $33 per unit
Unit CM = Selling price per unit − Variable expenses per unit
= $60 per unit − $33 per unit = $27 per unit
Profit = (Unit CM × Q) − Fixed expenses
= ($27 per unit × 9,200 units) − $211,700 = $248,400 − $211,700 = $36,700

39) D

The increase in net operating income would be the increased contribution margin because fixed expenses are not affected.

Selling price per unit ($120,000 ÷ 3,000 units)	$ 40
Variable cost per unit ($90,000 ÷ 3,000 units)	30
Unit contribution margin	$ 10
Unit contribution margin (a)	$ 10 per unit
Increased unit sales (b)	20 units
Increase in net operating income (a) × (b)	$ 200

40) A

Selling price per unit ($40,000 ÷ 1,000 units)	$ 40
Variable cost per unit ($30,000 ÷ 1,000 units)	30
Unit contribution margin	$ 10
Selling price	$ 40 per unit
Variable cost per price ($30 per unit + $1 per unit)	31 per unit
Unit contribution margin (a)	$ 9 per unit
Unit sales (1,000 units + 50 units) (b)	1,050 units
Contribution margin (a) × (b)	$ 9,450
Fixed expenses ($7,000 + $2,000)	9,000
Net operating income	$ 450

41) C

Selling price per unit ($40,000 ÷ 2,000 units)	$ 20	
Variable cost per unit ($24,000 ÷ 2,000 units)	12	
Unit contribution margin	$ 8	
Selling price ($20 per unit + $4 per unit)	$ 24	per unit
Variable cost per price	12	per unit
Unit contribution margin (a)	$ 12	per unit
Unit sales (2,000 units – 200 units) (b)	1,800	units
Contribution margin (a) × (b)	$ 21,600	
Fixed expenses	11,200	
Net operating income	$ 10,400	

42) A
Contribution margin ratio = Contribution margin ÷ Sales = $84,000 ÷ $240,000 = 35%
Dollar sales to break even = Fixed expenses ÷ Contribution margin ratio = $81,900 ÷ 35% = $234,000

43) C

Profit = (Unit CM × Q) − Fixed expenses
$0 = (Unit CM × 1,000 units) − $150,000
Unit CM = $150,000 ÷ 1,000 units = $150 per unit

44) C

Selling price per unit ($50,000 ÷ 1,000 units)	$ 50.00
Variable cost per unit ($32,500 ÷ 1,000 units)	32.50
Unit contribution margin	$ 17.50

Unit sales to break even = Fixed expenses ÷ Unit CM = $12,250 ÷ $17.50 per unit = 700 units

45) B
CM ratio = Contribution margin ÷ Sales = $128,000 ÷ $320,000 = 40%
Dollar sales to break even = Fixed expenses ÷ CM ratio = $121,600 ÷ 40% = $304,000
Margin of safety in dollars = Total budgeted (or actual) sales − Break-even sales
= $320,000 − $304,000 = $16,000

46) C

CM ratio = Contribution margin ÷ Sales = $67,500 ÷ $270,000 = 25%
Dollar sales to break even = Fixed expenses ÷ CM ratio = $63,750 ÷ 25% = $255,000
Margin of safety in dollars = Total budgeted (or actual) sales − Break-even sales
= $270,000 − $255,000 = $15,000
Margin of safety percentage = Margin of safety in dollars ÷ Total budgeted (or actual) sales
= $15,000 ÷ $270,000 = 6%

47) D

Selling price per unit ($210,000 ÷ 7,000 units)	$ 30.00
Variable cost per unit ($136,500 ÷ 7,000 units)	19.50
Unit contribution margin	$ 10.50

Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($31,500 + $67,200) ÷ $10.50 per unit = $98,700 ÷ $10.50 per unit = 9,400 units

48) D
Unit CM = Selling price per unit − Variable expenses per unit
= $80 per unit − (0.35 × $80 per unit) = $80 per unit − $28 per unit = $52 per unit
Contribution margin = $52 per unit × 3,000 units = $156,000
Profit = Unit CM × Unit sales − Fixed expenses
= $156,000 − $66,000 = $90,000
Degree of operating leverage = Contribution margin ÷ Net operating income
= $156,000 ÷ $90,000 = 1.73

49) C
Profit = (CM ratio × Sales) − Fixed expenses
= (0.60 × $144,000) − $51,000
= $86,400 − $51,000
= $35,400

50) A
Profit = (CM ratio × Sales) − Fixed expenses
= (0.58 × $103,000) − $36,000
= $59,740 − $36,000
= $23,740

51) B

Profit = (CM ratio × Sales) − Fixed expenses
= (0.19 × $319,000) − $54,000
= $60,610 − $54,000
= $6,610

52) D
Profit = (CM ratio × Sales) − Fixed expenses
= (0.12 × $738,000) − $84,000
= $88,560 − $84,000
= $4,560

53) C
Profit = (CM ratio × Sales) − Fixed expenses
= (0.67 × $82,000) − $25,000
= $54,940 − $25,000
= $29,940

54) B
Profit = (CM ratio × Sales) − Fixed expenses
= (0.56 × $95,000) − $29,000
= $53,200 − $29,000
= $24,200

55) D
CM ratio = Unit contribution margin ÷ Unit selling price
= ($28 − (0.65 × $28)) ÷ $28 = ($28.00 − $18.20) ÷ $28.00 = $9.80 ÷ $28.00 = 0.35
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $9,800 ÷ 0.35 = $28,000

56) A
CM ratio = 1 − Variable expense ratio = 1 − 0.40 = 0.60
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $150,000 ÷ 0.60 = $250,000

57) D

Profit = (Sales − Variable expenses) − Fixed expenses
$63,250 = ($315,000 − Variable expenses) − $110,000
Variable expenses = $315,000 − $110,000 − $63,250 = $141,750
CM ratio = Contribution margin ÷ Sales = ($315,000 − $141,750) ÷ $315,000 = 0.55
Dollar sales to break even = Fixed expenses ÷ CM ratio = $110,000 ÷ 0.55 = $200,000
Unit sales to break even = $200,000 ÷ $25 per unit = 8,000 units

58) A
Profit = (Sales − Variable expenses) − Fixed expenses
$24,000 = ($300,000 − Variable expenses) − $96,000
Variable expenses = $300,000 − $96,000 − $24,000 = $180,000
CM ratio = Contribution margin ÷ Sales = ($300,000 − $180,000) ÷ $300,000 = 0.40
Dollar sales to break even = Fixed expenses ÷ CM ratio = $96,000 ÷ 0.40 = $240,000
Unit sales to break even = $240,000 ÷ $20 per unit = 12,000 units

59) C
CM ratio = 1 − Variable expense ratio
CM ratio = 1 − 0.70 = 0.30
Dollar sales to break even = Fixed expenses ÷ CM ratio
$800,000 = Fixed expenses ÷ 0.30
Fixed expenses = $800,000 × 0.30 = $240,000
Profit = (CM ratio × Sales) − Fixed expenses
−$30,000 = (0.30 × Sales) − $240,000
Sales = ($240,000 − $30,000) ÷ 0.30 = $700,000

60) B
CM ratio = 1 − Variable expense ratio
CM ratio = 1 − 0.75 = 0.25
Dollar sales to break even = Fixed expenses ÷ CM ratio
$675,000 = Fixed expenses ÷ 0.25
Fixed expenses = $675,000 × 0.25 = $168,750
Profit = (CM ratio × Sales) − Fixed expenses
−$24,000 = (0.25 × Sales) − $168,750
Sales = ($168,750 − $24,000) ÷ 0.25 = $579,000

61) D

Profit = (CM ratio × Sales) − Fixed expenses
−$36,000 = (0.40 × $840,000) − Fixed expenses
Fixed expenses = (0.40 × $840,000) + $36,000 = $372,000
Dollar sales to break even = Fixed expenses ÷ CM ratio = $372,000 ÷ 0.40 = $930,000

62) B
Profit = (CM ratio × Sales) − Fixed expenses
−$16,000 = (0.25 × $480,000) − Fixed expenses
Fixed expenses = (0.25 × $480,000) + $16,000 = $136,000
Dollar sales to break even = Fixed expenses ÷ CM ratio = $136,000 ÷ 0.25 = $544,000

63) C
CM ratio = 1 − Variable expense ratio = 1 − 0.60 = 0.40
Dollar sales to break even = Fixed expenses ÷ CM ratio = $150,000 ÷ 0.40 = $375,000
Margin of safety in dollars = Total budgeted (or actual) sales − Break-even sales
= $600,000 − $375,000 = $225,000

64) B
CM ratio = 1 − Variable expense ratio
= 1 − 0.45 = 0.55

Dollar sales to break even = Fixed expenses ÷ CM ratio
$322,800 = Fixed expenses ÷ 0.55
Fixed expenses = $322,800 × 0.55 = $177,540
Margin of safety in dollars = Total actual sales − Break-even sales
Margin of safety percentage = Margin of safety in dollars ÷ Total actual sales
Margin of safety percentage = (Total actual sales − Break-even sales) ÷ Total actual sales
Margin of safety percentage = 1 − Break-even sales ÷ Total actual sales
Break-even sales ÷ Total actual sales = 1 − Margin of safety percentage
Total actual sales = Break-even sales ÷ (1 − Margin of safety percentage)
= $322,800 ÷ (1 − 0.25) = $430,400
Profit = (CM ratio × Sales) − Fixed expenses
= (0.55 × $430,400) − $177,540 = $59,180

65) C

CM ratio = 1 − Variable expense ratio
= 1 − 0.60 = 0.40
Dollar sales to break even = Fixed expenses ÷ CM ratio
$500,000 = Fixed expenses ÷ 0.40
Fixed expenses = $500,000 × 0.40 = $200,000
Margin of safety in dollars = Total actual sales − Break-even sales
Margin of safety percentage = Margin of safety in dollars ÷ Total actual sales
Margin of safety percentage = (Total actual sales − Break-even sales) ÷ Total actual sales
Margin of safety percentage = 1 − Break-even sales ÷ Total actual sales
Break-even sales ÷ Total actual sales = 1 − Margin of safety percentage
Total actual sales = Break-even sales ÷ (1 − Margin of safety percentage)
= $500,000 ÷ (1 − 0.20) = $625,000
Profit = (CM ratio × Sales) − Fixed expenses
= (0.40 × $625,000) − $200,000 = $50,000

66) C
CM ratio = 1 − Variable expense ratio = 1 − 0.60 = 0.40
Dollar sales to attain a target profit = (Target profit + Fixed expenses) ÷ CM ratio
X = [(0.10 × X) + $420,000] ÷ 0.40
X = 0.25X + $1,050,000

0.75X = $1,050,000
X = $1,050,000 ÷ 0.75 = $1,400,000

67) D
Margin of safety in dollars = Total budgeted (or actual) sales − Break-even sales
$100,000 = $400,000 − Break-even sales
Break-even sales = $400,000 − $100,000 = $300,000
Dollar sales to break even = Fixed expenses ÷ CM ratio
$300,000 = Fixed expenses ÷ 0.75
Fixed expenses = $300,000 × 0.75 = $225,000

68) A

CM ratio = 1 − Variable expense ratio
= 1 − 0.60 = 0.40
Contribution margin = CM ratio × Sales
= 0.40 × $400,000 = $160,000
Degree of operating leverage = Contribution margin ÷ Net operating income
5.0 = $160,000 ÷ Net operating income
Net operating income = $160,000 ÷ 5.0 = $32,000
Profit = (CM ratio × Sales) − Fixed expenses
$32,000 = (0.40 × $400,000) − Fixed expenses
Fixed expenses = $160,000 − $32,000 = $128,000
Profit = (CM ratio × Sales) − Fixed expenses
= (0.40 × ($400,000 + $40,000)) − $128,000
= $176,000 − $128,000 = $48,000
Degree of operating leverage = Contribution margin ÷ Net operating income
= $176,000 ÷ $48,000 = 3.67

69) A

Contribution Income Statement

	1,000 units	1,400 units
Sales (at $160 per unit)	$ 160,000	$ 224,000
Variable expenses (at $48 per unit and $76 per unit)	48,000	106,400
Contribution margin	112,000	117,600
Fixed expenses	87,000	87,000
Net operating income	$ 25,000	$ 30,600

Net operating income would increase by $5,600

70) A

Contribution Income Statement

	5,600 units	5,710 units
Sales (at $140 per unit)	$ 784,000	$ 799,400
Variable expenses (at $70 per unit)	392,000	399,700
Contribution margin	392,000	399,700
Fixed expenses ($7,000 increase)	204,000	211,000
Net operating income	$ 188,000	$ 188,700

Net operating income would increase by $700.

71) A

Contribution Income Statement

	6,000 units	6,140 units
Sales (at $130 per unit)	$ 780,000	$ 798,200
Variable expenses (at $78 per unit)	468,000	478,920
Contribution margin	312,000	319,280
Fixed expenses ($5,000 increase)	263,000	268,000
Net operating income	$ 49,000	$ 51,280

Net operating income would increase by $2,280.

72) A

Contribution Income Statement

	4,000 units	4,500 units
Sales (at $200 per unit and $186 per unit)	$ 800,000	$ 837,000
Variable expenses (at $40 per unit)	160,000	180,000
Contribution margin	640,000	657,000
Fixed expenses (increase by $35,000)	531,000	566,000
Net operating income	$ 109,000	$ 91,000

Net operating income would decrease by $18,000.

73) C

Profit = (P − V) × Q − Fixed expenses
$20,000 = ($9.50 per unit − $6.00 per unit) × Q − $100,000
($9.50 per unit − $6.00 per unit) × Q = $120,000
$3.50 per unit × Q = $120,000
Q = $120,000 ÷ $3.50 per unit
Q = 34,286 units

74) A

Contribution Income Statement

	6,000 units	6,500 units
Sales (at $100 per unit)	$ 600,000	$ 650,000
Variable expenses (at $20 and $29 per unit)	120,000	188,500
Contribution margin	480,000	461,500
Fixed expenses (decreases by $46,000)	384,000	338,000
Net operating income	$ 96,000	$ 123,500

Net operating income increases by $27,500.

75) D

Contribution Income Statement

	7,000 units	7,500 units
Sales ($170 per unit)	$ 1,190,000	$ 1,275,000
Variable expenses (at $68 per unit and $74 per unit)	476,000	555,000
Contribution margin	714,000	720,000
Fixed expenses	521,000	521,000
Net operating income	$ 193,000	$ 199,000

Net operating income increases by $6,000

76) D
CM ratio = 1 − Variable expense ratio = 1 − 0.42 = 0.58
Increase in net operating income = CM ratio × Increase in sales − Increase in fixed expenses
= (0.58 × $60,000) − $25,000 = $34,800 − $25,000 = $9,800

77) D

Contribution Income Statement

	8,000 units	8,180 units
Sales (at $140 per unit)	$ 1,120,000	$ 1,145,200
Variable expenses (at $28 per unit)	224,000	229,040
Contribution margin	896,000	916,160
Fixed expenses ($20,000 increase)	719,000	739,000
Net operating income	$ 177,000	$ 177,160

Net operating income would increase by $160.

78) B

Contribution Income Statement

	5,000 units	5,900 units
Sales (at $160 per unit and $147 per unit)	$ 800,000	$ 867,300
Variable expenses (at $48 per unit)	240,000	283,200
Contribution margin	560,000	584,100
Fixed expenses (increases by $33,000)	499,000	532,000
Net operating income	$ 61,000	$ 52,100

Net operating income decreases by $8,900.

79) B

Contribution Income Statement

	8,000 units	8,200 units
Sales (at $220 per unit)	$ 1,760,000	$ 1,804,000
Variable expenses (at $66 per unit and $77 per unit)	528,000	631,400
Contribution margin	1,232,000	1,172,600
Fixed expenses (decreases by $74,000)	991,000	917,000
Net operating income	$ 241,000	$ 255,600

Net operating income would increase by $14,600.

80) D

CM ratio = Unit contribution margin ÷ Unit selling price
= ($130.00 per unit − $41.60 per unit) ÷ $130.00 per unit
= $88.40 per unit ÷ $130.00 per unit = 0.68
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $109,616 ÷ 0.68
= $161,200

81) B
Unit CM = Selling price per unit − Variable expenses per unit
= $150.00 per unit − $73.50 per unit = $76.50 per unit
Unit sales to break even = Fixed expenses ÷ Unit CM
= $308,295 ÷ $76.50 per unit = 4,030 units

82) A
CM ratio = Unit contribution margin ÷ Unit selling price
= ($160.00 per unit − $64.00 per unit) ÷ $160.00 per unit
= $96.00 per unit ÷ $160.00 per unit = 0.60
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $124,800 ÷ 0.60
= $208,000

83) D
CM ratio = Unit contribution margin ÷ Unit selling price
= ($110.00 per unit − $30.80 per unit) ÷ $110.00 per unit
= $79.20 per unit ÷ $110.00 per unit = 0.72
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $321,552 ÷ 0.72
= $446,600

84) C
CM ratio = Unit contribution margin ÷ Unit selling price
= ($160.00 per unit − $48.00 per unit) ÷ $160.00 per unit
= $112.00 per unit ÷ $160.00 per unit = 0.70
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $399,420 ÷ 0.70
= $570,600

85) A

CM ratio = Unit contribution margin ÷ Unit selling price
= ($150.00 per unit − $58.50 per unit) ÷ $150.00 per unit
= $91.50 per unit ÷ $150.00 per unit = 0.61
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $366,915 ÷ 0.61
= $601,500

86) A
Fixed expenses = $3,000 + $1,500 = $4,500
Unit CM = Selling price per unit − Variable expenses per unit
= $2.00 per unit − ($0.30 per unit + $0.20 per unit) = $1.50 per unit
CM ratio = Unit CM ÷ Unit selling price
= $1.50 per unit ÷ $2.00 per unit = 0.75
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $4,500 ÷ 0.75 = $6,000

87) A
Unit sales to break even = Fixed expenses ÷ Unit CM
= $300,000 ÷ ($200.00 per unit − $80.00 per unit)
= $300,000 ÷ $120.00 per unit
= 2,500 units

88) D
Unit CM = Selling price per unit − Variable expenses per unit
= $1.20 per unit − $0.72 per unit = $0.48 per unit
CM ratio = Unit CM ÷ Unit selling price
= $0.48 per unit ÷ $1.20 per unit = 0.4
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $64,800 ÷ 0.4 = $162,000

89) D
CM ratio = Contribution margin ÷ Sales
= $7,920 ÷ $17,600 = 0.45
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $3,600 ÷ 0.45 = $8,000
Unit sales to break even = $8,000 ÷ $16.00 per unit = 500 units

90) D

Unit CM = Selling price per unit − Variable expenses per unit
= $20 per unit − $14 per unit = $6 per unit
Unit sales to break even = Fixed expenses ÷ Unit CM
= $54,000 ÷ $6 per unit = 9,000 units

91) A
Unit CM = Selling price per unit − Variable expenses per unit
= $38 per book − $30 per book = $8 per book
Unit sales to break even = Fixed expenses ÷ Unit CM
59,000 books = Fixed expenses ÷ $8 per book
Fixed expenses = 59,000 books × $8 per book = $472,000

92) B
Unit CM = Selling price per unit − Variable expenses per unit
= $140 per book − $25 per book = $115 per book
Unit sales to break even = Fixed expenses ÷ Unit CM
6,000 books = Fixed expenses ÷ $115 per book
Fixed expenses = 6,000 books × $115 per book = $690,000

93) C

Unit sales to break even = Fixed expenses ÷ Unit CM
= $466,620 ÷ ($150.00 per unit − $34.50 per unit)
= $466,620 ÷ $115.50 per unit
= 4,040 units

94) C
Unit sales to break even = Fixed expenses ÷ Unit CM
125,000 units = $105,000 ÷ Unit CM
Unit CM = $105,000 ÷ 125,000 units = $0.84 per unit
Unit CM = Selling price per unit − Variable expenses per unit
$0.84 per unit = $3.00 per unit − Variable expenses per unit
Variable expenses per unit = $3.00 per unit − $0.84 per unit = $2.16 per unit

95) A

Unit sales to break even = Fixed expenses ÷ Unit CM
100,000 units = $300,000 ÷ Unit CM
Unit CM = $300,000 ÷ 100,000 units = $3.00 per unit
Unit CM = Selling price per unit − Variable expenses per unit
$3.00 per unit = $8.00 per unit − Variable expenses per unit
Variable expenses per unit = $8.00 per unit − $3.00 per unit = $5.00 per unit

96) C
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $84,000 ÷ 0.30 = $280,000
Unit sales to break even = $280,000 ÷ $20 per person = 14,000 persons
Dollar sales to attain a target profit = (Target profit + Fixed expenses) ÷ CM ratio
= ($42,000 + $84,000) ÷ 0.30 = $420,000
Unit sales to attain a target profit = $420,000 ÷ $20 per person = 21,000 persons

97) A
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $76,800 ÷ 0.4 = $192,000
Margin of safety in dollars = Total budgeted (or actual) sales − Break-even sales
= $224,000 − $192,000 = $32,000

98) D
CM ratio = Contribution margin ÷ Sales
= $148,000 ÷ $370,000 = 0.4
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $55,000 ÷ 0.4 = $137,500

99) C
Unit sales to break even = Fixed expenses ÷ Unit CM
7,000 units = $63,000 ÷ Unit CM
Unit CM = $63,000 ÷ 7,000 units = $9 per unit
Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($13,500 + $63,000) ÷ $9 per unit
= $76,500 ÷ $9 per unit
= 8,500 units

100) D

Unit sales to break even = Fixed expenses ÷ Unit CM
5,000 units = $225,000 ÷ Unit CM
Unit CM = $225,000 ÷ 5,000 units = $45 per unit
Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($67,500 + $225,000) ÷ $45 per unit
= $292,500 ÷ $45 per unit
= 6,500 units

101) B
Profit = (Unit CM × Q) − Fixed expenses
= ($2 per unit × 25,000 units) − $40,000 = $10,000
Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($10,000 + $45,000) ÷ $2 per unit = 27,500 units

102) D
Unit CM = Selling price per unit − Variable expenses per unit
= $165.00 per unit − $92.00 per unit
= $73.00 per unit
Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($20,000 + $431,040) ÷ $73.00 per unit

= $451,040 ÷ $73.00 per unit
= 6,179 units

103) B
Unit CM = Selling price per unit − Variable expenses per unit
= $160.00 per unit − $65.60 per unit
= $94.40 per unit
Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($17,000 + $387,040) ÷ $94.40 per unit
= $404,040 ÷ $94.40 per unit
= 4,280 units

104) C
Dollar sales to attain a target profit = (Target profit + Fixed expenses) ÷ CM ratio
= ($7,000 + $296,400) ÷ 0.52
= $303,400 ÷ 0.52
= $583,462

105) B

Unit CM = Selling price per unit − Variable expenses per unit
= $120.00 per unit − $52.80 per unit
= $67.20 per unit
Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($13,000 + $396,480) ÷ $67.20 per unit
= $409,480 ÷ $67.20 per unit
= 6,093 units

106) C
Unit CM = Selling price per unit − Variable expenses per unit
= $240.00 per unit − $81.60 per unit
= $158.40 per unit
Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($44,000 + $997,920) ÷ $158.40 per unit
= $1,041,920 ÷ $158.40 per unit
= 6,578 units

107) B
Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($90,000 + $300,000) ÷ ($15 per unit − $9 per unit)
= $390,000 ÷ $6 per unit
= 65,000 units

108) C
Dollar sales to attain a target profit = (Target profit + Fixed expenses) ÷ CM ratio
= ($28,000 + $720,720) ÷ 0.63
= $748,720 ÷ 0.63
= $1,188,444

109) A
Margin of safety in dollars = Total sales − Break-even sales
= ($270 per unit × 13,800 units) − ($270 per unit × 10,488 units)
= $3,726,000 − $2,831,760 = $894,240
Margin of safety percentage = Margin of safety in dollars ÷ Total sales
= $894,240 ÷ $3,726,000 = 0.24

110) C

Margin of safety in dollars = Total sales − Break-even sales
= ($170 per unit × 10,000 units) − ($170 per unit × 8,100 units)
= $1,700,000 − $1,377,000 = $323,000
Margin of safety percentage = Margin of safety in dollars ÷ Total sales
= $323,000 ÷ $1,700,000 = 0.19

111) B
Margin of safety in dollars = Total sales − Break-even sales
= (12,300 units × $105 per unit) − (8,610 units × $105 per unit)
= $1,291,500 − $904,050 = $387,450

112) B
Margin of safety in dollars = Total sales − Break-even sales
= (10,600 units × $100 per unit) − (9,540 units × $100 per unit)
= $1,060,000 − $954,000 = $106,000

113) B
Margin of safety in dollars = Total actual sales − Break-even sales
= (30,300 units × $200 per unit) − (21,816 units × $200 per unit)
= $6,060,000 − $4,363,200 = $1,696,800

Margin of safety percentage = Margin of safety in dollars ÷ Total actual sales
= $1,696,800 ÷ $6,060,000 = 28%

114) D
Contribution margin = Sales − Variable expenses
= $17,600 − $9,680 = $7,920
Contribution margin ratio = Contribution margin ÷ Sales
= $7,920 ÷ $17,600 = 0.45
Dollar sales to break even = Fixed expenses ÷ Contribution margin ratio
= $3,600 ÷ 0.45 = $8,000
Margin of safety in dollars = Total budgeted (or actual) sales − Break-even sales
= $17,600 − $8,000 = $9,600
Margin of safety percentage = Margin of safety in dollars ÷ Total budgeted (or actual) sales
= $9,600 ÷ $17,600 = 55%

115) D

Margin of safety in dollars = Total sales − Break-even sales
= ($170 per unit × 41,800 units) − ($170 per unit × 33,900 units)
= $7,106,000 − $5,763,000 = $1,343,000

116) D
Margin of safety in dollars = Total sales − Break-even sales
= ($240 per unit × 41,300 units) − ($240 per unit × 36,757 units)
= $9,912,000 − $8,821,680 = $1,090,320

117) A
Percentage change in net operating income = Degree of operating leverage × Percentage change in sales
= 10.8 ×14% = 151.2%

118) C
Degree of operating leverage = Contribution margin ÷ Net operating income
= $115,200 ÷ $31,100 = 3.70

119) A
Percentage change in sales = ($80,000 − $100,000) ÷ $100,000 = −20%
Percentage change in net operating income = Degree of operating leverage × Percentage change in sales
−300% = Degree of operating leverage × −20%
Degree of operating leverage = 15

120) B
Degree of operating leverage = Contribution margin ÷ Net operating income
= $48,000 ÷ $12,000 = 4

121) A
Percentage change in net operating income = Degree of operating leverage × Percentage change in sales
= 4.8 × 13% = 62.4%

122) C
Percentage change in net operating income = Degree of operating leverage × Percentage change in sales
= 7.3 × 3% = 21.9%

123) C

Contribution margin = Sales − Variable expenses
= $630,000 − $280,000 = $350,000
Profit = Contribution margin − Fixed expenses
= $350,000 − $280,000 = $70,000
Degree of operating leverage = Contribution margin ÷ Net operating income
= $350,000 ÷ $70,000 = 5.00

124) C
Contribution margin = Sales − Variable expenses
= $1,000,000 − $600,000 = $400,000
Profit = Contribution margin − Fixed expenses
= $400,000 − $300,000 = $100,000
Degree of operating leverage = Contribution margin ÷ Net operating income
= $400,000 ÷ $100,000 = 4

125) C
Degree of operating leverage = Contribution margin ÷ Net operating income
= $30,000 ÷ $13,500 = 2.2
Percentage change in net operating income = Degree of operating leverage × Percentage change in sales

= 2.2 × 10% = 22%

126) D
Degree of operating leverage = Contribution margin ÷ Net operating income
= $174,960 ÷ $90,980 = 1.92

127) D
Degree of operating leverage = Contribution margin ÷ Net operating income
= $84,000 ÷ $12,200 = 6.89

128) D
Contribution margin = Sales − Variable expenses
= (2,000 units × $40 per unit) − (2,000 units × 0.35 × $40 per unit)
= $80,000 − $28,000 = $52,000
Net operating income = Contribution margin − Fixed expenses
= $52,000 − $42,000 = $10,000
Degree of operating leverage = Contribution margin ÷ Net operating income
= $52,000 ÷ $10,000 = 5.20

129) C
Contribution margin = Sales − Variable expenses
= (2,000 units × $35 per unit) − (2,000 units × 0.40 × $35 per unit)
= $70,000 − $28,000 = $42,000
Net operating income = Contribution margin − Fixed expenses
= $42,000 − $22,000 = $20,000
Degree of operating leverage = Contribution margin ÷ Net operating income
= $42,000 ÷ $20,000 = 2.1

130) A
Degree of operating leverage = Contribution margin ÷ Net operating income
= $48,000 ÷ $9,600 = 5.0

131) C
Sales of Product K = 3 × Sales of Product J
Overall contribution margin = (Product J CM ratio × Sales of Product J) + (Product K CM ratio × Sales of Product K)
= (0.40 × Sales of Product J) + (0.50 × 3 × Sales of Product J)
= 1.90 × Sales of Product J
Overall sales = Sales of Product J + Sales of Product K
= Sales of Product J + Sales of Product K
= Sales of Product J + 3 × Sales of Product J
= 4.00 × Sales of Product J
Overall CM ratio = Overall contribution margin ÷ Overall sales
= (1.90 × Sales of Product J) ÷ (4.00 × Sales of Product J)
= 1.90 ÷ 4.00 = 0.475
Dollar sales to break even = Fixed expenses ÷ Overall CM ratio
= $120,000 ÷ 0.475 = $252,632

132) A

	Product K09E	Product G17B
Sales (a)	$ 28,000	$ 38,000
Variable expenses	11,200	8,600
Contribution margin (b)	$ 16,800	$ 29,400
CM ratio (b) ÷ (a)	60.0%	77.4%

Since Product K09E has a lower contribution margin ratio, a shift in sales to that product would increase the break-even point of the entire company.

133) C

	Product A	Product B	Product C	Total
Monthly sales in dollars	$ 120,000	$ 160,000	$ 200,000	$ 480,000
Contribution margin ratio	20%	40%	16%	
Contribution margin	$ 24,000	$ 64,000	$ 32,000	$ 120,000

Overall CM ratio = Contribution margin ÷ Sales = $120,000 ÷ $480,000 = 0.25

134) B

	Product I49V	Product Z50U	Total
Sales	$ 37,000	$ 42,000	$ 79,000
Variable expenses	12,500	28,580	41,080
Contribution margin	$ 24,500	$ 13,420	$ 37,920

CM ratio = Contribution margin ÷ Sales = $37,920 ÷ $79,000 = 0.48

Dollar sales to break even = Fixed expenses ÷ CM ratio = $39,090 ÷ 0.48 = $81,438

135) A

	Product I49V	Product Z50U	Total
Sales	$ 15,000	$ 14,000	$ 29,000
Variable expenses	3,300	2,790	6,090
Contribution margin	$ 11,700	$ 11,210	$ 22,910

CM ratio = Contribution margin ÷ Sales = $22,910 ÷ $29,000 = 0.79

Dollar sales to break even = Fixed expenses ÷ CM ratio = $18,460 ÷ 0.79 = $23,367

136) D

	Standard	Deluxe	Total
Total sales	$ 450,000	$ 50,000	$ 500,000
Total variable expenses	360,000	20,000	380,000
Total contribution margin	$ 90,000	$ 30,000	$ 120,000

CM ratio = Contribution margin ÷ Sales
= $120,000 ÷ $500,000 = 0.24
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $57,600 ÷ 0.24 = $240,000

137) A

	Product C90B	Product Y45E
Sales (a)	$ 29,140	$ 26,100
Variable expenses	7,285	10,440
Contribution margin (b)	$ 21,855	$ 15,660
CM ratio (b) ÷ (a)	75%	60%

Since Product C90B has a higher contribution margin ratio, a shift in sales to that product would decrease the break-even point of the entire company.

138) A

	Product C90B	Product Y45E
Sales (a)	$ 24,000	$ 29,000
Variable expenses	6,480	11,010
Contribution margin (b)	$ 17,520	$ 17,990
CM ratio (b) ÷ (a)	73.0%	62.0%

Since Product C90B has a higher contribution margin ratio, a shift in sales to that product would decrease the break-even point of the entire company.

139) C

	Product R10L	Product X96N	Total
Sales	$ 42,000	$ 55,000	$ 97,000
Variable expenses	11,880	15,280	27,160
Contribution margin	$ 30,120	$ 39,720	$ 69,840

CM ratio = Contribution margin ÷ Sales = $69,840 ÷ $97,000 = 0.72

Dollar sales to break even = Fixed expenses ÷ CM ratio = $46,170 ÷ 0.72 = $64,125

140) B

	Product R10L	Product X96N	Total
Sales	$ 28,000	$ 22,000	$ 50,000
Variable expenses	6,440	7,560	14,000
Contribution margin	$ 21,560	$ 14,440	$ 36,000

CM ratio = Contribution margin ÷ Sales = $36,000 ÷ $50,000 = 0.72

Dollar sales to break even = Fixed expenses ÷ CM ratio = $32,710 ÷ 0.72 = $45,431

141) A

Selling price per unit = $266,800 ÷ 4,600 units = $58 per unit

Variable expense per unit = $179,400 ÷ 4,600 units = $39 per unit

Unit CM = $58 per unit − $39 per unit = $19 per unit

Contribution margin = $19 per unit × 4,500 units =$85,500

142) A

Selling price per unit = $266,800 ÷ 4,600 units = $58 per unit

Variable expense per unit = $179,400 ÷ 4,600 units = $39 per unit

Unit CM = $58 per unit − $39 per unit = $19 per unit

Profit = Unit CM × Q − Fixed expenses

= $19 per unit × 4,200 units − $62,200 = $79,800 − $62,200 = $17,600

143) C

Selling price per unit = $95,000 ÷ 3,800 units = $25 per unit

Variable expense per unit = $38,000 ÷ 3,800 units = $10 per unit

Unit CM = $25 per unit − $10 per unit = $15 per unit

Contribution margin = $15 per unit × 3,900 units = $58,500

144) D

Selling price per unit = $336,000 ÷ 9,600 units = $35 per unit
Variable expense per unit = $144,000 ÷ 9,600 units = $15 per unit
Unit CM = $35 per unit − $15 per unit = $20 per unit
Contribution margin = $20 per unit × 9,100 units = $182,000

145) A

Selling price per unit = $336,000 ÷ 9,600 units = $35 per unit
Variable expense per unit = $144,000 ÷ 9,600 units = $15 per unit
Unit CM = $35 per unit − $15 per unit = $20 per unit
Profit = Unit CM × Q − Fixed expenses
= $20 per unit × 9,700 units − $137,000 = $194,000 − $137,000 = $57,000

146) A

The increase in net operating income would be the increased contribution margin because fixed expenses are not affected.

Selling price per unit ($90,000 ÷ 3,000 units)	$ 30.00	
Variable cost per unit ($58,500 ÷ 3,000 units)	19.50	
Unit contribution margin	$ 10.50	
Unit contribution margin (a)	$ 10.50	per unit
Increased unit sales (b)	40	units
Increase in net operating income (a) × (b)	$ 420.00	

147) D

Selling price per unit ($90,000 ÷ 3,000 units)	$ 30.00	
Variable cost per unit ($58,500 ÷ 3,000 units)	19.50	
Unit contribution margin	$ 10.50	
Unit contribution margin (a)	$ 10.50	per unit
Unit sales (b)	2,900	units
Contribution margin (a) × (b)	$ 30,450	
Fixed expenses	21,000	
Net operating income	$ 9,450	

148) C

Selling price per unit = $88,000 ÷ 4,000 units = $22 per unit
Variable expense per unit = $40,000 ÷ 4,000 units = $10 per unit
Unit CM = $22 per unit − $10 per unit = $12 per unit
Contribution margin = $12 per unit × 3,600 units = $43,200

149) C
Selling price per unit = $88,000 ÷ 4,000 units = $22 per unit
Variable expense per unit = $40,000 ÷ 4,000 units = $10 per unit
Unit CM = $22 per unit − $10 per unit = $12 per unit
Profit = Unit CM × Q − Fixed expenses
= $12 per unit × 3,500 units − $41,700 = $42,000 − $41,700 = $300

150) A

Total contribution margin (a)	$ 135,000	
Total unit sales (b)	9,000 units	
Unit contribution margin (a) ÷ (b)	$ 15 per unit	

Alternatively,

Selling price per unit ($540,000 ÷ 9,000 units)	$ 60
Variable cost per unit ($405,000 ÷ 9,000 units)	45
Unit contribution margin	$ 15

151) C
CM ratio = Contribution margin ÷ Sales = $135,000 ÷ $540,000 = 25%

152) D
Variable expense ratio = Variable expenses ÷ Sales = $405,000 ÷ $540,000 = 75%

153) D
Unit contribution margin = Selling price per unit − Variable expenses per unit
= ($1,053,500 ÷ 245,000 units) − (($427,000 + $63,000) ÷ 245,000 units)
= ($1,053,500 ÷ 245,000 units) − ($490,000 ÷ 245,000 units)
= $4.30 per unit − $2.00 per unit = $2.30 per unit

154) C

Unit contribution margin = Selling price per unit − Variable expenses per unit
= ($2,788,000 ÷ 680,000 units) − (($1,156,000 + $272,000) ÷ 680,000 units)
= ($2,788,000 ÷ 680,000 units) − ($1,428,000 ÷ 680,000 units)
= $4.10 per unit − $2.10 per unit = $2.00 per unit

155) B
Contribution margin = Sales − Variable expenses
= $984,000 − ($233,000 + $190,120) = $984,000 − $423,120 = $560,880
CM ratio = Contribution margin ÷ Sales
= $560,880 ÷ $984,000 = 0.57

156) D
Contribution margin = Sales − Variable expenses
= $2,788,000 − ($1,156,000 + $272,000) = $2,788,000 − $1,428,000 = $1,360,000
CM ratio = Contribution margin ÷ Sales
= $1,360,000 ÷ $2,788,000 = 0.488

157) C
Unit sales = 680,000 units × 1.04 = 707,200 units
Unit selling price = $2,788,000 ÷ 680,000 units = $4.10 per unit
Variable manufacturing expense per unit = $1,156,000 ÷ 680,000 units = $1.70 per unit
Variable selling and administrative expense per unit = $272,000 ÷ 680,000 units = $0.40 per unit

Unit sales	707,200
Sales (at $4.10 per unit)	$ 2,899,520
Variable expenses:	
Variable manufacturing expense (at $1.70 per unit)	1,202,240
Variable selling and administrative expense (at $0.40 per unit)	282,880
Contribution margin	1,414,400
Fixed expenses:	
Fixed manufacturing expenses	760,000
Fixed selling and administrative expenses	294,000
Net operating income	$ 360,400

158) B

Unit contribution margin = Selling price per unit − Variable expenses per unit
= ($2,132,000 ÷ 520,000 units) − (($650,000 + $260,000) ÷ 520,000 units)
= ($2,132,000 ÷ 520,000 units) − ($910,000 ÷ 520,000 units)
= $4.10 per unit − $1.75 per unit = $2.35 per unit

159) B
Contribution margin = Sales − Variable expenses
= $2,132,000 − ($650,000 + $260,000) = $2,132,000 − $910,000 = $1,222,000
CM ratio = Contribution margin ÷ Sales
= $1,222,000 ÷ $2,132,000 = 0.573

160) D
Unit sales = 520,000 units × 1.03 = 535,600 units
Unit selling price = $2,132,000 ÷ 520,000 units = $4.10 per unit
Variable manufacturing expense per unit = $650,000 ÷ 520,000 units = $1.25 per unit
Variable selling and administrative expense per unit = $260,000 ÷ 520,000 units = $0.50 per unit

Unit sales	535,600
Sales (at $4.10 per unit)	$ 2,195,960
Variable expenses:	
Variable manufacturing expenses ($1.25 per unit)	669,500
Variable selling and administrative expense (at $0.50 per unit)	267,800
Contribution margin	1,258,660
Fixed expenses:	
Fixed manufacturing expenses	464,000
Fixed selling and administrative expenses	312,000
Net operating income	$ 482,660

161) A

Unit sales = 520,000 units × 1.03 = 535,600 units
Unit selling price = $2,132,000 ÷ 520,000 units = $4.10 per unit
Variable manufacturing expense per unit = $650,000 ÷ 520,000 units = $1.25 per unit
Variable selling and administrative expense per unit = $260,000 ÷ 520,000 units = $0.50 per unit

Unit sales	535,600
Sales (at $4.10 per unit)	$ 2,195,960
Variable expenses:	
Variable manufacturing expenses ($1.25 per unit)	669,500
Variable selling and administrative expense (at $0.50 per unit)	267,800
Contribution margin	1,258,660
Fixed expenses:	
Fixed manufacturing expenses	464,000
Fixed selling and administrative expenses	312,000
Net operating income	$ 482,660

162) D

Selling price per unit ($280,000 ÷ 7,000 units)	$ 40	
Variable cost per unit ($182,000 ÷ 7,000 units)	26	
Unit contribution margin	$ 14	
Selling price	$ 40	per unit
Variable cost per price ($26 per unit + $10 per unit)	36	per unit
Unit contribution margin (a)	$ 4	per unit
Unit sales (7,000 units + 15,800 units) (b)	22,800	units
Contribution margin (a) × (b)	$ 91,200	
Fixed expenses ($84,000 + $1,500)	85,500	
Net operating income	$ 5,700	

163) C

The increase in net operating income would be the increased contribution margin because fixed expenses are not affected.

Selling price per unit ($300,000 ÷ 6,000 units)	$ 50	
Variable cost per unit ($240,000 ÷ 6,000 units)	40	
Unit contribution margin	$ 10	
Unit contribution margin (a)	$ 10	per unit
Increased unit sales (b)	20	units
Increase in net operating income (a) × (b)	$ 200	

164) C

Selling price per unit ($300,000 ÷ 6,000 units)	$ 50	
Variable cost per unit ($240,000 ÷ 6,000 units)	40	
Unit contribution margin	$ 10	
Selling price ($50 per unit + $3 per unit)	$ 53	per unit
Variable cost per price	40	per unit
Unit contribution margin (a)	$ 13	per unit
Unit sales (6,000 units − 400 units) (b)	5,600	units
Contribution margin (a) × (b)	$ 72,800	
Fixed expenses	59,000	
Net operating income	$ 13,800	

165) D

Selling price per unit ($240,000 ÷ 6,000 units)	$ 40
Variable cost per unit ($180,000 ÷ 6,000 units)	30
Unit contribution margin	$ 10

Unit sales to break even = Fixed expenses ÷ Unit CM = $54,000 ÷ $10 per unit = 5,400 units

166) B

Selling price per unit ($240,000 ÷ 6,000 units)	$ 40
Variable cost per unit ($180,000 ÷ 6,000 units)	30
Unit contribution margin	$ 10

Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($24,000 + $54,000) ÷ $10 per unit = $78,000 ÷ $10 per unit = 7,800 units

167) C

Selling price per unit ($180,000 ÷ 9,000 units)	$ 20
Variable cost per unit ($117,000 ÷ 9,000 units)	13
Unit contribution margin	$ 7

Unit sales to break even = Fixed expenses ÷ Unit CM = $56,700 ÷ $7 per unit = 8,100 units

168) A
CM ratio = Contribution margin ÷ Sales = $63,000 ÷ $180,000 = 35%
Dollar sales to break even = Fixed expenses ÷ CM ratio = $56,700 ÷ 35% = $162,000

169) C

Selling price per unit ($180,000 ÷ 9,000 units)	$ 20
Variable cost per unit ($117,000 ÷ 9,000 units)	13
Unit contribution margin	$ 7

Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($16,100 + $56,700) ÷ $7 per unit = $72,800 ÷ $7 per unit = 10,400 units

170) C
Contribution margin ratio = Contribution margin ÷ Sales = $94,500 ÷ $270,000 = 35%
Dollar sales to break even = Fixed expenses ÷ Contribution margin ratio = $86,100 ÷ 35% = $246,000

171) C
CM ratio = Contribution margin ÷ Sales = $94,500 ÷ $270,000 = 35%
Dollar sales to break even = Fixed expenses ÷ CM ratio = $86,100 ÷ 35% = $246,000
Margin of safety in dollars = Total budgeted (or actual) sales − Break-even sales
= $270,000 − $246,000 = $24,000

172) B

CM ratio = Contribution margin ÷ Sales = $37,500 ÷ $150,000 = 25%
Dollar sales to break even = Fixed expenses ÷ CM ratio = $35,250 ÷ 25% = $141,000
Margin of safety in dollars = Total budgeted (or actual) sales − Break-even sales
= $150,000 − $141,000 = $9,000

173) D
CM ratio = Contribution margin ÷ Sales = $37,500 ÷ $150,000 = 25%
Dollar sales to break even = Fixed expenses ÷ CM ratio = $35,250 ÷ 25% = $141,000
Margin of safety in dollars = Total budgeted (or actual) sales − Break-even sales
= $150,000 − $141,000 = $9,000
Margin of safety percentage = Margin of safety in dollars ÷ Total budgeted (or actual) sales
= $9,000 ÷ $150,000 = 6%

174) A
CM ratio = Contribution margin ÷ Sales = $18,000 ÷ $60,000 = 30%
Dollar sales to break even = Fixed expenses ÷ CM ratio = $13,200 ÷ 30% = $44,000
Margin of safety in dollars = Total budgeted (or actual) sales − Break-even sales
= $60,000 − $44,000 = $16,000
Margin of safety percentage = Margin of safety in dollars ÷ Total budgeted (or actual) sales
= $16,000 ÷ $60,000 = 27%

175) A
Degree of operating leverage = Contribution margin ÷ Net operating income
= $18,000 ÷ $4,800 = 3.75
Percentage change in net operating income = Degree of operating leverage × Percentage change in sales
= 3.75 × 20% = 75%

176) B

Selling price per unit = $1,560,000 ÷ 200,000 units = $7.80 per unit
Variable expense per unit = ($660,000 + $180,000) ÷ 200,000 units
= $840,000 ÷ 200,000 units = $4.20 per unit
Unit CM = Selling price per unit − Variable expenses per unit
= $7.80 per unit − $4.20 per unit = $3.60 per unit
Fixed expenses = ($448,000 + $214,000) = $662,000
Unit sales to break even = Fixed expenses ÷ Unit contribution margin
= $662,000 ÷ $3.60 per unit = 183,889 units
Margin of safety = Total actual sales − Break-even sales
= 200,000 units − 183,889 units = 16,111

177) C

Selling price per unit = $1,560,000 ÷ 200,000 units = $7.80 per unit
Variable expense per unit = ($660,000 + $180,000) ÷ 200,000 units
= $840,000 ÷ 200,000 units = $4.20 per unit
Unit CM = Selling price per unit − Variable expenses per unit
= $7.80 per unit − $4.20 per unit = $3.60 per unit

178) D

Sales revenue	$ 1,560,000
Variable expenses:	
Variable manufacturing expense	660,000
Variable selling and administrative expense	180,000
Contribution margin	$ 720,000

Degree of operating leverage = Contribution margin ÷ Net operating income
= $720,000 ÷ $58,000 = 12.41

179) C

Contribution margin = Sales − Variable expenses
= $4,176,000 − ($2,871,000 + $348,000)
= $4,176,000 − $3,219,000 = $957,000
Unit CM = Contribution margin ÷ Unit sales
= $957,000 ÷ 580,000 units = $1.65 per unit
Unit sales to break even = Fixed expenses ÷ Unit contribution margin
= ($778,000 + $104,000) ÷ $1.65 per unit
= $882,000 ÷ $1.65 per unit = 534,545 units
Margin of safety in units = Total budgeted (or actual) sales − Unit sales to break even
= 580,000 units − 534,545 units = 45,455 units

180) C
Contribution margin = Sales − Variable expenses
= $4,176,000 − ($2,871,000 + $348,000)
= $4,176,000 − $3,219,000 = $957,000
Unit CM = Contribution margin ÷ Unit sales
= $957,000 ÷ 580,000 units = $1.65 per unit

181) D
Contribution margin = Sales − Variable expenses

= $4,176,000 − ($2,871,000 + $348,000)
= $4,176,000 − $3,219,000 = $957,000
Degree of operating leverage = Contribution margin ÷ Net operating income
= $957,000 ÷ $75,000 = 12.76

182) C
Contribution margin = Sales − Variable expenses
= $2,412,000 − ($1,170,000 + $414,000)
= $2,412,000 − $1,584,000 = $828,000
Unit CM = $828,000 ÷ 360,000 bundles = $2.30 per bundle
Fixed expenses = $714,000 + $82,000 = $796,000
Unit sales to break even = Fixed expenses ÷ Unit contribution margin
= $796,000 ÷ $2.30 per bundle = 346,087 bundles

183) C

Contribution margin = Sales − Variable expenses
= $2,412,000 − ($1,170,000 + $414,000)
= $2,412,000 − $1,584,000 = $828,000
CM ratio = Contribution margin ÷ Sales
= $828,000 ÷ $2,412,000 = 0.343

184) B
Contribution margin = Sales − Variable expenses
= $2,412,000 − ($1,170,000 + $414,000)
= $2,412,000 − $1,584,000 = $828,000
Degree of operating leverage = Contribution margin ÷ Net operating income
= $828,000 ÷ $32,000
= 25.88

185) A
Contribution margin = Sales − Variable expenses
= $2,736,000 − ($1,349,000 + $399,000)
= $2,736,000 − $1,748,000 = $988,000
Unit CM = $988,000 ÷ 380,000 kilograms = $2.60 per kilogram
Unit sales to break even = Fixed expenses ÷ Unit contribution margin
= $708,000 ÷ $2.60 per kilogram = 272,308 kilograms

186) C
Contribution margin = Sales − Variable expenses
= $1,840,000 − ($943,000 + $355,000)
= $1,840,000 − $1,298,000 = $542,000
CM ratio = Contribution margin ÷ Sales = $542,000 ÷ $1,840,000 = 0.295

187) D
Contribution margin = Sales − Variable expenses
= $2,736,000 − ($1,349,000 + $399,000)
= $2,736,000 − $1,748,000 = $988,000
CM ratio = Contribution margin ÷ Sales = $988,000 ÷ $2,736,000 = 0.361

188) C

Contribution margin = Sales − Variable expenses
= $2,736,000 − ($1,349,000 + $399,000)
= $2,736,000 − $1,748,000 = $988,000
Degree of operating leverage = Contribution margin ÷ Net operating income
= $988,000 ÷ $280,000 = 3.53

189) A

Unit sales (150 unit increase)	6,000 units	6,150 units
Sales (at $140 per unit)	$ 840,000	$ 861,000
Variable expenses (at $42 per unit)	252,000	258,300
Contribution margin	588,000	602,700
Fixed expenses ($14,000 increase)	490,000	504,000
Net operating income	$ 98,000	$ 98,700

Overall net operating income will increase by $700

190) A

Unit sales (increase of 300 units)	6,000 units	6,300 units
Sales (at $140 per unit)	$ 840,000	$ 882,000
Variable expenses(at $42 per unit and $47 per unit)	252,000	296,100
Contribution margin	588,000	585,900
Fixed expenses	490,000	490,000
Net operating income	$ 98,000	$ 95,900

Overall net operating income will decrease by $2,100

191) C

Unit sales (increase by 500 units)	6,000 units	6,500 units
Sales (at $140 per unit and $133 per unit)	$ 840,000	$ 864,500
Variable expenses (at $42 per unit)	252,000	273,000
Contribution margin	588,000	591,500
Fixed expenses (increase by $28,000)	490,000	518,000
Net operating income	$ 98,000	$ 73,500

Overall net operating income will decrease by $24,500

192) A

Unit sales (increase by 100 units)	6,000 units	6,100 units
Sales (at $140 per unit)	$ 840,000	$ 854,000
Variable expenses (at $42 per unit and $53 per unit)	252,000	323,300
Contribution margin	588,000	530,700
Fixed expenses (decrease by $58,000)	490,000	432,000
Net operating income	$ 98,000	$ 98,700

Overall net operating income will increase by $700

193) D

Unit sales (increase of 200 units)	7,000 units	7,200 units
Sales (at $230 per unit)	$ 1,610,000	$ 1,656,000
Variable expenses(at $115 per unit and $118 per unit)	805,000	849,600
Contribution margin	805,000	806,400
Fixed expenses	581,000	581,000
Net operating income	$ 224,000	$ 225,400

Overall net operating income will increase by $1,400

194) D

Unit sales (100 unit increase)	7,000 units	7,100 units
Sales (at $230 per unit)	$ 1,610,000	$ 1,633,000
Variable expenses (at $115 per unit)	805,000	816,500
Contribution margin	805,000	816,500
Fixed expenses ($11,000 increase)	581,000	592,000
Net operating income	$ 224,000	$ 224,500

Overall net operating income will increase by $500

195) C

Unit sales (increase by 300 units)	7,000 units	7,300 units
Sales (at $230 per unit)	$ 1,610,000	$ 1,679,000
Variable expenses (at $115 per unit and $135 per unit)	805,000	985,500
Contribution margin	805,000	693,500
Fixed expenses (decrease by $113,000)	581,000	468,000
Net operating income	$ 224,000	$ 225,500

Overall net operating income will increase by $1,500

196) D

Unit sales (increase by 1,600 units)	7,000 units	8,600 units
Sales (at $230 per unit and $212 per unit)	$ 1,610,000	$ 1,823,200
Variable expenses (at $115 per unit)	805,000	989,000
Contribution margin	805,000	834,200
Fixed expenses (increase by $37,000)	581,000	618,000
Net operating income	$ 224,000	$ 216,200

Overall net operating income will decrease by $7,800

197) D

Unit sales (increase of 500 units)	7,000 units	7,500 units
Sales (at $220 per unit)	$ 1,540,000	$ 1,650,000
Variable expenses(at $44 per unit and $55 per unit)	308,000	412,500
Contribution margin	1,232,000	1,237,500
Fixed expenses	901,000	901,000
Net operating income	$ 331,000	$ 336,500

Overall net operating income will increase by $5,500

198) C

Unit sales (increase of 190 units)	7,000 units	7,190 units
Sales (at $220 per unit)	$ 1,540,000	$ 1,581,800
Variable expenses (at $44 per unit)	308,000	316,360
Contribution margin	1,232,000	1,265,440
Fixed expenses ($28,000 increase)	901,000	929,000
Net operating income	$ 331,000	$ 336,440

Overall net operating income will increase by $5,440

199) D

Unit sales (increase by 1,000 units)	7,000 units	8,000 units
Sales (at $220 per unit and $202 per unit)	$ 1,540,000	$ 1,616,000
Variable expenses (at $44 per unit)	308,000	352,000
Contribution margin	1,232,000	1,264,000
Fixed expenses (increase by $53,000)	901,000	954,000
Net operating income	$ 331,000	$ 310,000

Overall net operating income will decrease by $21,000

200) B

Unit sales (increase by 300 units)	7,000 units	7,300 units
Sales (at $220 per unit)	$ 1,540,000	$ 1,606,000
Variable expenses (at $44 per unit and $55 per unit)	308,000	401,500
Contribution margin	1,232,000	1,204,500
Fixed expenses (decrease by $65,000)	901,000	836,000
Net operating income	$ 331,000	$ 368,500

Overall net operating income will increase by $37,500

201) D

Unit CM = Selling price per unit − Variable expenses per unit
= $230.00 per unit − $89.70 per unit = $140.30 per unit
Unit sales to break even = Fixed expenses ÷ Unit CM
= $308,660 ÷ $140.30 per unit = 2,200 units

202) C

Unit CM = Selling price per unit − Variable expenses per unit
= $230.00 per unit − $89.70 per unit = $140.30 per unit
CM ratio = Unit contribution margin ÷ Unit selling price = $140.30 per unit ÷ $230.00 per unit = 0.61
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $308,660 ÷ 0.61 = $506,000

203) C
Unit CM = Selling price per unit − Variable expenses per unit
= $200.00 per unit − $58.00 per unit = $142.00 per unit
Unit sales to break even = Fixed expenses ÷ Unit CM
= $407,540 ÷ $142.00 per unit = 2,870 units

204) C
Unit CM = Selling price per unit − Variable expenses per unit
= $200.00 per unit − $58.00 per unit = $142.00 per unit
CM ratio = Unit CM ÷ Unit selling price = $142.00 per unit ÷ $200.00 per unit = 0.71
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $407,540 ÷ 0.71 = $574,000

205) B
Unit CM = Selling price per unit − Variable expenses per unit
= $110.00 per unit − $34.10 per unit = $75.90 per unit
Unit sales to break even = Fixed expenses ÷ Unit CM
= $132,066 ÷ $75.90 per unit = 1,740 units

206) A
Unit CM = Selling price per unit − Variable expenses per unit
= $110.00 per unit − $34.10 per unit = $75.90 per unit
CM ratio = Unit CM ÷ Unit selling price = $75.90 per unit ÷ $110.00 per unit = 0.69
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $132,066 ÷ 0.69 = $191,400

207) A

Unit CM = Selling price per unit − Variable expenses per unit
= $50 per unit − $30 per unit = $20 per unit
Unit sales to break even = Fixed expenses ÷ Unit CM
= $180,000 ÷ $20 per unit = 9,000 units
Dollar sales to break even = $50 per unit × 9,000 units = $450,000

208) C
Unit CM = Selling price per unit − Variable expenses per unit
= $50 per unit − $30 per unit = $20 per unit
Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($40,000 + $180,000) ÷ $20 per unit = $220,000 ÷ $20 per unit = 11,000 units

209) A

Sales ($50 per unit × 10,000 units)	$ 500,000
Variable expenses ($30 per unit × 10,000 units)	300,000
Contribution margin	200,000
Fixed expenses	180,000
Net operating income	$ 20,000

Degree of operating leverage = Contribution margin ÷ Net operating income
= $200,000 ÷ $20,000 = 10.0

210) D
Unit CM = Selling price per unit − Variable expenses per unit
= $220.00 per unit − $72.60 per unit = $147.40 per unit
Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($14,000 + $548,328) ÷ $147.40 per unit
=$562,328 ÷ $147.40 per unit = 3,815 units

211) D
Unit CM = Selling price per unit − Variable expenses per unit
= $220.00 per unit − $72.60 per unit = $147.40 per unit
CM ratio = Unit CM ÷ Unit selling price = $147.40 per unit ÷ $220.00 per unit = 0.67
Dollar sales to attain a target profit = (Target profit + Fixed expenses) ÷ CM ratio
= ($16,000 + $548,328) ÷ 0.67
= $564,328 ÷ 0.67
= $842,281

212) B

Unit CM = Selling price per unit − Variable expenses per unit
= $200.00 per unit − $68.00 per unit = $132.00 per unit
Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($514,800 + $11,000) ÷ $132.00 per unit
=$525,800 ÷ $132.00 per unit = 3,983 units

213) B
Unit CM = Selling price per unit − Variable expenses per unit
= $200.00 per unit − $68.00 per unit = $132.00 per unit
CM ratio = Unit contribution margin ÷ Unit selling price = $132.00 per unit ÷ $200.00 per unit = 0.66
Dollar sales to attain a target profit = (Target profit + Fixed expenses) ÷ CM ratio
= ($12,000 + $514,800) ÷ 0.66
= $526,800 ÷ 0.66 = $798,182

214) C
Unit CM = Selling price per unit − Variable expenses per unit
= $150.00 per unit − $42.00 per unit = $108.00 per unit
Unit sales to attain a target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($17,000 + $421,200) ÷ $108.00 per unit

=$438,200 ÷ $108.00 per unit = 4,057 units

215) B
Unit CM = Selling price per unit − Variable expenses per unit
= $150.00 per unit − $42.00 per unit = $108.00 per unit
CM ratio = Unit CM ÷ Unit selling price = $108.00 per unit ÷ $150.00 per unit = 0.72
Dollar sales to attain a target profit = (Target profit + Fixed expenses) ÷ CM ratio
= ($8,000 + $421,200) ÷ 0.72
=$429,200 ÷ 0.72 = $596,111

216) B

CM ratio = Unit CM ÷ Unit selling price
= ($100 per unit − $70 per unit) ÷ $100 per unit = 0.30
Dollar sales to break even = Fixed expenses ÷ CM ratio
= $450,000 ÷ 0.30 = $1,500,000
Margin of safety in dollars = Total budgeted (or actual) sales − Break-even sales
= (20,000 units × $100 per unit) − $1,500,000
= $2,000,000 − $1,500,000 = $500,000
Margin of safety percentage = Margin of safety in dollars ÷ Total budgeted (or actual) sales
= $500,000 ÷ $2,000,000 = 0.25

217) A

Unit CM = Selling price per unit − Variable expenses per unit
= $100 per unit − $70 per unit = $30 per unit
Let X = Unit sales to attain a target profit
Target profit = 0.05 × X × $100 per unit = $5 per unit × X
X = (Target profit + Fixed expenses) ÷ Unit CM
X = ($5 per unit × X + $450,000) ÷ $30 per unit
$30 per unit × X = $5 per unit × X + $450,000
$25 per unit × X = $450,000
X = $450,000 ÷ $25 per unit = 18,000 units

218) B

Sales ($230 per unit × 24,000 units)	$ 5,520,000
Break-even sales ($230 per unit × 17,280 units)	3,974,400
Margin of safety (in dollars)	$ 1,545,600

219) B

Sales ($230 per unit × 24,000 units)	$ 5,520,000
Break-even sales ($230 per unit × 17,280 units)	3,974,400
Margin of safety (in dollars)	$ 1,545,600

Margin of safety percentage = Margin of safety in dollars ÷ Total sales
= $1,545,600 ÷ $5,520,000 = 28%

220) B

Sales ($180 per unit × 29,800 units)	$ 5,364,000
Break-even sales ($180 per unit × 25,032 units)	4,505,760
Margin of safety (in dollars)	$ 858,240

221) B

Sales ($180 per unit × 29,800 units)	$ 5,364,000
Break-even sales ($180 per unit × 25,032 units)	4,505,760
Margin of safety (in dollars)	$ 858,240

Margin of safety percentage = Margin of safety in dollars ÷ Total budgeted (or actual) sales
= $858,240 ÷ $5,364,000 = 16%

222) D
Degree of operating leverage = Contribution margin ÷ Net operating income
= $166,400 ÷ $45,500 = 3.66

223) A
Degree of operating leverage = Contribution margin ÷ Net operating income
= $166,400 ÷ $45,500 = 3.66

Percentage change in net operating income = Degree of operating leverage × Percentage change in sales
= 3.66 × 7% = 25.60%

224) B
Degree of operating leverage = Contribution margin ÷ Net operating income
= $112,000 ÷ $6,400 = 17.5

225) B
Degree of operating leverage = Contribution margin ÷ Net operating income
= $112,000 ÷ $6,400 = 17.5
Percentage change in net operating income = Degree of operating leverage × Percentage change in sales
= 17.5 × 5% = 87.5%

226) C
Degree of operating leverage = Contribution margin ÷ Net operating income
= $251,600 ÷ $57,800 = 4.35

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227) C

Degree of operating leverage = Contribution margin ÷ Net operating income
= $251,600 ÷ $57,800 = 4.35

Percentage change in net operating income = Degree of operating leverage × Percentage change in sales
= 4.35 × 19% = 82.71%

228) C

	Product B32L	Product K84B	Total
Sales	$ 46,000	$ 27,000	$ 73,000
Variable expenses	13,800	14,670	28,470
Contribution margin	$ 32,200	$ 12,330	$ 44,530

CM ratio = Contribution margin ÷ Sales revenue = $44,530 ÷ $73,000 = 0.61

Dollar sales to break even = Fixed expenses ÷ CM ratio = $42,550 ÷ 0.61 = $69,754

229) B

	Product B32L	Product K84B
Sales (a)	$ 46,000	$ 27,000
Variable expenses	13,800	14,670
Contribution margin (b)	$ 32,200	$ 12,330
Contribution margin ratio (b) ÷ (a)	70.0%	45.7%

The overall break-even point for the entire company would decrease if the sales mix shifts toward Product B32L because Product B32L has a higher contribution margin (70.0%) than Product K84B (45.7%).

230) B

	Product R38T	Product X08S	Total
Sales	$ 29,000	$ 50,000	$ 79,000
Variable expenses	8,040	28,300	36,340
Contribution margin	$ 20,960	$ 21,700	$ 42,660

CM ratio = Contribution margin ÷ Sales revenue = $42,660 ÷ $79,000 = 0.54

Dollar sales to break even = Fixed expenses ÷ CM ratio = $34,930 ÷ 0.54 = $64,685

231) C

	Product R38T	Product X08S	Total
Sales	$ 20,000	$ 39,000	$ 59,000
Variable expenses	7,400	6,170	13,570
Contribution margin	$ 12,600	$ 32,830	$ 45,430

CM ratio = Contribution margin ÷ Sales revenue = $45,430 ÷ $59,000 = 0.77

Dollar sales to break even = Fixed expenses ÷ CM ratio = $41,160 ÷ 0.77 = $53,455

232) B

	Product R38T	Product X08S
Sales (a)	$ 20,000	$ 39,000
Variable expenses	7,400	6,170
Contribution margin (b)	$ 12,600	$ 32,830
Contribution margin ratio (b) ÷ (a)	63.0%	84.2%

The overall break-even point for the entire company would increase if the sales mix shifts toward Product R38T because Product R38T has a lower contribution margin (63.0%) than Product X08S (84.2%).

233) Essay

Sales (3,700 units)	$ 107,300
Variable expenses	66,600
Contribution margin	40,700
Fixed expenses	34,800
Net operating income	$ 5,900
Sales (3,400 units)	$ 98,600
Variable expenses	61,200
Contribution margin	37,400
Fixed expenses	34,800
Net operating income	$ 2,600

234) Essay

Sales (5,800 units)	$ 377,000
Variable expenses	249,400
Contribution margin	127,600
Fixed expenses	102,200
Net operating income	$ 25,400

235) Essay

Sales (5,200 units)	$ 327,600
Variable expenses	156,000
Contribution margin	171,600
Fixed expenses	104,600
Net operating income	$ 67,000

236) Essay

Sales (5,500 units)	$ 445,500
Variable expenses	192,500
Contribution margin	253,000
Fixed expenses	190,800
Net operating income	$ 62,200

237) Essay

Sales (2,000 units)	$ 155,000
Variable expenses	80,100
Contribution margin	74,900
Fixed expenses	57,000
Net operating income	$ 17,900
Sales (1,900 units)	$ 147,250
Variable expenses	76,095
Contribution margin	71,155
Fixed expenses	57,000
Net operating income	$ 14,155

238) Essay

Sales (2,100 units)	$ 205,800
Variable expenses	107,100
Contribution margin	98,700
Fixed expenses	82,400
Net operating income	$ 16,300
Sales (2,200 units)	$ 215,600
Variable expenses	112,200
Contribution margin	103,400
Fixed expenses	82,400
Net operating income	$ 21,000

239) Essay

The increase in net operating income would be the increased contribution margin because fixed expenses are not affected.

Selling price per unit ($350,000 ÷ 7,000 units)	$ 50	
Variable cost per unit ($245,000 ÷ 7,000 units)	35	
Unit contribution margin	$ 15	
Unit contribution margin (a)	$15	per unit
Increased unit sales (b)	40	units
Increase in net operating income (a) × (b)	$600	

Unit contribution margin (a)	$ 15	per unit
Unit sales (b)	6,900	units
Contribution margin (a) × (b)	$ 103,500	
Fixed expenses	97,500	
Net operating income	$ 6,000	

240) Essay

Selling price per unit ($180,000 ÷ 3,000 units)	$ 60	
Variable cost per unit ($126,000 ÷ 3,000 units)	42	
Unit contribution margin	$ 18	
Selling price ($60 per unit + $4 per unit)	$ 64	per unit
Variable cost per price	42	per unit
Unit contribution margin (a)	$ 22	per unit
Unit sales (3,000 units − 300 units) (b)	2,700	units
Contribution margin (a) × (b)	$ 59,400	
Fixed expenses	52,200	
Net operating income	$ 7,200	
Selling price	$ 60	per unit
Variable cost per price ($42 per unit + $6 per unit)	48	per unit
Unit contribution margin (a)	$ 12	per unit
Unit sales (3,000 units + 1,800 units) (b)	4,800	units
Contribution margin (a) × (b)	$ 57,600	
Fixed expenses ($52,200 + $3,000)	55,200	
Net operating income	$ 2,400	

241) Essay

Selling price per unit ($120,000 ÷ 2,000 units)	$ 60	
Variable cost per unit ($72,000 ÷ 2,000 units)	36	
Unit contribution margin	$ 24	
Unit contribution margin (a)	$ 24	per unit
Unit sales (b)	1,900	units
Contribution margin (a) × (b)	$ 45,600	
Fixed expenses	33,600	
Net operating income	$ 12,000	
Selling price ($60 per unit + $4 per unit)	$ 64	per unit
Variable cost per price	36	per unit
Unit contribution margin (a)	$ 28	per unit
Unit sales (2,000 units − 200 units) (b)	1,800	units
Contribution margin (a) × (b)	$ 50,400	
Fixed expenses	33,600	
Net operating income	$ 16,800	

242) Essay

Total contribution margin (a)	$ 144,000
Total unit sales (b)	8,000 units
Unit contribution margin (a) ÷ (b)	$ 18 per unit
Unit contribution margin (a)	$ 18 per unit
Unit sales (b)	7,900 units
Contribution margin (a) × (b)	$ 142,200
Fixed expenses	142,200
Net operating income	$ 0
Selling price	$ 60 per unit
Variable cost per price ($42 per unit + $5 per unit)	47 per unit
Unit contribution margin (a)	$ 13 per unit
Unit sales (8,000 units + 3,400 units) (b)	11,400 units
Contribution margin (a) × (b)	$ 148,200
Fixed expenses ($142,200 + $2,000)	144,200
Net operating income	$ 4,000

243) Essay

Total contribution margin (a)	$ 60,000
Total unit sales (b)	3,000 units
Unit contribution margin (a) ÷ (b)	$ 20 per unit
Unit contribution margin (a)	$ 20 per unit
Increased unit sales (b)	50 units
Increase in net operating income (a) × (b)	$ 1,000
Unit contribution margin (a)	$ 20 per unit
Unit sales (b)	2,900 units
Contribution margin (a) × (b)	$ 58,000
Fixed expenses	48,000
Net operating income	$ 10,000
Selling price ($50 per unit + $4 per unit)	$ 54 per unit
Variable cost per price	30 per unit
Unit contribution margin (a)	$ 24 per unit
Unit sales (b)	2,800 units
Contribution margin (a) × (b)	$ 67,200
Fixed expenses	48,000
Net operating income	$ 19,200
Selling price	$ 50 per unit
Variable cost per price ($30 per unit + $5 per unit)	35 per unit
Unit contribution margin (a)	$ 15 per unit
Unit sales (3,000 units + 450 units) (b)	3,450 units
Contribution margin (a) × (b)	$ 51,750
Fixed expenses ($48,000 + $3,000)	51,000
Net operating income	$ 750

244) Essay

CM ratio = Contribution margin ÷ Sales = $60,000 ÷ $300,000 = 20%

The increase in net operating income would be the increased contribution margin because fixed expenses are not affected.

Selling price per unit ($300,000 ÷ 5,000 units)	$ 60	
Variable cost per unit ($240,000 ÷ 5,000 units)	48	
Unit contribution margin	$ 12	
Unit contribution margin (a)	$ 12	per unit
Increased unit sales (b)	40	units
Increase in net operating income (a) × (b)	$ 480	
Selling price ($60 per unit + $4 per unit)	$ 64	per unit
Variable cost per price	48	per unit
Unit contribution margin (a)	$16	per unit
Unit sales (b)	4,600	units
Contribution margin (a) × (b)	$ 73,600	
Fixed expenses	58,800	
Net operating income	$ 14,800	

245) Essay

<ol style=" list-style-type: lower-alpha; font-weight: normal;padding-left: 20px;">
The increase in net operating income would be the increased contribution margin because fixed expenses are not affected.

Selling price per unit ($270,000 ÷ 9,000 units)	$ 30	
Variable cost per unit ($189,000 ÷ 9,000 units)	21	
Unit contribution margin	$ 9	
Unit contribution margin (a)	$ 9	per unit
Increased unit sales (b)	40	units
Increase in net operating income (a) × (b)	$ 360	

Selling price	$ 30	per unit
Variable cost per price ($21 per unit + $6 per unit)	27	per unit
Unit contribution margin (a)	$ 3	per unit
Unit sales (9,000 units + 19,200 units) (b)	28,200	units
Contribution margin (a) × (b)	$ 84,600	
Fixed expenses ($77,400 + $3,000)	80,400	
Net operating income	$ 4,200	

246) Essay

Selling price per unit ($150,000 ÷ 3,000 units)	$ 50
Variable cost per unit ($90,000 ÷ 3,000 units)	30
Unit contribution margin	$ 20

247) Essay

c. CM ratio = Contribution margin ÷ Sales = $87,500 ÷ $250,000 = 35% Dollar sales to break even = Fixed expenses ÷ CM ratio = $71,750 ÷ 35% = $205,000 Margin of safety in dollars = Total budgeted (or actual) sales − Break-even sales = $250,000 − $205,000 = $45,000

d. Degree of operating leverage = Contribution margin ÷ Net operating income = $87,500 ÷ $15,750 = 5.6

248) Essay

e. CM ratio = Contribution margin ÷ Sales = $216,000 ÷ $540,000 = 40% Dollar sales to break even = Fixed expenses ÷ CM ratio = $204,000 ÷ 40% = $510,000 Margin of safety in dollars = Total budgeted (or actual) sales − Break-even sales = $540,000 − $510,000 = $30,000 Margin of safety percentage = Margin of safety in dollars ÷ Total budgeted (or actual) sales = $30,000 ÷ $540,000 = 6%

f. Degree of operating leverage = Contribution margin ÷ Net operating income = $216,000 ÷ $12,000 = 18.0 Percentage change in net operating income = Degree of operating leverage × Percentage change in sales = 18.0 × 15% = 270%

249) Essay
Profit = (CM ratio × Sales) − Fixed expenses
= (70% × $105,000) − $48,000
= $73,500 − $48,000 = $25,500

250) Essay
Profit = (CM ratio × Sales) − Fixed expenses
= (70% × $109,000) − $50,000
= $76,300 − $50,000 = $26,300

251) Essay
Profit = (CM ratio × Sales) − Fixed expenses
= (62% × $193,000) − $91,000
= $119,660 − $91,000 = $28,660

252) Essay
Profit = (CM ratio × Sales) − Fixed expenses
= (65% × $143,000) − $62,000
= $92,950 − $62,000 = $30,950

253) Essay

New contribution margin ($72 per unit – $16 per unit)	$ 56
New unit monthly sales (5,000 units + 200 units)	5,200
New total contribution margin: 5,200 units × $56 per unit	$ 291,200
Present total contribution margin: 5,000 units × $72 per unit	360,000
Change in total contribution margin	(68,800)
Plus savings in salespersons' salaries	68,000
Change in net operating income	$ (800)

254) Essay

New contribution margin ($120 per unit – $10 per unit)	$ 110
New unit monthly sales (9,500 units + 520 units)	10,020
New total contribution margin: 10,020 units × $110 per unit	$ 1,102,200
Present total contribution margin: 9,500 units × $120 per unit	1,140,000
Change in total contribution margin	(37,800)
Plus savings in salespersons' salaries	110,000
Change in net operating income	$ 72,200

255) Essay

New contribution margin ($104 per unit – $11 per unit)	$ 93
New unit monthly sales (6,000 units + 100 units)	6,100
New total contribution margin: 6,100 units × $93 per unit	$ 567,300
Present total contribution margin: 6,000 units × $104 per unit	624,000
Change in total contribution margin	(56,700)
Plus savings in salespersons' salaries	55,000
Change in net operating income	$ (1,700)

256) Essay

New variable cost per unit ($36 per unit + $46 per unit)	$ 82
New contribution margin per unit ($200 per unit − $82 per unit)	$ 118
New unit monthly sales (1,200 units + 400 units)	1,600
New total contribution margin: 1,600 units × $118 per unit	$ 188,800
Current total contribution margin: 1,200 units × $164 per unit	196,800
Change in total contribution margin and in net operating income	$ (8,000)

Because fixed expenses are not affected by this change, the change in net operating income will be equal to the change in total contribution margin.

257) Essay

New variable cost per unit ($30 per unit + $7 per unit)	$ 37
New contribution margin per unit ($100 per unit − $37 per unit)	$ 63
New unit monthly sales (4,000 units + 500 units)	4,500
New total contribution margin: 4,500 units × $63 per unit	$ 283,500
Current total contribution margin: 4,000 units × $70 per unit	280,000
Change in total contribution margin and in net operating income	$ 3,500

Because fixed expenses are not affected by this change, the change in net operating income will be equal to the change in total contribution margin.

258) Essay

New selling price ($220 per unit − $11 per unit)	$ 209
New contribution margin ($209 per unit − $88 per unit)	$ 121
New unit monthly sales (4,000 units + 400 units)	4,400
New total contribution margin: 4,400 units × $121 per unit	$ 532,400
Present total contribution margin: 4,000 units × $132 per unit	528,000
Change in total contribution margin	4,400
Less increase in advertising budget	23,700
Change in net operating income	$ (19,300)

259) Essay

New selling price ($120 per unit − $8 per unit)	$ 112
New contribution margin ($112 per unit − $24 per unit)	$ 88
New unit monthly sales (5,000 units + 600 units)	5,600
New total contribution margin: 5,600 units × $88 per unit	$ 492,800
Present total contribution margin: 5,000 units × $96 per unit	480,000
Change in total contribution margin	12,800
Less increase in advertising budget	23,000
Change in net operating income	$ (10,200)

260) Essay

Increase in total contribution margin ($66 per unit × 150 units)	$ 9,900
Less incremental fixed expenses	8,000
Change in net operating income	$ 1,900

261) Essay

Increase in total contribution margin ($126 per unit × 150 units)	$ 18,900
Less incremental fixed expenses	17,000
Change in net operating income	$ 1,900

262) Essay

Increase in total contribution margin ($84 per unit × 150 units)	$ 12,600
Less incremental fixed expenses	13,000
Change in net operating income	$ (400)

263) Essay

New variable cost per unit ($39 per unit + $15 per unit)	$ 54
New contribution margin per unit ($130 per unit − $54 per unit)	$ 76
New unit monthly sales (1,000 units + 200 units)	1,200
New total contribution margin: 1,200 units × $76 per unit	$ 91,200
Current total contribution margin: 1,000 units × $91 per unit	91,000
Change in total contribution margin and in net operating income	$ 200

Because fixed expenses are not affected by this change, the change in net operating income will be equal to the change in total contribution margin.

264) Essay

	Per Unit	Percent of Sales
Selling price per unit	$ 160.00	100%
Variable expense per unit	70.40	44%
Contribution margin per unit and contribution margin ratio	$ 89.60	56%

Dollar sales to break even = Fixed expenses ÷ CM ratio = $153,216 ÷ 0.56 = $273,600

265) Essay

	Per Unit	Percent of Sales
Selling price per unit	$ 240.00	100%
Variable expense per unit	72.00	30%
Contribution margin per unit and contribution margin ratio	$ 168.00	70%

Unit sales to break even = Fixed expenses ÷ Unit CM = $372,960 ÷ $168 per unit = 2,220 units
Dollar sales to break even = Fixed expenses ÷ CM ratio = $372,960 ÷ 0.70 = $532,800

266) Essay

	Per Unit	Percent of Sales
Selling price per unit	$ 170.00	100%
Variable expense per unit	83.30	49%
Contribution margin per unit and contribution margin ratio	$ 86.70	51%

Unit sales to break even = Fixed expenses ÷ Unit CM = $138,720 ÷ $86.70 per unit = 1,600 units

Dollar sales to break even = Fixed expenses ÷ CM ratio = $138,720 ÷ 0.51 = $272,000

267) Essay

Selling price per unit	$ 200.00
Variable expense per unit	64.00
Contribution margin per unit	$ 136.00

Unit sales to break even = Fixed expenses ÷ Unit CM = $670,480 ÷ $136 per unit = 4,930 units

268) Essay

Selling price per unit	$ 130.00
Variable expense per unit	48.10
Contribution margin per unit	$ 81.90

Unit sales to break even = Fixed expenses ÷ Unit CM = $223,587 ÷ $81.90 per unit = 2,730 units

Managerial Accounting for Managers Edition 6 by Noreen

269) Essay

	Per Unit	Percent of Sales
Selling price per unit	$ 240.00	100%
Variable expense per unit	55.20	23%
Contribution margin per unit and contribution margin ratio	$ 184.80	77%

Dollar sales to break even = Fixed expenses ÷ CM ratio = $249,480 ÷ 0.77 = $324,000

270) Essay

	Per Unit	Percent of Sales
Selling price per unit	$ 230.00	100%
Variable expense per unit	103.50	45%
Contribution margin per unit and CM ratio	$ 126.50	55%

g. Unit sales to attain target profit = (Target profit + Fixed expenses) ÷ Unit CM = ($518,650 + $12,650) ÷ $126.50 per unit = 4,200 units

h. Dollar sales to attain target profit = (Target profit + Fixed expenses) ÷ CM ratio = ($518,650 + $63,250) ÷ 0.55 = $1,058,000

271) Essay

Dollar sales to attain target profit = (Target profit + Fixed expenses) ÷ CM ratio
= ($41,700 + $455,700) ÷ 0.60 = $829,000

272) Essay

Dollar sales to attain target profit = (Target profit + Fixed expenses) ÷ CM ratio
= ($585,000 + $11,250) ÷ 0.75 = $795,000

273) Essay

	Per Unit	Percent of Sales
Selling price per unit	$ 150.00	100%
Variable expense per unit	57.00	38%
Contribution margin per unit and CM ratio	$ 93.00	62%

i. Unit sales to attain target profit = (Target profit + Fixed expenses) ÷ Unit CM = ($381,300 + $9,300) ÷ $93.00 per unit = 4,200 units

j. Dollar sales to attain target profit = (Target profit + Fixed expenses) ÷ CM ratio = ($381,300 + $18,600) ÷ 0.62 = $645,000

274) Essay

Dollar sales to attain target profit = (Target profit + Fixed expenses) ÷ CM ratio = ($561,600 + $34,560) ÷ 0.54 = $1,104,000

275) Essay

Selling price per unit	$ 180.00
Variable expense per unit	81.00
Contribution margin per unit	$ 99.00

Unit sales to attain target profit = (Target profit + Fixed expenses) ÷ Unit CM = ($594,000 + $19,800) ÷ $99.00 per unit = 6,200 units

276) Essay

Selling price per unit	$ 180.00
Variable expense per unit	37.80
Contribution margin per unit	$ 142.20

Unit sales to attain target profit = (Target profit + Fixed expenses) ÷ Unit CM = ($483,480 + $56,880) ÷ $142.20 per unit = 3,800 units

277) Essay

Sales (at the current volume of 35,600 units) (a)	$ 3,560,000
Break-even sales (at 29,192 units)	2,919,200
Margin of safety (in dollars) (b)	$ 640,800
Margin of safety percentage, (b) ÷ (a)	18%

278) Essay

Sales (at the current volume of 37,300 units) (a)	$ 3,730,000
Break-even sales (at 26,483 units)	2,648,300
Margin of safety (in dollars) (b)	$ 1,081,700
Margin of safety percentage, (b) ÷ (a)	29%

279) Essay

Sales (at the current volume of 36,900 units) (a)	$ 8,487,000
Break-even sales (at 32,103 units)	7,383,690
Margin of safety (in dollars) (b)	$ 1,103,310
Margin of safety percentage, (b) ÷ (a)	13%

280) Essay

k. Degree of operating leverage = Contribution margin ÷ Net operating income = $269,500 ÷ $27,800 = 9.69

l. Percent increase in net operating income = Percent increase in sales × Degree of operating leverage = 3% × 9.69 = 29.07%

281) Essay

m. Degree of operating leverage = Contribution margin ÷ Net operating income = $251,100 ÷ $41,300 = 6.08

n. Percent increase in net operating income = Percent increase in sales × Degree of operating leverage = 19% × 6.08 = 115.52%

282) Essay

o. Degree of operating leverage = Contribution margin ÷ Net operating income = $46,200 ÷ $13,200 = 3.50

p. Percent increase in net operating income = Percent increase in sales × Degree of operating leverage = 10% × 3.50 = 35.00%

283) Essay

	Product W07C	Product B29Z	Total
Sales	$ 25,000	$ 27,000	$ 52,000
Variable expenses	7,000	8,600	15,600
Contribution margin	$ 18,000	$ 18,400	36,400
Fixed expenses			32,860
Net operating income			$ 3,540

	Product W07C	Product B29Z
Sales (a)	$ 25,000	$ 27,000
Contribution margin (b)	$ 18,000	$ 18,400
CM ratio (b)÷(a)	0.720	0.681

284) Essay

	Product F73A	Product L75P	Total
Sales	$ 27,000	$ 14,000	$ 41,000
Variable expenses	9,450	5,310	14,760
Contribution margin	$ 17,550	$ 8,690	26,240
Fixed expenses			21,060
Net operating income			$ 5,180

	Product F73A	Product L75P
Sales (a)	$ 27,000	$ 14,000
Contribution margin (b)	$ 17,550	$ 8,690
Contribution margin ratio (b)÷(a)	0.650	0.621

285) Essay

Sales (3,700 units)	$ 107,300
Variable expenses	66,600
Contribution margin	40,700
Fixed expenses	34,800
Net operating income	$ 5,900
Sales (3,400 units)	$ 98,600
Variable expenses	61,200
Contribution margin	37,400
Fixed expenses	34,800
Net operating income	$ 2,600

286) Essay

Sales (5,800 units)	$ 377,000
Variable expenses	249,400
Contribution margin	127,600
Fixed expenses	102,200
Net operating income	$ 25,400

287) Essay

Sales (5,500 units)	$ 445,500
Variable expenses	192,500
Contribution margin	253,000
Fixed expenses	190,800
Net operating income	$ 62,200

288) Essay

Sales (2,100 units)	$ 205,800
Variable expenses	107,100
Contribution margin	98,700
Fixed expenses	82,400
Net operating income	$ 16,300
Sales (2,200 units)	$ 215,600
Variable expenses	112,200
Contribution margin	103,400
Fixed expenses	82,400
Net operating income	$ 21,000

289) Essay

Profit = (CM ratio × Sales) − Fixed expenses
= (70% × $105,000) − $48,000
= $73,500 − $48,000 = $25,500

290) Essay

Profit = (CM ratio × Sales) − Fixed expenses
= (62% × $193,000) − $91,000
= $119,660 − $91,000 = $28,660

291) Essay

Profit = (CM ratio × Sales) − Fixed expenses
= (65% × $143,000) − $62,000
= $92,950 − $62,000 = $30,950

292) Essay

New contribution margin ($72 per unit − $16 per unit)	$ 56
New unit monthly sales (5,000 units + 200 units)	5,200
New total contribution margin: 5,200 units × $56 per unit	$ 291,200
Present total contribution margin: 5,000 units × $72 per unit	360,000
Change in total contribution margin	(68,800)
Plus savings in salespersons' salaries	68,000
Change in net operating income	$ (800)

293) Essay

New contribution margin ($104 per unit − $11 per unit)	$ 93
New unit monthly sales (6,000 units + 100 units)	6,100
New total contribution margin: 6,100 units × $93 per unit	$ 567,300
Present total contribution margin: 6,000 units × $104 per unit	624,000
Change in total contribution margin	(56,700)
Plus savings in salespersons' salaries	55,000
Change in net operating income	$ (1,700)

294) Essay

New variable cost per unit ($30 per unit + $7 per unit)	$ 37
New contribution margin per unit ($100 per unit – $37 per unit)	$ 63
New unit monthly sales (4,000 units + 500 units)	4,500
New total contribution margin: 4,500 units × $63 per unit	$ 283,500
Current total contribution margin: 4,000 units × $70 per unit	280,000
Change in total contribution margin and in net operating income	$ 3,500

Because fixed expenses are not affected by this change, the change in net operating income will be equal to the change in total contribution margin.

295) Essay

New selling price ($220 per unit – $11 per unit)	$ 209
New contribution margin ($209 per unit – $88 per unit)	$ 121
New unit monthly sales (4,000 units + 400 units)	4,400
New total contribution margin: 4,400 units × $121 per unit	$ 532,400
Present total contribution margin: 4,000 units × $132 per unit	528,000
Change in total contribution margin	4,400
Less increase in advertising budget	23,700
Change in net operating income	$ (19,300)

296) Essay

New selling price ($120 per unit – $8 per unit)	$ 112
New contribution margin ($112 per unit – $24 per unit)	$ 88
New unit monthly sales (5,000 units + 600 units)	5,600
New total contribution margin: 5,600 units × $88 per unit	$ 492,800
Present total contribution margin: 5,000 units × $96 per unit	480,000
Change in total contribution margin	12,800
Less increase in advertising budget	23,000
Change in net operating income	$ (10,200)

297) Essay

Increase in total contribution margin ($66 per unit × 150 units)	$ 9,900
Less incremental fixed expenses	8,000
Change in net operating income	$ 1,900

298) Essay

Increase in total contribution margin ($84 per unit × 150 units)	$ 12,600
Less incremental fixed expenses	13,000
Change in net operating income	$ (400)

299) Essay

New variable cost per unit ($39 per unit + $15 per unit)	$ 54
New contribution margin per unit ($130 per unit − $54 per unit)	$ 76
New unit monthly sales (1,000 units + 200 units)	1,200
New total contribution margin: 1,200 units × $76 per unit	$ 91,200
Current total contribution margin: 1,000 units × $91 per unit	91,000
Change in total contribution margin and in net operating income	$ 200

Because fixed expenses are not affected by this change, the change in net operating income will be equal to the change in total contribution margin.

300) Essay

	Per Unit	Percent of Sales
Selling price per unit	$ 160.00	100%
Variable expense per unit	70.40	44%
Contribution margin per unit and contribution margin ratio	$ 89.60	56%

Dollar sales to break even = Fixed expenses ÷ CM ratio = $153,216 ÷ 0.56 = $273,600

301) Essay

	Per Unit	Percent of Sales
Selling price per unit	$ 240.00	100%
Variable expense per unit	72.00	30%
Contribution margin per unit and contribution margin ratio	$ 168.00	70%

Unit sales to break even = Fixed expenses ÷ Unit CM = $372,960 ÷ $168 per unit = 2,220 units

Dollar sales to break even = Fixed expenses ÷ CM ratio = $372,960 ÷ 0.70 = $532,800

302) Essay

	Per Unit	Percent of Sales
Selling price per unit	$ 170.00	100%
Variable expense per unit	83.30	49%
Contribution margin per unit and contribution margin ratio	$ 86.70	51%

Unit sales to break even = Fixed expenses ÷ Unit CM = $138,720 ÷ $86.70 per unit = 1,600 units

Dollar sales to break even = Fixed expenses ÷ CM ratio = $138,720 ÷ 0.51 = $272,000

303) Essay

Selling price per unit	$ 200.00
Variable expense per unit	64.00
Contribution margin per unit	$ 136.00

Unit sales to break even = Fixed expenses ÷ Unit CM = $670,480 ÷ $136 per unit = 4,930 units

304) Essay

Selling price per unit	$ 130.00
Variable expense per unit	48.10
Contribution margin per unit	$ 81.90

Unit sales to break even = Fixed expenses ÷ Unit CM = $223,587 ÷ $81.90 per unit = 2,730 units

305) Essay

	Per Unit	Percent of Sales
Selling price per unit	$ 240.00	100%
Variable expense per unit	55.20	23%
Contribution margin per unit and contribution margin ratio	$ 184.80	77%

Dollar sales to break even = Fixed expenses ÷ CM ratio = $249,480 ÷ 0.77 = $324,000

306) Essay

	Per Unit	Percent of Sales
Selling price per unit	$ 230.00	100%
Variable expense per unit	103.50	45%
Contribution margin per unit and CM ratio	$ 126.50	55%

q. Unit sales to attain target profit = (Target profit + Fixed expenses) ÷ Unit CM = ($518,650 + $12,650) ÷ $126.50 per unit = 4,200 units

r. Dollar sales to attain target profit = (Target profit + Fixed expenses) ÷ CM ratio = ($518,650 + $63,250) ÷ 0.55 = $1,058,000

307) Essay

Dollar sales to attain target profit = (Target profit + Fixed expenses) ÷ CM ratio
= ($585,000 + $11,250) ÷ 0.75 = $795,000

308) Essay

	Per Unit	Percent of Sales
Selling price per unit	$ 150.00	100%
Variable expense per unit	57.00	38%
Contribution margin per unit and CM ratio	$ 93.00	62%

s. Unit sales to attain target profit = (Target profit + Fixed expenses) ÷ Unit CM = ($381,300 + $9,300) ÷ $93.00 per unit = 4,200 units

t. Dollar sales to attain target profit = (Target profit + Fixed expenses) ÷ CM ratio = ($381,300 + $18,600) ÷ 0.62 = $645,000

309) Essay

Dollar sales to attain target profit = (Target profit + Fixed expenses) ÷ CM ratio
= ($561,600 + $34,560) ÷ 0.54 = $1,104,000

310) Essay

Selling price per unit	$ 180.00
Variable expense per unit	81.00
Contribution margin per unit	$ 99.00

Unit sales to attain target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($594,000 + $19,800) ÷ $99.00 per unit = 6,200 units

311) Essay

Selling price per unit	$ 180.00
Variable expense per unit	37.80
Contribution margin per unit	$ 142.20

Unit sales to attain target profit = (Target profit + Fixed expenses) ÷ Unit CM
= ($483,480 + $56,880) ÷ $142.20 per unit = 3,800 units

312) Essay

Sales (at the current volume of 35,600 units) (a)	$ 3,560,000
Break-even sales (at 29,192 units)	2,919,200
Margin of safety (in dollars) (b)	$ 640,800
Margin of safety percentage, (b) ÷ (a)	18%

313) Essay

Sales (at the current volume of 37,300 units) (a)	$ 3,730,000
Break-even sales (at 26,483 units)	2,648,300
Margin of safety (in dollars) (b)	$ 1,081,700
Margin of safety percentage, (b) ÷ (a)	29%

314) Essay

Sales (at the current volume of 36,900 units) (a)	$ 8,487,000
Break-even sales (at 32,103 units)	7,383,690
Margin of safety (in dollars) (b)	$ 1,103,310
Margin of safety percentage, (b) ÷ (a)	13%

315) Essay

u. Degree of operating leverage = Contribution margin ÷ Net operating income = $269,500 ÷ $27,800 = 9.69

v. Percent increase in net operating income = Percent increase in sales × Degree of operating leverage = 3% × 9.69 = 29.07%

316) Essay

w. Degree of operating leverage = Contribution margin ÷ Net operating income = $251,100 ÷ $41,300 = 6.08

x. Percent increase in net operating income = Percent increase in sales × Degree of operating leverage = 19% × 6.08 = 115.52%

317) Essay

y. Degree of operating leverage = Contribution margin ÷ Net operating income = $46,200 ÷ $13,200 = 3.50

z. Percent increase in net operating income = Percent increase in sales × Degree of operating leverage = 10% × 3.50 = 35.00%

318) Essay

	Product W07C	Product B29Z	Total
Sales	$ 25,000	$ 27,000	$ 52,000
Variable expenses	7,000	8,600	15,600
Contribution margin	$ 18,000	$ 18,400	36,400
Fixed expenses			32,860
Net operating income			$ 3,540

	Product W07C	Product B29Z
Sales (a)	$ 25,000	$ 27,000
Contribution margin (b)	$ 18,000	$ 18,400
CM ratio (b)÷(a)	0.720	0.681

319) Essay

	Product F73A	Product L75P	Total
Sales	$ 27,000	$ 14,000	$ 41,000
Variable expenses	9,450	5,310	14,760
Contribution margin	$ 17,550	$ 8,690	26,240
Fixed expenses			21,060
Net operating income			$ 5,180

	Product F73A	Product L75P
Sales (a)	$ 27,000	$ 14,000
Contribution margin (b)	$ 17,550	$ 8,690
Contribution margin ratio (b)÷(a)	0.650	0.621

Managerial Accounting for Managers Edition 6 by Noreen

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

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

1) Which of the following statements is true?
   1. The engineering approach to the analysis of mixed costs involves a detailed statistical analysis of cost behavior using methods that minimize the squared errors.
   2. A major advantage of the high-low method of cost estimation is that it omits all data from the analysis other than the lowest and highest costs.
   3. Managers can use a variety of methods to estimate the fixed and variable components of a mixed cost. In account analysis, an account is classified as either variable or fixed based on the analyst's prior knowledge of how the cost in the account behaves.

   A) Only statement I is true.
   B) Only statement III is true.
   C) Both statements II and III are true.
   D) All of the statements are true.

2) Which of the following statements is true?
   1. The highest and lowest costs are always used to analyze a mixed cost under the high-low method.
   2. The high and low points used in the high-low method tend to be unusual and therefore the cost formula for the mixed cost may not accurately represent all of the data.

   A) Only statement I is true.
   B) Only statement II is true.
   C) Both statements are true.
   D) Neither statement is true.

3) Which of the following statements is true?
   1. In a scattergraph of cost and activity, activity is the independent variable because it causes variations in the cost.
   2. A quick look at a scattergraph of cost versus activity can reveal that there is little relation between the cost and the activity or that the relation is something other than a simple straight line. In such cases, least square regression is highly recommended for estimating fixed and variable costs.

   A) Only statement I is true.
   B) Only statement II is true.
   C) Both statements are true.
   D) Neither statement is true.

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4) Which of the following statements is true?
   1. The least-squares regression method computes the regression line that minimizes the sum of the squared deviations from the plotted points to the line.
   2. Least-squares regression selects the values for the intercept and slope of a straight line that minimize the sum of the errors.
      A) Only statement I is true.
      B) Only statement II is true.
      C) Both statements are true.
      D) Neither statement is true.

5) Which of the following statements is true?
   1. The %media:formula2.mml% (i.e., R-squared) tells us the percentage of the variation in the dependent variable (cost) that is explained by variation in the independent variable (activity).
   2. The %media:formula3.mml% (i.e., R-squared) varies from 0% to 100%, and the lower the percentage, the better the fit of the data to a straight line.
      A) Only statement I is true.
      B) Only statement II is true.
      C) Both statements are true.
      D) Neither statement is true.

6) Which of the following statements is true when referring to the high-low method of cost analysis?
   A) The high-low method has no major weaknesses.
   B) The high-low method is very hard to apply.
   C) In essence, the high-low method draws a straight line through two data points.
   D) The high-low method uses all of the available data to estimate fixed and variable costs.

7) In describing the cost formula equation, Y = a + bX, which of the following is correct:
   A) "Y" is the independent variable.
   B) "a" is the variable cost per unit.
   C) "a" and "b" are valid for all levels of activity.
   D) in the high-low method, "b" equals the change in cost divided by the change in activity.

8) Larker Brothers, Incorporated, used the high-low method to derive its cost formula for electrical power cost. According to the cost formula, the variable cost per unit of activity is $4 per machine-hour. Total electrical power cost at the high level of activity was $19,200 and at the low level of activity was $18,400. If the high level of activity was 3,300 machine hours, then the low level of activity was:

A) 3,100 machine hours
B) 3,200 machine hours
C) 3,000 machine hours
D) 2,900 machine hours

9) Gamach Corporation is a wholesaler that sells a single product. Management has provided the following cost data for two levels of monthly sales volume. The company sells the product for $104.50 per unit.

Sales volume (units)	5,000	6,000
Cost of sales	$ 295,000	$ 354,000
Selling and administrative costs	$ 186,000	$ 202,800

The best estimate of the total monthly fixed cost is:

A) $102,000
B) $518,900
C) $556,800
D) $481,000

10) Hara Corporation is a wholesaler that sells a single product. Management has provided the following cost data for two levels of monthly sales volume. The company sells the product for $159.80 per unit.

Sales volume (units)	6,000	7,000
Cost of sales	$ 363,600	$ 424,200
Selling and administrative costs	$ 531,000	$ 547,400

The best estimate of the total variable cost per unit is:

Note: Round your intermediate calculations to 2 decimal places.

A) $77.00
B) $60.60
C) $149.10
D) $138.80

11) Maintenance costs at a Straiton Corporation factory are listed below:

	Machine-Hours	Maintenance Cost
March	3,627	$ 54,384
April	3,588	$ 53,980
May	3,637	$ 54,453
June	3,638	$ 54,491
July	3,572	$ 53,843
August	3,611	$ 54,196
September	3,644	$ 54,550
October	3,609	$ 54,181
November	3,669	$ 54,767

Management believes that maintenance cost is a mixed cost that depends on machine-hours. Use the high-low method to estimate the variable and fixed components of this cost. Compute the variable component first and round off to the nearest whole cent. Compute the fixed component second and round off to the nearest whole dollar. These estimates would be closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $0.10 per machine-hour; $54,382 per month
B) $15.00 per machine-hour; $54,316 per month
C) $9.12 per machine-hour; $21,309 per month
D) $9.53 per machine-hour; $19,801 per month

12) Iacob Corporation is a wholesaler that sells a single product. Management has provided the following cost data for two levels of monthly sales volume. The company sells the product for $160.00 per unit.

Sales volume (units)	12,700	14,490
Cost of sales	$ 1,054,100	$ 1,202,670
Selling and administrative costs	$ 652,000	$ 691,380

The best estimate of the total contribution margin when 13,720 units are sold is:

A) $868,630
B) $754,600
C) $270,970
D) $369,110

13) Iacob Corporation is a wholesaler that sells a single product. Management has provided the following cost data for two levels of monthly sales volume. The company sells the product for $103.40 per unit.

Sales volume (units)	5,000	6,000
Cost of sales	$ 315,500	$ 378,600
Selling and administrative costs	$ 162,500	$ 177,600

The best estimate of the total contribution margin when 5,300 units are sold is:

Note: Round your intermediate calculations to 2 decimal places.

A) $56,710
B) $133,560
C) $41,340
D) $213,590

14) Edal Corporation has provided the following production and total cost data for two levels of monthly production volume. The company produces a single product.

Production volume	5,000 units	6,000 units
Direct materials	$ 266,500	$ 319,800
Direct labor	$ 52,000	$ 62,400
Manufacturing overhead	$ 748,500	$ 769,200

The best estimate of the total variable manufacturing cost per unit is:

Note: Round your intermediate calculations to 2 decimal places.

A) $63.70
B) $84.40
C) $53.30
D) $20.70

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15) Bakan Corporation has provided the following production and average cost data for two levels of monthly production volume. The company produces a single product.

Production volume	5,200 units	6,200 units
Direct materials	$ 85.40 per unit	$ 85.40 per unit
Direct labor	$ 31.60 per unit	$ 31.60 per unit
Manufacturing overhead	$ 74.40 per unit	$ 68.40 per unit

The best estimate of the total variable manufacturing cost per unit is:

Note: Round your intermediate calculations to 2 decimal places.

A) $150.60
B) $154.20
C) $159.40
D) $117.00

16) Bakan Corporation has provided the following production and average cost data for two levels of monthly production volume. The company produces a single product.

Production volume	3,000 units	4,000 units
Direct materials	$ 86.30 per unit	$ 86.30 per unit
Direct labor	$ 26.40 per unit	$ 26.40 per unit
Manufacturing overhead	$ 75.90 per unit	$ 60.40 per unit

The best estimate of the total variable manufacturing cost per unit is:

Note: Round your intermediate calculations to 2 decimal places.

A) $126.60
B) $86.30
C) $13.90
D) $112.70

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17) Supply costs at Coulthard Corporation's chain of gyms are listed below:

	Client-Visits	Supply Cost
March	11,652	$ 28,461
April	11,448	$ 28,355
May	11,980	$ 28,632
June	12,500	$ 28,902
July	11,712	$ 28,492
August	11,198	$ 28,225
September	11,992	$ 28,638
October	11,683	$ 28,477
November	11,831	$ 28,554

Management believes that supply cost is a mixed cost that depends on client-visits. Use the high-low method to estimate the variable and fixed components of this cost. Compute the variable component first. Then compute the fixed component, rounding off to the nearest whole dollar. Those estimates are closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $2.21 per client-visit; $28,493 per month
B) $1.10 per client-visit; $15,344 per month
C) $0.56 per client-visit; $21,897 per month
D) $0.52 per client-visit; $22,402 per month

18) Supply costs at Coulthard Corporation's chain of gyms are listed below:

	Client-Visits	Supply Cost
March	12,855	$ 23,598
April	12,283	$ 23,278
May	13,104	$ 23,742
June	12,850	$ 23,607
July	12,493	$ 23,415
August	12,794	$ 23,562
September	12,686	$ 23,496
October	12,765	$ 23,541
November	13,018	$ 23,687

Management believes that supply cost is a mixed cost that depends on client-visits. Use the high-low method to estimate the variable and fixed components of this cost. Compute the variable component first. Then compute the fixed component, rounding off to the nearest whole dollar. Those estimates are closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $1.85 per client-visit; $23,547 per month
B) $1.77 per client-visit; $557 per month
C) $0.55 per client-visit; $16,579 per month
D) $0.57 per client-visit; $16,273 per month

19) Electrical costs at one of Finfrock Corporation's factories are listed below:

	Machine-Hours	Electrical Cost
March	3,642	$ 40,537
April	3,616	$ 40,319
May	3,667	$ 40,706
June	3,634	$ 40,462
July	3,665	$ 40,703
August	3,659	$ 40,680
September	3,644	$ 40,547
October	3,612	$ 40,268
November	3,624	$ 40,364

Management believes that electrical cost is a mixed cost that depends on machine-hours. Use the high-low method to estimate the variable and fixed components of this cost. Compute the variable component first, rounding off to the nearest whole cent. Then compute the fixed component, rounding off to the nearest whole dollar. Those estimates are closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $7.96 per machine-hour; $11,517 per month
B) $11.13 per machine-hour; $40,510 per month
C) $9.61 per machine-hour; $5,533 per month
D) $0.13 per machine-hour; $40,246 per month

20) Deidoro Company has provided the following data for maintenance cost:

	Prior Year	Current Year
Machine hours	18,000	20,300
Maintenance cost	$ 34,700	$ 37,460

Maintenance cost is a mixed cost with variable and fixed components. The fixed and variable components of maintenance cost are closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $34,700 per year; $1.845 per machine hour
B) $13,100 per year; $1.845 per machine hour
C) $13,100 per year; $1.200 per machine hour
D) $34,700 per year; $1.200 per machine hour

Managerial Accounting for Managers Edition 6 by Noreen

21) Deidoro Company has provided the following data for maintenance cost:

	Prior Year	Current Year
Machine hours	8,000	10,000
Maintenance cost	$ 26,600	$ 31,000

Maintenance cost is a mixed cost with variable and fixed components. The fixed and variable components of maintenance cost are closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $26,600 per year; $3.10 per machine hour
B) $9,000 per year; $2.20 per machine hour
C) $9,000 per year; $3.10 per machine hour
D) $26,600 per year; $2.20 per machine hour

22) Caraco Corporation has provided the following production and average cost data for two levels of monthly production volume. The company produces a single product.

Production volume	11,100 units	12,100 units
Direct materials	$ 80.90 per unit	$ 80.90 per unit
Direct labor	$ 49.20 per unit	$ 49.20 per unit
Manufacturing overhead	$ 70.20 per unit	$ 65.20 per unit

The best estimate of the total cost to manufacture 11,900 units is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $2,353,050
B) $2,341,875
C) $2,303,880
D) $2,335,170

23) Caraco Corporation has provided the following production and average cost data for two levels of monthly production volume. The company produces a single product.

Production volume	7,000 units	8,000 units
Direct materials	$ 87.40 per unit	$ 87.40 per unit
Direct labor	$ 20.20 per unit	$ 20.20 per unit
Manufacturing overhead	$ 101.50 per unit	$ 90.80 per unit

The best estimate of the total cost to manufacture 7,300 units is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $1,487,375
B) $1,448,320
C) $1,500,750
D) $1,526,430

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24) A soft drink bottler incurred the following factory utility cost: $3,761 for 1,150 cases bottled and $3,834 for 1,600 cases bottled. Factory utility cost is a mixed cost containing both fixed and variable components. The variable factory utility cost per case bottled is closest to:

A) $3.27
B) $0.16
C) $2.40
D) $2.35

25) A soft drink bottler incurred the following factory utility cost: $9,246 for 5,200 cases bottled and $8,997 for 4,900 cases bottled. Factory utility cost is a mixed cost containing both fixed and variable components. The variable factory utility cost per case bottled is closest to:

A) $1.81
B) $1.78
C) $1.84
D) $0.83

26) Andom Corporation has provided the following production and average cost data for two levels of monthly production volume. The company produces a single product.

Production volume	1,000 units	2,000 units
Direct materials	$ 15.20 per unit	$ 15.20 per unit
Direct labor	$ 30.50 per unit	$ 30.50 per unit
Manufacturing overhead	$ 54.10 per unit	$ 37.40 per unit

The best estimate of the total monthly fixed manufacturing cost is:

Note: Round your intermediate calculations to 2 decimal places.

A) $74,800
B) $54,100
C) $99,800
D) $33,400

27) The following data pertains to activity and maintenance cost for two recent periods:

Activity level (units)	8,000	7,000
Maintenance cost	$ 34,000	$ 31,500

Maintenance cost is a mixed cost with both fixed and variable components. Using the high-low method, the cost formula for maintenance cost is:

Note: Round your intermediate calculations to 2 decimal places.

A) Y = $4.25 X
B) Y = $14,000 + $2.50 X
C) Y = $2,500 + $4.25 X
D) Y = $4.50 X

Managerial Accounting for Managers Edition 6 by Noreen

28) Farac Corporation has provided the following production and total cost data for two levels of monthly production volume. The company produces a single product.

Production volume	4,000 units	5,000 units
Direct materials	$ 208,800	$ 261,000
Direct labor	$ 119,200	$ 149,000
Manufacturing overhead	$ 319,200	$ 329,500

The best estimate of the total cost to manufacture 4,300 units is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $674,890
B) $665,855
C) $695,740
D) $635,970

29) The following data pertains to activity and utility cost for two recent periods:

Activity level (units)	15,000	12,000
Utility cost	$ 24,750	$ 21,000

Utility cost is a mixed cost with both fixed and variable components. Using the high-low method, the cost formula for utility cost is:

Note: Round your intermediate calculations to 2 decimal places.

A) Y = $1.65 X
B) Y = $1.75 X
C) Y = $3,750 + $1.75 X
D) Y = $6,000 + $1.25 X

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30) Dacosta Corporation has provided the following production and total cost data for two levels of monthly production volume. The company produces a single product.

Production volume	6,000 units	7,000 units
Direct materials	$ 369,600	$ 431,200
Direct labor	$ 309,600	$ 361,200
Manufacturing overhead	$ 919,800	$ 937,300

The best estimate of the total monthly fixed manufacturing cost is:

Note: Round your intermediate calculations to 2 decimal places.

A) $1,599,000
B) $1,664,350
C) $814,800
D) $1,729,700

31) Seifer Incorporated's inspection costs are listed below:

	Units Produced	Inspection Costs
April	119	$ 8,558
May	117	$ 8,535
June	113	$ 8,415
July	125	$ 8,736
August	152	$ 9,357
September	108	$ 8,320
October	120	$ 8,603
November	192	$ 10,337

Management believes that inspection cost is a mixed cost that depends on the number of units produced. Using the least-squares regression method, the estimates of the variable and fixed components of inspection cost would be closest to:

A) $24.08 per unit plus $5,709 per month
B) $67.74 per unit plus $8,858 per month
C) $24.37 per unit plus $5,658 per month
D) $24.01 per unit plus $5,727 per month

32) Your boss would like you to estimate the fixed and variable components of a particular cost. Actual data for this cost over four recent periods appear below.

	Activity	Cost
Period 1	26	$ 380
Period 2	25	$ 369
Period 3	22	$ 346
Period 4	27	$ 390

Using the least-squares regression method, what is the cost formula for this cost?

A) Y = $145.49 + $9.05X
B) Y = $0.00 + $15.86X
C) Y = $153.39 + $8.71X
D) Y = $158.82 + $5.95X

33) Your boss would like you to estimate the fixed and variable components of a particular cost. Actual data for this cost over four recent periods appear below.

	Activity	Cost
Period 1	22	$ 121
Period 2	28	$ 132
Period 3	21	$ 117
Period 4	29	$ 134

Using the least-squares regression method, what is the cost formula for this cost?

A) Y = $75.89 + $1.02X
B) Y = $72.64 + $2.13X
C) Y = $0.00 + $5.04X
D) Y = $75.50 + $2.02X

34) The management of Hamano Corporation would like for you to analyze their repair costs, which are listed below:

	Machine-Hours	Repair Costs
April	2,139	$ 33,093
May	2,168	$ 33,111
June	2,125	$ 33,088
July	2,196	$ 33,111
August	2,110	$ 33,021
September	2,212	$ 33,175
October	2,136	$ 33,062
November	2,207	$ 33,148

Management believes that repair cost is a mixed cost that depends on the number of machine-hours. Using the least-squares regression method, the estimates of the variable and fixed components of repair cost would be closest to:

A) $1.37 per machine-hour plus $30,140 per month
B) $0.81 per machine-hour plus $31,706 per month
C) $1.10 per machine-hour plus $30,731 per month
D) 15.12 per machine-hour plus $33,670 per month

35) The management of Hamano Corporation would like for you to analyze their repair costs, which are listed below:

	Machine-Hours	Repair Costs
April	4,459	$ 98,523
May	4,426	$ 98,296
June	4,493	$ 98,781
July	4,417	$ 98,207
August	4,432	$ 98,349
September	4,446	$ 98,420
October	4,489	$ 98,749
November	4,475	$ 98,654

Management believes that repair cost is a mixed cost that depends on the number of machine-hours. Using the least-squares regression method, the estimates of the variable and fixed components of repair cost would be closest to:

A) $22.11 per machine-hour plus $98,497 per month
B) $7.37 per machine-hour plus $65,670 per month
C) $8.19 per machine-hour plus $62,015 per month
D) $7.55 per machine-hour plus $64,859 per month

36) One of Matthew Corporation's competitors has learned that Matthew has a total expense per unit of $1.50 at the 15,000 unit level of activity and total expense per unit of $1.45 at the 20,000 unit level of activity. Assume that the relevant range includes all of the activity levels mentioned in this problem.
What would be the competitor's prediction of variable cost per unit for Matthew Corporation?

A) $1.30
B) $0.77
C) $1.50
D) $1.45

37) One of Matthew Corporation's competitors has learned that Matthew has a total expense per unit of $1.50 at the 15,000 unit level of activity and total expense per unit of $1.45 at the 20,000 unit level of activity. Assume that the relevant range includes all of the activity levels mentioned in this problem.
What would be the competitor's prediction of total fixed cost per period?
Note: Round your intermediate calculations to 2 decimal places.

A) $22,500
B) $28,000
C) $13,600
D) $3,000

38) One of Matthew Corporation's competitors has learned that Matthew has a total expense per unit of $1.50 at the 15,000 unit level of activity and total expense per unit of $1.45 at the 20,000 unit level of activity. Assume that the relevant range includes all of the activity levels mentioned in this problem.
What would be the competitor's prediction of total expected costs at 18,000 units?
Note: Round your intermediate calculations to 2 decimal places.

A) $16,860
B) $26,400
C) $29,100
D) $30,000

39) The following production and average cost data for two levels of monthly production volume have been supplied by a company that produces a single product:

Production volume	2,000 units	4,000 units
Direct materials	$ 88.40 per unit	$ 88.40 per unit
Direct labor	$ 20.60 per unit	$ 20.60 per unit
Manufacturing overhead	$ 86.90 per unit	$ 55.30 per unit

The best estimate of the total monthly fixed manufacturing cost is:
Note: Round your intermediate calculations to 2 decimal places.

A) $221,200
B) $391,800
C) $173,800
D) $126,400

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40) The following production and average cost data for two levels of monthly production volume have been supplied by a company that produces a single product:

Production volume	2,000 units	4,000 units
Direct materials	$ 88.40 per unit	$ 88.40 per unit
Direct labor	$ 20.60 per unit	$ 20.60 per unit
Manufacturing overhead	$ 86.90 per unit	$ 55.30 per unit

The best estimate of the total variable manufacturing cost per unit is:

Note: Round your intermediate calculations to 2 decimal places.

A) $132.70
B) $88.40
C) $23.70
D) $109.00

41) The following production and average cost data for two levels of monthly production volume have been supplied by a company that produces a single product:

Production volume	2,000 units	4,000 units
Direct materials	$ 88.40 per unit	$ 88.40 per unit
Direct labor	$ 20.60 per unit	$ 20.60 per unit
Manufacturing overhead	$ 86.90 per unit	$ 55.30 per unit

The best estimate of the total cost to manufacture 2,200 units is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $396,220
B) $430,980
C) $361,460
D) $418,340

42) Wilson Corporation's activity for the first six of the current year is as follows:

	Machine-Hours	Electrical Cost
January	2,000	$ 1,560
February	3,000	$ 2,200
March	2,400	$ 1,750
April	1,900	$ 1,520
May	1,800	$ 1,480
June	2,100	$ 1,600

Using the high-low method, the variable cost per machine hour would be:

A) $0.67
B) $0.64
C) $0.40
D) $0.60

43) Wilson Corporation's activity for the first six of the current year is as follows:

	Machine-Hours	Electrical Cost
January	2,000	$ 1,560
February	3,000	$ 2,200
March	2,400	$ 1,750
April	1,900	$ 1,520
May	1,800	$ 1,480
June	2,100	$ 1,600

Using the high-low method, the fixed portion of the electrical cost each month would be:

Note: Round your intermediate calculations to 2 decimal places.

A) $400
B) $760
C) $280
D) $190

44) Inspection costs at one of Ratulowski Corporation's factories are listed below:

	Units Produced	Inspection Costs
April	777	$ 10,176
May	807	$ 10,404
June	798	$ 10,355
July	835	$ 10,665
August	822	$ 10,542
September	795	$ 10,313
October	805	$ 10,409
November	853	$ 10,795
December	796	$ 10,310

Management believes that inspection cost is a mixed cost that depends on units produced. Using the high-low method, the estimate of the variable component of inspection cost per unit produced is closest to:

A) $8.14
B) $7.05
C) $0.12
D) $12.89

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45) Inspection costs at one of Ratulowski Corporation's factories are listed below:

	Units Produced	Inspection Costs
April	921	$ 17,812
May	981	$ 18,200
June	927	$ 17,865
July	911	$ 17,710
August	933	$ 17,894
September	918	$ 17,780
October	935	$ 17,932
November	875	$ 17,200
December	914	$ 17,738

Management believes that inspection cost is a mixed cost that depends on units produced. Using the high-low method, the estimate of the fixed component of inspection cost per month is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $17,720.00
B) $17,201.00
C) $17,711.00
D) $8,949.17

46) Inspection costs at one of Ratulowski Corporation's factories are listed below:

	Units Produced	Inspection Costs
April	777	$ 10,176
May	807	$ 10,404
June	798	$ 10,355
July	835	$ 10,665
August	822	$ 10,542
September	795	$ 10,313
October	805	$ 10,409
November	853	$ 10,795
December	796	$ 10,310

Management believes that inspection cost is a mixed cost that depends on units produced. Using the high-low method, the estimate of the fixed component of inspection cost per month is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $10,344
B) $10,441
C) $3,852
D) $10,176

47) Compton Corporation is a wholesale distributor of educational CD-ROMs. The company's records indicate the following:

	This Year	Last Year
Units Sold	250,000	200,000
Sales	$ 1,250,000	$ 1,000,000
Cost of goods sold	875,000	700,000
Gross margin	375,000	300,000
Selling and administrative expenses	222,000	210,000
Net operating income	$ 153,000	$ 90,000

Using the high-low method of analysis, what are the company's estimated variable selling and administrative expenses per unit?

A) $0.24
B) $4.17
C) $0.88
D) $0.96

48) Compton Corporation is a wholesale distributor of educational CD-ROMs. The company's records indicate the following:

	This Year	Last Year
Units Sold	250,000	200,000
Sales	$ 1,250,000	$ 1,000,000
Cost of goods sold	875,000	700,000
Gross margin	375,000	300,000
Selling and administrative expenses	222,000	210,000
Net operating income	$ 153,000	$ 90,000

Using the high-low method of analysis, what are the company's estimated total fixed selling and administrative expenses per year?

Note: Round your intermediate calculations to 2 decimal places.

A) $60,000
B) $174,000
C) $150,000
D) $162,000

49) Compton Corporation is a wholesale distributor of educational CD-ROMs. The company's records indicate the following:

	This Year	Last Year
Units Sold	250,000	200,000
Sales	$ 1,250,000	$ 1,000,000
Cost of goods sold	875,000	700,000
Gross margin	375,000	300,000
Selling and administrative expenses	222,000	210,000
Net operating income	$ 153,000	$ 90,000

What is the company's contribution margin for this year?

Note: Round your intermediate calculations to 2 decimal places.

A) $315,000
B) $(667,500)
C) $375,000
D) $213,000

50) The Blaine Corporation is a highly automated manufacturer. At an activity level of 6,000 machine setups, total overhead costs equal $240,000. Of this amount, depreciation totals $80,000 (all fixed) and lubrication totals $72,000 (all variable). The remaining $88,000 of the total overhead cost consists of utility cost (mixed). At an activity level of 9,000 setups, utility cost totals $112,000.
Assume that the relevant range includes all of the activity levels mentioned in this problem. The variable cost per setup for utilities is most likely closest to:
A) $8.00 per setup
B) $12.44 per setup
C) $4.00 per setup
D) $14.66 per setup

51) The Blaine Corporation is a highly automated manufacturer. At an activity level of 6,000 machine setups, total overhead costs equal $240,000. Of this amount, depreciation totals $80,000 (all fixed) and lubrication totals $72,000 (all variable). The remaining $88,000 of the total overhead cost consists of utility cost (mixed). At an activity level of 9,000 setups, utility cost totals $112,000.
Assume that the relevant range includes all of the activity levels mentioned in this problem. The total fixed overhead costs for Blaine Corporation are most likely closest to:
A) $112,000
B) $120,000
C) $40,000
D) $80,000

52) The Blaine Corporation is a highly automated manufacturer. At an activity level of 6,000 machine setups, total overhead costs equal $240,000. Of this amount, depreciation totals $80,000 (all fixed) and lubrication totals $72,000 (all variable). The remaining $88,000 of the total overhead cost consists of utility cost (mixed). At an activity level of 9,000 setups, utility cost totals $112,000.
Assume that the relevant range includes all of the activity levels mentioned in this problem. If 7,800 setups are projected for the next period, total expected overhead cost would be closest to:
A) $156,000
B) $236,000
C) $214,400
D) $276,000

Managerial Accounting for Managers Edition 6 by Noreen

53) Babuca Corporation has provided the following production and total cost data for two levels of monthly production volume. The company produces a single product.

Production volume	13,800 units	15,000 units
Direct materials	$ 894,240	$ 972,000
Direct labor	$ 255,300	$ 277,500
Manufacturing overhead	$ 1,010,600	$ 1,025,360

The best estimate of the total monthly fixed manufacturing cost is:

Note: Round your intermediate calculations to 2 decimal places.

A) $848,360
B) $840,860
C) $837,860
D) $843,860

54) Babuca Corporation has provided the following production and total cost data for two levels of monthly production volume. The company produces a single product.

Production volume	5,000 units	6,000 units
Direct materials	$ 103,500	$ 124,200
Direct labor	$ 282,500	$ 339,000
Manufacturing overhead	$ 667,000	$ 679,800

The best estimate of the total monthly fixed manufacturing cost is:

Note: Round your intermediate calculations to 2 decimal places.

A) $1,098,000
B) $1,053,000
C) $1,143,000
D) $603,000

55) Babuca Corporation has provided the following production and total cost data for two levels of monthly production volume. The company produces a single product.

Production volume	11,500 units	14,000 units
Direct materials	$ 761,300	$ 926,800
Direct labor	$ 270,250	$ 329,000
Manufacturing overhead	$ 1,006,500	$ 1,057,000

The best estimate of the total variable manufacturing cost per unit is:
Note: Round your intermediate calculations to 2 decimal places.

A) $109.90
B) $93.50
C) $89.70
D) $95.85

56) Babuca Corporation has provided the following production and total cost data for two levels of monthly production volume. The company produces a single product.

Production volume	5,000 units	6,000 units
Direct materials	$ 103,500	$ 124,200
Direct labor	$ 282,500	$ 339,000
Manufacturing overhead	$ 667,000	$ 679,800

The best estimate of the total variable manufacturing cost per unit is:
Note: Round your intermediate calculations to 2 decimal places.

A) $90.00
B) $77.20
C) $12.80
D) $20.70

Managerial Accounting for Managers Edition 6 by Noreen

57) Babuca Corporation has provided the following production and total cost data for two levels of monthly production volume. The company produces a single product.

Production volume	15,700 units	18,000 units
Direct materials	$ 1,028,350	$ 1,179,000
Direct labor	$ 290,450	$ 333,000
Manufacturing overhead	$ 1,009,600	$ 1,038,120

The best estimate of the total cost to manufacture 17,400 units is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $2,468,970
B) $2,492,280
C) $2,538,900
D) $2,399,040

58) Babuca Corporation has provided the following production and total cost data for two levels of monthly production volume. The company produces a single product.

Production volume	5,000 units	6,000 units
Direct materials	$ 103,500	$ 124,200
Direct labor	$ 282,500	$ 339,000
Manufacturing overhead	$ 667,000	$ 679,800

The best estimate of the total cost to manufacture 5,300 units is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $1,116,180
B) $1,062,915
C) $1,080,000
D) $1,009,650

59) Wuensch Incorporated, an escrow agent, has provided the following data concerning its office expenses:

	Escrows Completed	Office Expenses
April	53	$7,427
May	94	$9,201
June	37	$6,769
July	87	$8,902
August	40	$6,875
September	38	$6,797
October	82	$8,681
November	35	$6,678
December	62	$7,836

Management believes that office expense is a mixed cost that depends on the number of escrows completed. Note: Real estate purchases usually involve the services of an escrow agent that holds funds and prepares documents to complete the transaction.

Using the high-low method, the estimate of the variable component of office expense per escrow completed is closest to:

A) $45.44
B) $42.76
C) $88.22
D) $131.00

60) Wuensch Incorporated, an escrow agent, has provided the following data concerning its office expenses:

	Escrows Completed	Office Expenses
April	53	$7,427
May	94	$9,201
June	37	$6,769
July	87	$8,902
August	40	$6,875
September	38	$6,797
October	82	$8,681
November	35	$6,678
December	62	$7,836

Management believes that office expense is a mixed cost that depends on the number of escrows completed. Note: Real estate purchases usually involve the services of an escrow agent that holds funds and prepares documents to complete the transaction.

Using the high-low method, the estimate of the fixed component of office expense per month is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $7,685
B) $7,182
C) $6,678
D) $5,182

Managerial Accounting for Managers Edition 6 by Noreen

61) Electrical costs at one of Rome Corporation's factories are listed below:

	Machine-Hours	Electrical Cost
March	458	$ 1,007
April	423	$ 934
May	440	$ 979
June	409	$ 902
July	426	$ 952
August	372	$ 822
September	414	$ 926
October	431	$ 949
November	468	$ 1,025

Management believes that electrical cost is a mixed cost that depends on machine-hours. Using the high-low method, the estimate of the variable component of electrical cost per machine-hour is closest to:

A) $2.11
B) $1.80
C) $2.21
D) $0.47

62) Electrical costs at one of Rome Corporation's factories are listed below:

	Machine-Hours	Electrical Cost
March	458	$ 1,007
April	423	$ 934
May	440	$ 979
June	409	$ 902
July	426	$ 952
August	372	$ 822
September	414	$ 926
October	431	$ 949
November	468	$ 1,025

Management believes that electrical cost is a mixed cost that depends on machine-hours. Using the high-low method, the estimate of the fixed component of electrical cost per month is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $822
B) $743
C) $38
D) $944

Managerial Accounting for Managers Edition 6 by Noreen

63) Callander Corporation is a wholesaler that sells a single product. Management has provided the following cost data for two levels of monthly sales volume. The company sells the product for $140.50 per unit.

Sales volume (units)	6,000	7,000
Cost of sales	$ 497,400	$ 580,300
Selling and administrative costs	$ 273,600	$ 294,700

The best estimate of the total monthly fixed cost is:

Note: Round your intermediate calculations to 2 decimal places.

A) $875,000
B) $147,000
C) $771,000
D) $823,000

64) Callander Corporation is a wholesaler that sells a single product. Management has provided the following cost data for two levels of monthly sales volume. The company sells the product for $140.50 per unit.

Sales volume (units)	6,000	7,000
Cost of sales	$ 497,400	$ 580,300
Selling and administrative costs	$ 273,600	$ 294,700

The best estimate of the total variable cost per unit is:

Note: Round your intermediate calculations to 2 decimal places.

A) $82.90
B) $128.50
C) $104.00
D) $125.00

65) Callander Corporation is a wholesaler that sells a single product. Management has provided the following cost data for two levels of monthly sales volume. The company sells the product for $140.50 per unit.

Sales volume (units)	6,000	7,000
Cost of sales	$ 497,400	$ 580,300
Selling and administrative costs	$ 273,600	$ 294,700

The best estimate of the total contribution margin when 6,300 units are sold is:

Note: Round your intermediate calculations to 2 decimal places.

A) $75,600
B) $97,650
C) $362,880
D) $229,950

66) The management of Casablanca Manufacturing Corporation believes that machine-hours is an appropriate measure of activity for overhead cost. Shown below are machine-hours and total overhead costs for the past six months:

	Machine-Hours	Overhead Cost
January	150,000	$339,000
February	140,000	$328,000
March	160,000	$350,000
April	130,000	$319,500
May	170,000	$362,500
June	200,000	$400,000

Assume that the relevant range includes all of the activity levels mentioned in this problem. If Casablanca expects to incur 185,000 machine hours next month, what will the estimated total overhead cost be using the high-low method?

Note: Round your intermediate calculations to 2 decimal places.

A) $212,750
B) $359,750
C) $382,750
D) $381,700

67) The management of Casablanca Manufacturing Corporation believes that machine-hours is an appropriate measure of activity for overhead cost. Shown below are machine-hours and total overhead costs for the past six months:

	Machine-Hours	Overhead Cost
January	150,000	$339,000
February	140,000	$328,000
March	160,000	$350,000
April	130,000	$319,500
May	170,000	$362,500
June	200,000	$400,000

Assume that the relevant range includes all of the activity levels mentioned in this problem. What is Casablanca's independent variable?

A) the year
B) the machine hours
C) the total overhead cost
D) the relevant range

Managerial Accounting for Managers Edition 6 by Noreen

68) Hiss Corporation's activity for the last six months is as follows:

	Machine Hours	Electrical Cost
July	2,000	$1,560
August	3,000	$2,230
September	2,400	$1,750
October	1,900	$1,520
November	1,800	$1,450
December	2,100	$1,600

Using the high-low method of analysis, the estimated variable cost per machine hour for electricity is closest to:

A) $0.40
B) $0.65
C) $0.70
D) $0.67

69) Hiss Corporation's activity for the last six months is as follows:

	Machine - Hours	Electrical Cost
July	2,000	$1,560
August	3,000	$2,230
September	2,400	$1,750
October	1,900	$1,520
November	1,800	$1,450
December	2,100	$1,600

Using the high-low method of analysis, the estimated fixed cost per month for electricity is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $260
B) $235
C) $280
D) $800

Managerial Accounting for Managers Edition 6 by Noreen

70) Jorgenson Corporation has provided the following data for the first five months of the year:

	Machine - Hours	Lubrication Cost
January	240	$1,500
February	320	$1,600
March	400	$1,740
April	300	$1,580
May	340	$1,680

Using the high-low method of analysis, the estimated variable lubrication cost per machine hour is closest to:

A) $1.50
B) $1.25
C) $0.67
D) $1.40

71) Jorgenson Corporation has provided the following data for the first five months of the year:

	Machine Hours	Lubrication Cost
January	240	$1,500
February	320	$1,600
March	400	$1,740
April	300	$1,580
May	340	$1,680

Using the high-low method of analysis, the estimated monthly fixed component of lubrication cost is closest to:

Note: Round your intermediate calculations to 2 decimal places.

A) $1,120
B) $1,140
C) $1,170
D) $1,130

72) Jorgenson Corporation has provided the following data for the first five months of the year:

	Machine Hours	Lubrication Cost
January	265	$1,515
February	355	$1,635
March	425	$1,765
April	320	$1,615
May	365	$1,720

Using the least-squares regression method of analysis, the estimated variable lubrication cost per machine hour is closest to:

A) $0.93
B) $1.71
C) $1.59
D) $1.38

73) Jorgenson Corporation has provided the following data for the first five months of the year:

	Machine Hours	Lubrication Cost
January	240	$1,500
February	320	$1,600
March	400	$1,740
April	300	$1,580
May	340	$1,680

Using the least-squares regression method of analysis, the estimated variable lubrication cost per machine hour is closest to:

A) $0.80
B) $1.56
C) $1.40
D) $1.28

74) Jorgenson Corporation has provided the following data for the first five months of the year:

	Machine Hours	Lubrication Cost
January	240	$1,500
February	320	$1,600
March	400	$1,740
April	300	$1,580
May	340	$1,680

Using the least-squares regression method of analysis, the estimated monthly fixed component of lubrication cost is closest to:

A) $1,050
B) $1,060
C) $1,121
D) $1,144

75) Lacourse Incorporated's inspection costs are listed below:

	Units Produced	Inspection Costs
January	434	$6,138
February	384	$5,643
March	453	$6,353
April	468	$6,491
May	410	$5,893
June	385	$5,646
July	460	$6,418
August	411	$5,906

Management believes that inspection cost is a mixed cost that depends on units produced. Using the least-squares regression method, the estimate of the variable component of inspection cost per unit produced is closest to:

A) $9.54
B) $15.12
C) $10.15
D) $10.25

76) Lacourse Incorporated's inspection costs are listed below:

	Units Produced	Inspection Costs
January	647	$15,309
February	724	$15,965
March	694	$15,715
April	645	$15,271
May	696	$15,745
June	665	$15,442
July	718	$15,933
August	699	$15,739

Management believes that inspection cost is a mixed cost that depends on units produced. Using the least-squares regression method, the estimate of the variable component of inspection cost per unit produced is closest to:

A) $22.80
B) $8.82
C) $8.27
D) $8.78

77) Lacourse Incorporated's inspection costs are listed below:

	Units Produced	Inspection Costs
January	434	$6,138
February	384	$5,643
March	453	$6,353
April	468	$6,491
May	410	$5,893
June	385	$5,646
July	460	$6,418
August	411	$5,906

Management believes that inspection cost is a mixed cost that depends on units produced. Using the least-squares regression method, the estimate of the fixed component of inspection cost per month is closest to:

A) $5,643
B) $1,741
C) $5,753
D) $1,699

78) Lacourse Incorporated's inspection costs are listed below:

	Units Produced	Inspection Costs
January	647	$15,309
February	724	$15,965
March	694	$15,715
April	645	$15,271
May	696	$15,745
June	665	$15,442
July	718	$15,933
August	699	$15,739

Management believes that inspection cost is a mixed cost that depends on units produced. Using the least-squares regression method, the estimate of the fixed component of inspection cost per month is closest to:

A) $9,608
B) $15,640
C) $9,587
D) $15,271

79) Recent maintenance costs of Divers Corporation are listed below:

	Machine-Hours	Maintenance Costs
February	527	$5,144
March	499	$5,033
April	542	$5,220
May	541	$5,196
June	489	$4,973
July	543	$5,200
August	558	$5,288
September	513	$5,060

Management believes that maintenance cost is a mixed cost that depends on machine-hours. Using the least-squares regression method, the estimate of the variable component of maintenance cost per machine-hour is closest to:

A) $9.76
B) $6.00
C) $4.43
D) $4.57

80) Recent maintenance costs of Divers Corporation are listed below:

	Machine-Hours	Maintenance Costs
February	527	$5,144
March	499	$5,033
April	542	$5,220
May	541	$5,196
June	489	$4,973
July	543	$5,200
August	558	$5,288
September	513	$5,060

Management believes that maintenance cost is a mixed cost that depends on machine-hours. Using the least-squares regression method, the estimate of the fixed component of maintenance cost per month is closest to:

A) $5,139
B) $2,806
C) $4,973
D) $2,738

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

81) Arlo's T-shirt Shop only has three costs: T-shirt cost, rent cost on the shop, and utilities cost. Arlo's sells the T-shirts for $14.50 each. Management has prepared the following cost information for next month:

	At 8,000 T-shirts	At 10,000 T-shirts
T-shirt cost	$ 48,000	$ 60,000
Rent cost	$ 3,600	$ 3,600
Utilities cost	$ 6,800	$ 8,300

Assume that all of the activity levels mentioned in this problem are within the relevant range.

Required:

a. Calculate Arlo's total variable cost if 9,000 T-shirts are sold next month.
b. Prepare Arlo's contribution format income statement if 10,000 T-shirts are sold.

Managerial Accounting for Managers Edition 6 by Noreen

82) Butler Sales Company is a distributor that has an exclusive franchise to sell a particular product made by another company. Butler Sales Company's traditional format income statements for the last two years are given below:

	This Year	Last Year
Units sold	200,000	160,000
Sales revenue	$ 1,000,000	$ 800,000
Cost of goods sold	700,000	560,000
Gross margin	300,000	240,000
Selling and administrative expense	210,000	198,000
Net operating income	$ 90,000	$ 42,000

Selling and administrative expense is a mixture of fixed costs and variable costs that vary with respect to the number of units sold.

Required:

a. Estimate the company's variable selling and administration expense per unit, and its total fixed selling and administrative expense per year.
b. Compute the company's contribution margin for this year.

83) The Stephens Leadership Center provides training seminars in personal development and time management. The company is relatively new and management is seeking information regarding the Center's cost structure. The following information has been gathered since the inception of the business in January of the current year:

	Seminars Offered	Costs Incurred
January	10	$ 17,000
February	12	$ 18,800
March	15	$ 20,900
April	18	$ 23,762
May	16	$ 21,800
June	13	$ 19,400

Required:

a. Using the high-low method, estimate the variable cost per seminar and the total fixed cost per month.

b. Using the least-squares method, estimate the variable cost per seminar and the total fixed cost per month.

84) The accounting department of Archer Company, a merchandising company, has prepared the following analysis:

Cost	Cost Formula
Cost of goods sold	$ 56 per unit
Sales commissions	12% of sales
Advertising expense	$ 300,000 per month
Administrative salaries	$ 160,000 per month
Billing expense	?
Depreciation expense	$ 62,000 per month

The accounting department feels that billing expense is a mixed cost, containing both fixed and variable cost elements. The billing expenses and sales in units over the last several months follow:

	Units Sold (thousands)	Billing Expense
January	9	$ 30,000
February	11	$ 33,000
March	14	$ 36,000
April	17	$ 42,000
May	15	$ 39,000
June	12	$ 35,000

The accounting department now plans to develop a cost formula for billing expense so that a contribution format income statement can be prepared for management's use.

Required:

a. Using the least-squares method, estimate the cost formula for billing expense. Round off both the fixed cost and the variable cost per thousand units sold to the nearest whole dollar.

b. Assume that the company plans to sell 30,000 units during July at a selling price of $100 per unit. Prepare a budgeted income statement for the month, using the contribution format.

85) Grawburg Incorporated maintains a call center to take orders, answer questions, and handle complaints. The costs of the call center for a number of recent months are listed below:

	Calls Taken	Call Center Cost
April	7,560	$ 81,960
May	7,529	$ 81,773
June	7,570	$ 82,025
July	7,568	$ 81,997
August	7,535	$ 81,816
September	7,549	$ 81,895
October	7,592	$ 82,156
November	7,579	$ 82,092

Management believes that the cost of the call center is a mixed cost that depends on the number of calls taken.

Required: Estimate the variable cost per call and fixed cost per month using the least-squares regression method.

Note: Round the "Variable cost" to 2 decimal places and the "Fixed cost" to the nearest dollar amount.

86) Grawburg Incorporated maintains a call center to take orders, answer questions, and handle complaints. The costs of the call center for a number of recent months are listed below:

	Calls Taken	Call Center Cost
April	9,030	$112,323
May	9,017	$112,278
June	9,035	$112,341
July	9,065	$112,458
August	9,015	$112,290
September	9,061	$112,419
October	9,070	$112,463
November	9,067	$112,439

Management believes that the cost of the call center is a mixed cost that depends on the number of calls taken.

Required: Estimate the variable cost per call and fixed cost per month using the least-squares regression method.

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87) Furlan Printing Corporation, a book printer, has provided the following data:

	Titles Printed	Press Setup Cost
May	29	$ 3,185
June	30	$ 3,218
July	42	$ 3,703
August	24	$ 3,011
September	40	$ 3,622
October	38	$ 3,566
November	39	$ 3,568
December	35	$ 3,250

Management believes that the press setup cost is a mixed cost that depends on the number of titles printed. (A specific book that is to be printed is called a "title". Typically, thousands of copies will be printed of each title. Specific steps must be taken to setup the presses for printing each title-for example, changing the printing plates. The costs of these steps are the press setup costs.)

Required: Estimate the variable cost per title printed and the fixed cost per month using the least-squares regression method.

Note: Round the "Variable cost" to 2 decimal places and the "Fixed cost" to the nearest dollar amount.

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88) Furlan Printing Corporation, a book printer, has provided the following data:

	Titles Printed	Press Setup Cost
May	40	$6,649
June	38	$6,438
July	25	$5,307
August	28	$5,564
September	33	$6,030
October	27	$5,505
November	39	$6,551
December	36	$6,275

Management believes that the press setup cost is a mixed cost that depends on the number of titles printed. (A specific book that is to be printed is called a "title". Typically, thousands of copies will be printed of each title. Specific steps must be taken to setup the presses for printing each title-for example, changing the printing plates. The costs of these steps are the press setup costs.)

Required: Estimate the variable cost per title printed and the fixed cost per month using the least-squares regression method.

89) The management of Rutledge Corporation would like to better understand the behavior of the company's warranty costs. Those costs are listed below for a number of recent months:

	Product Returns	Warranty Cost
March	30	$3,648
April	37	$4,074
May	43	$4,460
June	41	$4,330
July	32	$3,756
August	48	$4,782
September	35	$3,932
October	33	$3,823

Management believes that warranty cost is a mixed cost that depends on the number of product returns.

Required: Estimate the variable cost per product return and the fixed cost per month using the least-squares regression method.

90) Below are cost and activity data for a particular cost over the last four periods. Your boss has asked you to analyze this cost so that management will have a better understanding of how this cost changes in response to changes in activity.

	Activity	Cost
Period 1	46	$791
Period 2	40	$738
Period 3	47	$807
Period 4	41	$746

Required: Using the least-squares regression method, estimate the cost formula for this cost.

91) Grawburg Incorporated maintains a call center to take orders, answer questions, and handle complaints. The costs of the call center for a number of recent months are listed below:

	Calls Taken	Call Center Cost
April	9,030	$112,323
May	9,017	$112,278
June	9,035	$112,341
July	9,065	$112,458
August	9,015	$112,290
September	9,061	$112,419
October	9,070	$112,463
November	9,067	$112,439

Management believes that the cost of the call center is a mixed cost that depends on the number of calls taken.

Required: Estimate the variable cost per call and fixed cost per month using the least-squares regression method.

92) Furlan Printing Corporation, a book printer, has provided the following data:

	Titles Printed	Press Setup Cost
May	40	$6,649
June	38	$6,438
July	25	$5,307
August	28	$5,564
September	33	$6,030
October	27	$5,505
November	39	$6,551
December	36	$6,275

Management believes that the press setup cost is a mixed cost that depends on the number of titles printed. (A specific book that is to be printed is called a "title". Typically, thousands of copies will be printed of each title. Specific steps must be taken to setup the presses for printing each title-for example, changing the printing plates. The costs of these steps are the press setup costs.)

Required: Estimate the variable cost per title printed and the fixed cost per month using the least-squares regression method.

Managerial Accounting for Managers Edition 6 by Noreen

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October	33	$3,823

Management believes that warranty cost is a mixed cost that depends on the number of product returns.

Required: Estimate the variable cost per product return and the fixed cost per month using the least-squares regression method.

94) Below are cost and activity data for a particular cost over the last four periods. Your boss has asked you to analyze this cost so that management will have a better understanding of how this cost changes in response to changes in activity.

	Activity	Cost
Period 1	46	$791
Period 2	40	$738
Period 3	47	$807
Period 4	41	$746

Required: Using the least-squares regression method, estimate the cost formula for this cost.

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Answer Key

Test name: Chapter 02A

1) B
2) B
3) A
4) A
5) A
6) C
7) D
8) A

Total cost = Total fixed cost + Total variable cost
High level of activity:
$19,200 = Total fixed cost + ($4 per machine-hour × 3,300 machine hours)
Total fixed cost = $19,200 − $13,200 = $6,000
Low level of activity:
$18,400 = $6,000 + ($4 per machine-hour × Low level of activity)
$4 per machine-hour × Low level of activity = $18,400 − $6,000 = $12,400
Low level of activity = 3,100 machine hours.

9) A

Variable cost of sales per unit = Change in cost ÷ Change in activity
= ($354,000 − $295,000) ÷ (6,000 units − 5,000 units)
= $59,000 ÷ 1,000 units
= $59.00 per unit
Fixed cost of sales:

Total cost at 6,000 units	$ 354,000
Less variable cost element: 6,000 units × $59.00 per unit	354,000
Fixed cost	$ 0

Variable selling and administrative cost per unit = Change in cost ÷ Change in activity
= ($202,800 − $186,000) ÷ (6,000 units − 5,000 units)
= $16,800 ÷ 1,000 units
= $16.80 per unit
Fixed cost of sales:

Total cost at 6,000 units	$ 202,800
Less variable cost element: 6,000 units × $16.80 per unit	100,800
Fixed cost	$ 102,000

Total fixed cost = $0 + $102,000 = $102,000

10) A

Variable cost of sales = Change in cost ÷ Change in activity
= ($424,200 − $363,600) ÷ (7,000 units − 6,000 units)
= $60,600 ÷ 1,000 units
= $60.60 per unit
Variable selling and administrative cost = Change in cost ÷ Change in activity
= ($547,400 − $531,000) ÷ (7,000 units − 6,000 units)
= $16,400 ÷ 1,000 units
= $16.40 per unit
Total variable cost = Variable cost of sales + Variable selling and administrative cost
= $60.60 per unit + $16.40 per unit
= $77.00 per unit

11) D

	Machine-Hours	Maintenance Cost
High level of activity (November)	3,669	$ 54,767
Low level of activity (July)	3,572	53,843
Change	97	$ 924

Variable cost per unit = Change in cost ÷ Change in activity
= $924 ÷ 97 machine-hours
= $9.53 per machine-hour
Fixed cost = Total cost − Variable cost element
= $54,767 − ($9.53 per machine-hour × 3,669 machine-hours)
= $54,767 − $34,966
= $19,801

12) B

Using the high-low method to estimate variable components of the costs:
Variable cost of sales = Change in cost ÷ Change in activity
= ($1,202,670 − $1,054,100) ÷ (14,490 units − 12,700 units)
= $148,570 ÷ 1,790 units
= $83.00 per unit
Variable selling and administrative cost = Change in cost ÷ Change in activity
= ($691,380 − $652,000) ÷ (14,490 units − 12,700 units)
= $39,380 ÷ 1,790 units
= $22.00 per unit
Total variable cost per unit = Variable cost of sales + Variable selling and administrative cost
= $83.00 per unit + $22.00 per unit = $105.00 per unit
Contribution margin per unit = Selling price per unit − Total variable cost per unit
= $160.00 per unit − $105.00 per unit = $55.00 per unit
Total contribution margin = Contribution margin per unit × Total unit sales
= $55.00 per unit × 13,720 units = $754,600

13) B
Using the high-low method to estimate variable components of the costs:
Variable cost of sales = Change in cost ÷ Change in activity
= ($378,600 − $315,500) ÷ (6,000 units − 5,000 units)

= $63,100 ÷ 1,000 units
= $63.10 per unit
Variable selling and administrative cost = Change in cost ÷ Change in activity
= ($177,600 − $162,500) ÷ (6,000 units − 5,000 units)
= $15,100 ÷ 1,000 units
= $15.10 per unit
Total variable cost per unit = Variable cost of sales + Variable selling and administrative cost
= $63.10 per unit + $15.10 per unit = $78.20 per unit
Contribution margin per unit = Selling price per unit − Total variable cost per unit
= $103.40 per unit − $78.20 per unit = $25.20 per unit
Total contribution margin = Contribution margin per unit × Total unit sales
= $25.20 per unit × 5,300 units = $133,560

14) B

Direct materials cost per unit = Change in cost ÷ Change in activity
= ($319,800 − $266,500) ÷ (6,000 units − 5,000 units)
= $53,300 ÷ 1,000 units
= $53.30 per unit
Direct labor cost per unit = Change in cost ÷ Change in activity
= ($62,400 − $52,000) ÷ (6,000 units − 5,000 units)
= $10,400 ÷ 1,000 units
= $10.40 per unit
Variable manufacturing overhead per unit = Change in cost ÷ Change in activity
= ($769,200 − $748,500) ÷ (6,000 units − 5,000 units)
= $20,700 ÷ 1,000 units
= $20.70 per unit
Total variable manufacturing cost per unit = Direct materials per unit + Direct labor per unit +
Variable manufacturing overhead per unit = $53.30 per unit + $10.40 per unit + $20.70 per unit
= $84.40 per unit

15) B
Total manufacturing overhead at 6,200 units = 6,200 units × $68.40 per unit = $424,080
Total manufacturing overhead at 5,200 units = 5,200 units × $74.40 per unit = $386,880
Variable manufacturing overhead per unit = Change in cost ÷ Change in activity
= ($424,080 − $386,880) ÷ (6,200 units − 5,200 units)
= $37,200 ÷ 1,000 units
= $37.20 per unit
Total variable manufacturing cost = Direct materials + Direct labor + Variable manufacturing overhead
= $85.40 per unit + $31.60 per unit + $37.20 per unit
= $154.20 per unit

16) A

Total manufacturing overhead at 4,000 units = 4,000 units × $60.40 per unit = $241,600
Total manufacturing overhead at 3,000 units = 3,000 units × $75.90 per unit = $227,700
Variable manufacturing overhead per unit = Change in cost ÷ Change in activity
= ($241,600 − $227,700) ÷ (4,000 units − 3,000 units)
= $13,900 ÷ 1,000 units
= $13.90 per unit
Total variable manufacturing cost = Direct materials + Direct labor + Variable manufacturing overhead
= $86.30 per unit + $26.40 per unit + $13.90 per unit
= $126.60 per unit

17) D

	Client-Visits	Supply Cost
High level of activity (June)	12,500	$ 28,902
Low level of activity (August)	11,198	28,225
Change	1,302	$ 677

Variable cost per unit = Change in cost ÷ Change in activity
= $677 ÷ 1,302 client-visits
= $0.52 per client-visit
Fixed cost = Total cost − Variable cost element
= $28,902 − ($0.52 per client-visit × 12,500 client-visits)
= $28,902 − $6,500
= $22,402

18) D

	Client-Visits	Supply Cost
High level of activity (May)	13,104	$ 23,742
Low level of activity (April)	12,283	23,278
Change	821	$ 464

Variable cost per unit = Change in cost ÷ Change in activity
= $464 ÷ 821 client-visits
= $0.57 per client-visit
Fixed cost = Total cost − Variable cost element
= $23,742 − ($0.57 per client-visit × 13,104 client-visits)
= $23,742 − $7,469
= $16,273

19) A

	Machine-Hours	Electrical Cost
High level of activity (May)	3,667	$ 40,706
Low level of activity (October)	3,612	40,268
Change	55	$ 438

Variable cost per unit = Change in cost ÷ Change in activity
= $438 ÷ 55 machine-hours
= $7.96 per machine-hour
Fixed cost = Total cost − Variable cost element
= $40,706 − ($7.96 per machine-hour × 3,667 machine-hours)
= $40,706 − $29,189
= $11,517

20) C

	Machine-Hours	Maintenance Cost
High level of activity	20,300	$ 37,460
Low level of activity	18,000	34,700
Change	2,300	$ 2,760

Variable cost per unit = Change in cost ÷ Change in activity
= $2,760 ÷ 2,300 machine-hours
= $1.20 per machine-hour
Fixed cost = Total cost − Variable cost element
= $37,460 − ($1.20 per machine-hour × 20,300 machine-hours)
= $37,460 − $24,360 = $13,100

21) B

	Machine-Hours	Maintenance Cost
High level of activity	10,000	$ 31,000
Low level of activity	8,000	26,600
Change	2,000	$ 4,400

Variable cost per unit = Change in cost ÷ Change in activity
= $4,400 ÷ 2,000 machine-hours
= $2.20 per machine-hour
Fixed cost = Total cost − Variable cost element
= $31,000 − ($2.20 per machine-hour × 10,000 machine-hours)
= $31,000 − $22,000
= $9,000

22) D

Total manufacturing overhead at 12,100 units = 12,100 units × $65.20 per unit = $788,920
Total manufacturing overhead at 11,100 units = 11,100 units × $70.20 per unit = $779,220
Variable manufacturing overhead per unit = Change in cost ÷ Change in activity
= ($788,920 − $779,220) ÷ (12,100 units − 11,100 units)
= $9,700 ÷ 1,000 units
= $9.70 per unit
Fixed cost element of manufacturing overhead = Total cost − Variable cost element
= $788,920 − (12,100 units × $9.70 per unit)
= $788,920 − $117,370
= $671,550
Total variable manufacturing cost = Direct materials + Direct labor + Manufacturing overhead
= $80.90 per unit + $49.20 per unit + $9.70 per unit
= $139.80 per unit
Total manufacturing cost = (Total variable manufacturing cost per unit × Total units manufactured) + Total fixed manufacturing cost
= ($139.80 per unit × 11,900 units) + $671,550
= $1,663,620 + $671,550
= $2,335,170

23) C

Total manufacturing overhead at 8,000 units = 8,000 units × $90.80 per unit = $726,400
Total manufacturing overhead at 7,000 units = 7,000 units × $101.50 per unit = $710,500
Variable manufacturing overhead per unit = Change in cost ÷ Change in activity
= ($726,400 − $710,500) ÷ (8,000 units − 7,000 units)
= $15,900 ÷ 1,000 units
= $15.90 per unit
Fixed cost element of manufacturing overhead = Total cost − Variable cost element
= $726,400 − (8,000 units × $15.90 per unit)
= $726,400 − $127,200
= $599,200
Total variable manufacturing cost = Direct materials + Direct labor + Manufacturing overhead
= ($87.40 per unit + $20.20 per unit) + $15.90 per unit
= $123.50 per unit
Total manufacturing cost = (Total variable manufacturing cost per unit × Total units manufactured) + Total fixed manufacturing cost
= ($123.50 per unit × 7,300 units) + $599,200
= $901,550 + $599,200
= $1,500,750

24) B

	Units	Utility Cost
High level of activity	1,600	$ 3,834
Low level of activity	1,150	3,761
Change	450	$ 73

Variable cost per unit = Change in cost ÷ Change in activity
= $73 ÷ 450 units
= $0.16 per unit

25) D

	Units	Utility Cost
High level of activity	5,200	$ 9,246
Low level of activity	4,900	8,997
Change	300	$ 249

Variable cost per unit = Change in cost ÷ Change in activity
= $249 ÷ 300 units
= $0.83 per unit

26) D
Both direct materials and direct labor are variable costs.
Total manufacturing overhead at 1,000 units = $54.10 per unit × 1,000 units = $54,100
Total manufacturing overhead at 2,000 units = $37.40 per unit × 2,000 units = $74,800
Variable element of manufacturing overhead = Change in cost ÷ Change in activity
= ($74,800 − $54,100) ÷ (2,000 units − 1,000 units)
= $20,700 ÷ 1,000 units
= $20.70 per unit
Fixed cost element of manufacturing overhead = Total cost − Total variable cost
= $74,800 − ($20.70 per unit × 2,000 units)
= $74,800 − $41,400
= $33,400

27) B

	Units	Maintenance Cost
High level of activity	8,000	$ 34,000
Low level of activity	7,000	31,500
Change	1,000	$ 2,500

Variable cost per unit = Change in cost ÷ Change in activity
= $2,500 ÷ 1,000 units
= $2.50 per unit
Fixed cost = Total cost − Variable cost element
= $34,000 − ($2.50 per unit × 8,000 units)
= $34,000 − $20,000
= $14,000

28) A

Direct materials is a variable cost, so it can be computed as follows:
Direct materials cost per unit = $208,800 ÷ 4,000 units = $52.20 per unit
Direct labor could also be computed the same way, but just to make sure it is purely a variable cost, we'll use the high-low method:
Variable direct labor cost per unit = Change in cost ÷ Change in activity
= ($149,000 − $119,200) ÷ (5,000 units − 4,000 units)
= $29,800 ÷ 1,000 units
= $29.80 per unit
Direct labor fixed cost element = Total cost − Variable cost element
= $149,000 − ($29.80 per unit × 5,000 units)
= $149,000 − $149,000 = $0
Variable manufacturing overhead cost per unit = Change in cost ÷ Change in activity
= ($329,500 − $319,200) ÷ (5,000 units − 4,000 units)
= $10,300 ÷ 1,000 units
= $10.30 per unit
Manufacturing overhead fixed cost element = Total cost − Variable cost element
= $329,500 − ($10.30 per unit × 5,000 units)
= $329,500 − $51,500 = $278,000
Total variable cost = Direct materials + Direct labor + Variable manufacturing overhead
= $52.20 per unit + $29.80 per unit + $10.30 per unit
= $92.30 per unit
Total fixed overhead cost = $278,000
Total cost to manufacture 4,300 units = Total fixed cost + Total variable cost
= $278,000 + ($92.30 per unit × 4,300 units)
= $278,000 + $396,890
= $674,890

29) D

	Units	Utility Cost
High level of activity	15,000	$ 24,750
Low level of activity	12,000	21,000
Change	3,000	$ 3,750

Variable cost per unit = Change in cost ÷ Change in activity
= $3,750 ÷ 3,000 units
= $1.25 per unit
Fixed cost = Total cost − Variable cost element
= $24,750 − ($1.25 per unit × 15,000 units)
= $24,750 − $18,750
= $6,000

30) C
Direct materials and direct labor are both strictly variable costs in this company.
Variable manufacturing overhead cost per unit = Change in cost ÷ Change in activity
= ($937,300 − $919,800) ÷ (7,000 units − 6,000 units)
= $17,500 ÷ 1,000 units
= $17.50 per unit

Fixed cost element of manufacturing overhead = Total cost − Variable cost element
= $937,300 − (7,000 units × $17.50 per unit)
= $937,300 − $122,500
= $814,800

31) A
Using Microsoft Excel, the solution is:

Intercept	$ 5,709	Fixed cost
Slope	$ 24.08	Variable cost
%media:formula4.mml%	1.00	

32) C
Using Microsoft Excel, the slope and intercept are:

Intercept	$ 153.39
Slope	$ 8.71
%media:F13252718303567316-1.ext%	0.99

Therefore, the cost formula is $153.39 per activity plus $8.71 per unit or:
Y = $153.39 + $8.71X

33) D

Using Microsoft Excel, the slope and intercept are:

Intercept	$ 75.50
Slope	$ 2.02
%media:1formula6.mml%	0.99

Therefore, the cost formula is $75.50 per activity plus $2.02 per unit or:

Y = $75.50 + $2.02X

34) C

Using Microsoft Excel, the solution is:

Intercept	$ 30,731	Fixed cost
Slope	$ 1.10	Variable cost
%media:F13252718303567324-1.ext%	0.82	

35) B

Using Microsoft Excel, the solution is:

Intercept	$ 65,670	Fixed cost
Slope	$ 7.37	Variable cost
%media:formula8.mml%	0.997	

36) A

	Units	Total Expense
High activity level ($1.45 per unit × 20,000 units)	20,000	$ 29,000
Low activity level ($1.50 per unit × 15,000 units)	15,000	$ 22,500
Change	5,000	$ 6,500

Variable cost = Change in cost ÷ Change in activity = $6,500 ÷ 5,000 units = $1.30 per unit

37) D

	Units	Total Expense
High activity level ($1.45 per unit × 20,000 units)	20,000	$ 29,000
Low activity level ($1.50 per unit × 15,000 units)	15,000	$ 22,500
Change	5,000	$ 6,500

Variable cost = Change in cost ÷ Change in activity = $6,500 ÷ 5,000 units = $1.30 per unit
Fixed cost element = Total cost − Variable cost element
= $29,000 − ($1.30 per unit × 20,000 units) = $3,000

38) B

	Units	Total Expense
High activity level ($1.45 per unit × 20,000 units)	20,000	$ 29,000
Low activity level ($1.50 per unit × 15,000 units)	15,000	$ 22,500
Change	5,000	$ 6,500

Variable cost = Change in cost ÷ Change in activity = $6,500 ÷ 5,000 units = $1.30 per unit
Fixed cost element = Total cost − Variable cost element
= $29,000 − ($1.30 per unit × 20,000 units) = $3,000
Y = a + bX = $3,000 + ($1.30 per unit × 18,000 units) = $26,400

39) D

Total manufacturing overhead at 2,000 units = 2,000 units × $86.90 per unit = $173,800
Total manufacturing overhead at 4,000 units = 4,000 units × $55.30 per unit = $221,200

	Units Produced	Total Manufacturing Overhead
High level of activity	4,000	$ 221,200
Low level of activity	2,000	173,800
Change	2,000	$ 47,400

Variable cost per unit = Change in cost ÷ Change in activity
= $47,400 ÷ 2,000 units
= $23.70 per unit
Fixed cost = Total cost − Variable cost element
= $221,200 − ($23.70 per unit × 4,000 units)
= $221,200 − $94,800
= $126,400

40) A
Total manufacturing overhead at 2,000 units = 2,000 units × $86.90 per unit = $173,800
Total manufacturing overhead at 4,000 units = 4,000 units × $55.30 per unit = $221,200

	Units Produced	Total Manufacturing Overhead
High level of activity	4,000	$ 221,200
Low level of activity	2,000	173,800
Change	2,000	$ 47,400

Variable cost per unit = Change in cost ÷ Change in activity
= $47,400 ÷ 2,000 units
= $23.70 per unit
Total variable cost per unit = Direct materials per unit + Direct labor per unit + variable manufacturing overhead per unit
= $88.40 + $20.60 + $23.70
= $132.70

41) D

Total manufacturing overhead at 2,000 units = 2,000 units × $86.90 per unit = $173,800
Total manufacturing overhead at 4,000 units = 4,000 units × $55.30 per unit = $221,200

	Units Produced	Total Manufacturing Overhead
High level of activity	4,000	$ 221,200
Low level of activity	2,000	173,800
Change	2,000	$ 47,400

Variable cost per unit = Change in cost ÷ Change in activity
= $47,400 ÷ 2,000 units
= $23.70 per unit
Fixed cost = Total cost − Variable cost element
= $221,200 − ($23.70 per unit × 4,000 units)
= $221,200 − $94,800
= $126,400
Total variable cost per unit = Direct materials per unit + Direct labor per unit + variable manufacturing overhead per unit
= $88.40 + $20.60 + $23.70
= $132.70
Total cost = Total fixed cost + Total variable cost
= $126,400 + ($132.70 per unit × 2,200 units)
= $126,400 + $291,940
= $418,340

42) D

	Machine-Hours	Electrical Cost
High activity level (February)	3,000	$ 2,200
Low activity level (May)	1,800	$ 1,480
Change	1,200	$ 720

Variable cost = Change in cost ÷ Change in activity
Variable cost = $720 ÷ 1,200 machine-hours = $0.60 per machine-hour

43) A

	Machine-Hours	Electrical Cost
High activity level (February)	3,000	$ 2,200
Low activity level (May)	1,800	$ 1,480
Change	1,200	$ 720

Variable cost = Change in cost ÷ Change in activity
Variable cost = $720 ÷ 1,200 machine-hours = $0.60 per machine-hour
Fixed cost = Total cost − Variable cost
Fixed cost = $2,200 − ($0.60 per machine-hour × 3,000 machine-hours) = $400

44) A

	Units Produced	Inspection Cost
High level of activity (November)	853	$ 10,795
Low level of activity (April)	777	10,176
Change	76	$ 619

Variable cost per unit = Change in cost ÷ Change in activity
= $619 ÷ 76 units
= $8.14 per unit

45) D

	Units Produced	Inspection Cost
High level of activity (May)	981	$ 18,200
Low level of activity (November)	875	17,200
Change	106	$ 1,000

Variable cost per unit = Change in cost ÷ Change in activity
= $1,000 ÷ 106 units
= $9.43 per unit
Total fixed cost = Total cost − Variable cost element
= $18,200 − ($9.43 per unit × 981 units)
= $18,200 − $9,250.83
= $8,949.17

46) C

	Units Produced	Inspection Cost
High level of activity (November)	853	$ 10,795
Low level of activity (April)	777	10,176
Change	76	$ 619

Variable cost per unit = Change in cost ÷ Change in activity
= $619 ÷ 76 units
= $8.14 per unit
Total fixed cost = Total cost − Variable cost element
= $10,795 − ($8.14 per unit × 853 units)
= $10,795 − $6,943
= $3,852

47) A

	Units Sold	Cost Incurred
High activity level	250,000	$ 222,000
Low activity level	250,000	$ 210,000
Change	50,000	$ 12,000

Variable cost = Change in cost ÷ Change in activity = $12,000 ÷ 50,000 units = $0.24 per unit

48) D

	Units Sold	Cost Incurred
High activity level	250,000	$ 222,000
Low activity level	200,000	$ 210,000
Change	50,000	$ 12,000

Variable cost = Change in cost ÷ Change in activity = $12,000 ÷ 50,000 units = $0.24 per unit
Fixed cost = Total cost − Variable cost
Fixed cost = $222,000 − ($0.24 per unit × 250,000 units) = $162,000

49) A

	Units Sold	Cost Incurred
High activity level	250,000	$ 222,000
Low activity level	200,000	$ 210,000
Change	50,000	$ 12,000

Variable cost = Change in cost ÷ Change in activity = $12,000 ÷ 50,000 units = $0.24 per unit

Sales		$ 1,250,000
Variable expenses:		
Cost of goods sold	$ 875,000	
Variable selling and administrative ($0.24 per unit × 250,000 units)	60,000	935,000
Contribution margin		$ 315,000

50) A

	Machine setups	Utility cost
High activity level	9,000	$ 112,000
Low activity level	6,000	$ 88,000
Change	3,000	$ 24,000

Variable cost = Change in cost ÷ Change in activity = $24,000 ÷ 3,000 machine setups = $8.00 per setup

51) B

	Machine setups	Utility cost
High activity level	9,000	$ 112,000
Low activity level	6,000	$ 88,000
Change	3,000	$ 24,000

Variable cost = Change in cost ÷ Change in activity = $24,000 ÷ 3,000 machine setups = $8.00 per setup

Fixed cost element = Total cost − Variable cost element

= $112,000 − ($8.00 per setup × 9,000 units) = $40,000

Depreciation	$ 80,000
Fixed utility cost	40,000
Total	$ 120,000

52) D

	Machine setups	Utility cost
High activity level	9,000	$ 112,000
Low activity level	6,000	$ 88,000
Change	3,000	$ 24,000

Variable cost = Change in cost ÷ Change in activity = $24,000 ÷ 3,000 machine setups = $8.00 per setup

Fixed cost element = Total cost − Variable cost element

= $112,000 − ($8.00 per setup × 9,000 units) = $40,000

Fixed costs:

Depreciation	$ 80,000
Fixed utility cost	40,000
Total fixed cost	$ 120,000

Variable costs:

Lubrication ($72,000 ÷ 6,000 machine setups)	$ 12
Variable utility cost	8
Total variable cost	$ 20

Y = a + bX = $120,000 + ($20 per machine setup × 7,800 machine setups) = $276,000

53) B

Direct materials is a variable cost.
Direct labor is usually a variable cost, but it doesn't hurt to check.
Variable cost per unit = Change in cost ÷ Change in activity
= ($277,500 − $255,300) ÷ (15,000 units − 13,800 units)
= $22,200 ÷ 1,200 units
= $18.50 per unit
Fixed cost = Total cost − Variable cost element
= $277,500 − ($18.50 per unit × 15,000 units)
= $277,500 − 277,500
= $0
Manufacturing overhead:
Variable cost per unit = Change in cost ÷ Change in activity
= ($1,025,360 − $1,010,600) ÷ (15,000 units − 13,800 units)
= $14,760 ÷ 1,200 units
= $12.30 per unit
Fixed cost = Total cost − Variable cost element
= $1,025,360 − ($12.30 per unit × 15,000 units)
= $1,025,360 − $184,500
= $840,860
Total fixed cost per month = $0 + $840,860 = $840,860

54) D

Direct materials is a variable cost.
Direct labor is usually a variable cost, but it doesn't hurt to check.
Variable cost per unit = Change in cost ÷ Change in activity
= ($339,000 − $282,500) ÷ (6,000 units − 5,000 units)
= $56,500 ÷ 1,000 units
= $56.50 per unit
Fixed cost = Total cost − Variable cost element
= $339,000 − ($56.50 per unit × 6,000 units)
= $339,000 − 339,000
= $0
Manufacturing overhead:
Variable cost per unit = Change in cost ÷ Change in activity
= ($679,800 − $667,000) ÷ (6,000 units − 5,000 units)
= $12,800 ÷ 1,000 units
= $12.80 per unit
Fixed cost = Total cost − Variable cost element
= $679,800 − ($12.80 per unit × 6,000 units)
= $679,800 − $76,800
= $603,000
Total fixed cost per month = $0 + $603,000 = $603,000

55) A

Note: There are several ways to compute the variable cost per unit for direct materials and direct labor.

Direct materials:

Variable cost per unit = Change in cost ÷ Change in activity

= ($926,800 − $761,300) ÷ (14,000 units − 11,500 units)

= $165,500 ÷ 2,500 units

= $66.20 per unit

Direct labor:

Variable cost per unit = Change in cost ÷ Change in activity

= ($329,000 − $270,250) ÷ (14,000 units − 11,500 units)

= $58,750 ÷ 2,500 units

= $23.50 per unit

Manufacturing overhead

Variable cost per unit = Change in cost ÷ Change in activity

= ($1,057,000 − $1,006,500) ÷ (14,000 units − 11,500 units)

= $50,500 ÷ 2,500 units

= $20.20 per unit

Total variable cost per unit = $66.20 per unit + $23.50 per unit + $20.20 per unit

= $109.90 per unit

56) A

Note: There are several ways to compute the variable cost per unit for direct materials and direct labor.

Direct materials:

Variable cost per unit = Change in cost ÷ Change in activity

= ($124,200 − $103,500) ÷ (6,000 units − 5,000 units)

= $20,700 ÷ 1,000 units

= $20.70 per unit

Direct labor:

Variable cost per unit = Change in cost ÷ Change in activity

= ($339,000 − $282,500) ÷ (6,000 units − 5,000 units)

= $56,500 ÷ 1,000 units

= $56.50 per unit

Manufacturing overhead

Variable cost per unit = Change in cost ÷ Change in activity

= ($679,800 − $667,000) ÷ (6,000 units − 5,000 units)

= $12,800 ÷ 1,000 units

= $12.80 per unit

Total variable cost per unit = $20.70 per unit + $56.50 per unit + $12.80 per unit

= $90.00 per unit

57) B

Note: There are several ways to compute the variable cost per unit for direct materials and direct labor.

Direct materials:

Variable cost per unit = Change in cost ÷ Change in activity

= ($1,179,000 − $1,028,350) ÷ (18,000 units − 15,700 units)

= $150,650 ÷ 2,300 units

= $65.50 per unit

Direct labor:

Variable cost per unit = Change in cost ÷ Change in activity

= ($333,000 − $290,450) ÷ (18,000 units − 15,700 units)

= $42,550 ÷ 2,300 units

= $18.50 per unit

Manufacturing overhead

Variable cost per unit = Change in cost ÷ Change in activity

= ($1,038,120 − $1,009,600) ÷ (18,000 units − 15,700 units)

= $28,520 ÷ 2,300 units

= $12.40 per unit

Total variable cost per unit = $65.50 per unit + $18.50 per unit + $12.40 per unit

= $96.40 per unit

Fixed cost = Total cost − Variable cost element

= $1,038,120 − ($12.40 per unit × 18,000 units)

= $1,038,120 − $223,200

= $814,920

Total fixed cost per month = $0 + $814,920 = $814,920

Total cost = Total fixed cost + Total variable cost

= $814,920 + ($96.40 per units × 17,400 units)

= $814,920 + $1,677,360

= $2,492,280

58) C

Note: There are several ways to compute the variable cost per unit for direct materials and direct labor.

Direct materials:

Variable cost per unit = Change in cost ÷ Change in activity

= ($124,200 − $103,500) ÷ (6,000 units − 5,000 units)

= $20,700 ÷ 1,000 units

= $20.70 per unit

Direct labor:

Variable cost per unit = Change in cost ÷ Change in activity

= ($339,000 − $282,500) ÷ (6,000 units − 5,000 units)

= $56,500 ÷ 1,000 units

= $56.50 per unit

Manufacturing overhead

Variable cost per unit = Change in cost ÷ Change in activity

= ($679,800 − $667,000) ÷ (6,000 units − 5,000 units)

= $12,800 ÷ 1,000 units

= $12.80 per unit

Total variable cost per unit = $20.70 per unit + $56.50 per unit + $12.80 per unit

= $90.00 per unit

Fixed cost = Total cost − Variable cost element

= $679,800 − ($12.80 per unit × 6,000 units)

= $679,800 − $76,800

= $603,000

Total fixed cost per month = $0 + $603,000 = $603,000

Total cost = Total fixed cost + Total variable cost

= $603,000 + ($90.00 per units × 5,300 units)

= $603,000 + $477,000

= $1,080,000

59) B

	Escrows Completed	Office Expenses
High level of activity (May)	94	$ 9,201
Low level of activity (November)	35	6,678
Change	59	$ 2,523

Variable cost per unit = Change in cost ÷ Change in activity
= $2,523 ÷ 59 escrows
= $42.76 per escrow

60) D

	Escrows Completed	Office Expenses
High level of activity (May)	94	$ 9,201
Low level of activity (November)	35	6,678
Change	59	$ 2,523

Variable cost per unit = Change in cost ÷ Change in activity
= $2,523 ÷ 59 escrows
= $42.76 per escrow

Total fixed cost = Total cost − Variable cost element
= $9,201 − ($42.76 per escrow × 94 escrows)
= $9,201 − $4,019
= $5,182

61) A

	Machine-Hours	Electrical Cost
High level of activity (November)	468	$ 1,025
Low level of activity (August)	372	$ 822
Change	96	$ 203

Variable cost per unit = Change in cost ÷ Change in activity
= $203 ÷ 96 machine-hours
= $2.11 per machine hour

62) C

	Machine-Hours	Electrical Cost
High level of activity (November)	468	$ 1,025
Low level of activity (August)	372	$ 822
Change	96	$ 203

Variable cost per unit = Change in cost ÷ Change in activity
= $203 ÷ 96 machine-hours
= $2.11 per machine hour
Total fixed cost = Total cost − Variable cost element
= $1,025 − ($2.11 per machine-hour × 468 machine-hours)
= $1,025 − $987
= $38

63) B
Cost of sales is a variable cost.
Selling and administrative costs:
Variable cost per unit = Change in cost ÷ Change in activity
= ($294,700 − $273,600) ÷ (7,000 units − 6,000 units)
= $21,100 ÷ 1,000 units

= $21.10 per unit
Fixed cost = Total cost − Variable cost element
= $294,700 − ($21.10 per unit × 7,000 units)
= $294,700 − $147,700
= $147,000

64) C

Cost of sales:
Because cost of sales is a variable cost, there are several ways to compute the variable cost per unit. Here is one:
Variable cost per unit = Change in cost ÷ Change in activity
= ($580,300 − $497,400) ÷ (7,000 units − 6,000 units)
= $82,900 ÷ 1,000 units
= $82.90 per unit
Selling and administrative costs:
Variable cost per unit = Change in cost ÷ Change in activity
= ($294,700 − $273,600) ÷ (7,000 units − 6,000 units)
= $21,100 ÷ 1,000 units
= $21.10 per unit
Total variable cost per unit = $82.90 per unit + $21.10 per unit = $104.00

65) D
Variable cost per unit = Change in cost ÷ Change in activity
= ($580,300 − $497,400) ÷ (7,000 units − 6,000 units)
= $82,900 ÷ 1,000 units
= $82.90 per unit
Selling and administrative costs:

Variable cost per unit = Change in cost ÷ Change in activity
= ($294,700 − $273,600) ÷ (7,000 units − 6,000 units)
= $21,100 ÷ 1,000 units
= $21.10 per unit
Total variable cost per unit = $82.90 per unit + $21.10 per unit = $104.00
Contribution margin per unit = Selling price per unit − Variable cost per unit
= $140.50 per unit − $104.00 per unit
= $36.50 per unit
Total contribution margin = Contribution margin per unit × Unit sales
= $36.50 per unit × 6,300 units
= $229,950

66) C

	Machine-Hours	Overhead Cost
High activity level (June)	200,000	$ 400,000
Low activity level (April)	130,000	$ 319,500
Change	70,000	$ 80,500

Variable cost = Change in cost ÷ Change in activity = $80,500 ÷ 70,000 MHs = $1.15 per MH

Fixed cost element = Total cost − Variable cost element

= $400,000 − ($1.15 per MH × 200,000 MHs) = $170,000

Y = a + bX = $170,000 + ($1.15 per MH × 185,000 MHs) = $382,750

67) B

The independent variable is the measure of activity which is machine-hours in this case.

68) B

	Machine-Hours	Electrical Cost
High activity level (August)	3,000	$ 2,230
Low activity level (November)	1,800	$ 1,450
Change	1,200	$ 780

Variable cost = Change in cost ÷ Change in activity

Variable cost = $780 ÷ 1,200 machine-hours = $0.65 per machine-hour

69) C

	Machine-Hours	Electrical Cost
High activity level (August)	3,000	$ 2,230
Low activity level (November)	1,800	$ 1,450
Change	1,200	$ 780

Variable cost = Change in cost ÷ Change in activity

Variable cost = $780 ÷ 1,200 machine-hours = $0.65 per machine-hour

Fixed cost = Total cost − Variable cost

Fixed cost = $2,230 − ($0.65 per machine-hour × 3,000 machine-hours) = $280

70) A

	Machine-Hours	Lubrication Cost
High activity level (March)	400	$ 1,740
Low activity level (January)	240	$ 1,500
Change	160	$ 240

Variable cost = Change in cost ÷ Change in activity = $240 ÷ 160 machine hours = $1.50 per machine hour

71) B

	Machine-Hours	Lubrication Cost
High activity level (March)	400	$ 1,740
Low activity level (January)	240	$ 1,500
Change	160	$ 240

Variable cost = Change in cost ÷ Change in activity = $240 ÷ 160 machine hours = $1.50 per machine hour
Fixed cost = Total cost − Variable cost
Fixed cost = $1,740 − ($1.50 per machine hour × 400 machine hours) = $1,140

72) C
<p>The regression line is Y = 1,100.05 + 1.5894X and the R^2 is 0.9303.
Therefore, the variable cost per machine hour for lubrication is closest to $1.59.

73) B
<p>The regression line is Y = 1,121.18 + 1.5588X and the R^2 is 0.9607.
Therefore, the variable cost per machine hour for lubrication is closest to $1.56.

74) C
<p>The regression line is Y = 1,121.18 + 1.5588X and the R^2 is 0.9607.
Therefore, the fixed component of lubrication cost is closest to $1,121.

75) D
Using Microsoft Excel functions, the solution is: Variable cost per unit produced = Slope = $10.25

76) B

Using Microsoft Excel functions, the solution is:
Variable cost per unit produced = Slope = $8.82

77) D
Using Microsoft Excel functions, the solution is:
Fixed cost per month = Intercept = $1,699

78) C
Using Microsoft Excel functions, the solution is:
Fixed cost per month = Intercept = $9,587

79) C
Using Microsoft Excel functions, the solution is:
Maintenance cost per machine-hour = Slope = $4.43

80) B
Using Microsoft Excel functions, the solution is:
Fixed maintenance cost per month = Intercept = $2,806

81) Essay

T-shirt cost Variable cost per unit = Change in cost ÷ Change in activity
= ($60,000 − $48,000) ÷ (10,000 T-shirts − 8,000 T-shirts)
= $12,000 ÷ 2,000 T-shirts
= $6 per T-shirt
Fixed cost = Total cost − Total variable cost
= $48,000 − (8,000 T-shirts × $6 per T-shirt)
= $0
Rent cost is fixed at $3,600 per month.
Utilities cost:
Variable cost per unit = Change in cost ÷ Change in activity
= ($8,300 − $6,800) ÷ (10,000 T-shirts − 8,000 T-shirts)
= $1,500 ÷ 2,000 T-shirts
= $0.75 per T-shirt
Fixed cost = Total cost − Total variable cost
= $8,300 − (8,000 T-shirts × $0.75 per T-shirt)
= $2,300
Y = $2,300 + $0.75X

T-shirt cost ($6 per T-shirt × 9,000 T-shirts)	$ 54,000
Utilities cost ($0.75 per T-shirt × 9,000 T-shirts)	6,750
Total variable cost	$ 60,750

Arlo's T-Shirt Shop
Contribution Format Income Statement
Monthly Sales Volume of 10,000 T-Shirts

Sales ($14.50 per unit × 10,000 units)		$145,000
Variable expenses:		
T-shirt cost ($6 per unit × 10,000 units)	$60,000	
Utilities cost ($0.75 per unit × 10,000 units)	7,500	67,500
Contribution margin		77,500
Fixed expenses:		
Rent cost	3,600	
Utilities cost	2,300	5,900
Net operating income		$71,600

82) Essay

	Units sold	Cost	
High level of activity	200,000	$ 210,000	
Low level of activity	160,000	198,000	
Change	40,000	$ 12,000	
Sales revenue			$ 1,000,000
Variable expenses:			
Cost of goods sold		$ 700,000	
Selling and administrative expenses ($0.30 per unit × 200,000 units)		60,000	760,000
Contribution margin			$ 240,000

83) Essay

<ol style="list-style-type:lower-alpha;padding-left:20px;">
High-Low Method:

	Seminars Offered	Cost Incurred
High activity level (April)	18	$ 23,762
Low activity level (January)	10	$ 17,000
Change	8	$ 6,762

84) Essay

Using least-squares regression, the cost formula is Y = $16,952 + $1,452X, where X is a thousand units.

Archer Company
Budgeted Income Statement
For the month of June

Sales ($100 per unit × 30,000 units)		$ 3,000,000
Variable expenses:		
Cost of goods sold ($56 per unit × 30,000 units)	$ 1,680,000	
Commissions (0.12 × $3,000,000)	360,000	
Billing expense ($1,452 × 30)	43,560	2,083,560
Contribution margin		916,440
Fixed expenses:		
Advertising expense	300,000	
Administrative salaries	160,000	
Billing expense	16,952	
Depreciation expense	62,000	538,952
Net operating income		$ 377,488

85) Essay
Using Microsoft Excel functions, the solution is:
Variable cost per call = Slope = $6.09
Fixed cost per month = Intercept = $35,914

86) Essay
Using Microsoft Excel functions, the solution is:
Variable cost per call = Slope = $3.27
Fixed cost per month = Intercept = $82,758

87) Essay

The solution using Microsoft Excel functions is:
Variable cost per title printed = Slope = $38.77
Fixed cost per month = Intercept = $2,048
The solution using the formulas in the text is:
n = 8
ΣX = 277
ΣY = $27,123
ΣXY = $949,985
$\sum X^2 = 9{,}871$
$b = [n(\sum XY) - (\sum X)(\sum Y)] \div [n(\sum X^2) - (\sum X)^2]$
$= [8(\$949{,}985) - (277)(\$27{,}123)] \div [8(9{,}871) - (277)^2]$
= $38.77
a = [(ΣY) − b(ΣX)] ÷ n
= [($27,123) − $38.77(277)] ÷ 8
= $2,048

88) Essay
The solution using Microsoft Excel functions is:
Variable cost per title printed = Slope = $88.21
Fixed cost per month = Intercept = $3,107

The solution using the formulas in the text is:
n = 8
ΣX = 266
ΣY = $48,319
ΣXY = $1,628,085
$\sum X^2 = 9{,}088$
$b = [n(\sum XY) - (\sum X)(\sum Y)] \div [n(\sum X^2) - (\sum X)^2]$
$= [8(\$1{,}628{,}085) - (266)(\$48{,}319)] \div [8(9{,}088) - (266)^2]$
= $88.21
a = [(ΣY) − b(ΣX)] ÷ n
= [($48,319) − $88.21(266)] ÷ 8
= $3,107

89) Essay

The solution using Microsoft Excel functions is:
Variable cost per product return = Slope = $63.59
Fixed cost per month = Intercept = $1,724
The solution using the formulas in the text is:
n = 8
ΣX = 299
ΣY = $32,805
ΣXY = $1,242,995
$\sum X^2 = 11,441$
$b = [n(\sum XY) - (\sum X)(\sum Y)] \div [n(\sum X^2) - (\sum X)^2]$
$= [8(\$1,242,995) - (299)(\$32,805)] \div [8(11,441) - (299)^2]$
= $63.59
a = [(ΣY) − b(ΣX)] ÷ n
= [($32,805) − $63.59(299)] ÷ 8
= $1,724
Any difference in the solutions is due to rounding errors when the formulas are used.

90) Essay
The solution using Microsoft Excel functions is:
Variable cost = Slope = $9.57

Fixed cost = Intercept = $354.31
Therefore, the cost formula is $354.31 per period plus $9.57 per unit of activity or:
Y = $354.31 + $9.57X
The solution using the formulas in the text is:
n = 4
ΣX = 174
ΣY = 3,082
ΣXY = 134,421
$\sum X^2 = 7,606$
$b = [n(\sum XY) - (\sum X)(\sum Y)] \div [n(\sum X^2) - (\sum X)^2]$
$= [4(134,421) - (174)(3,082)] \div [4(7,606) - (174)^2]$
= $9.57 (rounded to nearest whole cent)
a = [(ΣY)−b(ΣX)] ÷ n
= [(3,082) − 9.57(174)] ÷ 4
= $354 (rounded to nearest whole dollar)
Cost formula: Y = $354 + $9.57X.

91) Essay

Using Microsoft Excel functions, the solution is:
Variable cost per call = Slope = $3.27
Fixed cost per month = Intercept = $82,758

92) Essay
The solution using Microsoft Excel functions is:
Variable cost per title printed = Slope = $88.21
Fixed cost per month = Intercept = $3,107
The solution using the formulas in the text is:
n = 8
ΣX = 266
ΣY = $48,319
ΣXY = $1,628,085

$$\sum X^2 = 9,088$$

$$b = [n(\sum XY) - (\sum X)(\sum Y)]/[n(\sum X^2) - (\sum X)^2]$$

$$= [8(\$1,628,085) - (266)(\$48,319)]/[8(9,088) - (266)^2]$$

= $88.21
a = [(ΣY) − b(ΣX)]/n
= [($48,319) − $88.21(266)]/8
= $3,107

93) Essay

The solution using Microsoft Excel functions is:
Variable cost per product return = Slope = $63.59
Fixed cost per month = Intercept = $1,724
The solution using the formulas in the text is:
n = 8
ΣX = 299
ΣY = $32,805
ΣXY = $1,242,995
$\sum X^2 = 11,441$
$b = [n(\sum XY) - (\sum X)(\sum Y)]/[n(\sum X^2) - (\sum X)^2]$
$= [8(\$1,242,995) - (299)(\$32,805)]/[8(11,441) - (299)^2]$
= $63.59
a = [(ΣY) − b(ΣX)]/n
= [($32,805) − $63.59(299)]/8
= $1,724
Any difference in the solutions is due to rounding errors when the formulas are used.

94) Essay
The solution using Microsoft Excel functions is:
Variable cost = Slope = $9.57

Fixed cost = Intercept = $354.31
Therefore, the cost formula is $354.31 per period plus $9.57 per unit of activity or:
Y = $354.31 + $9.57X
The solution using the formulas in the text is:
n = 4
ΣX = 174
ΣY = 3,082
ΣXY = 134,421
$\sum X^2 = 7,606$
$b = [n(\sum XY) - (\sum X)(\sum Y)]/[n(\sum X^2) - (\sum X)^2]$
$= [4(134,421) - (174)(3,082)]/[4(7,606) - (174)^2]$
= $9.57 (rounded to nearest whole cent)
a = [(ΣY)−b(ΣX)]/n
= [(3,082) − 9.57(174)]/4
= $354 (rounded to nearest whole dollar)
Cost formula: Y = $354 + $9.57X.