Williams Financial and Managerial Accounting, 19e

Chapter 20 Test Bank – Static

**True / False Questions**

1. Costs that increase in total amount in direct proportion to an increase in output are called variable costs.

**TRUE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Topic: Cost-Volume Relationships

2. When cost-volume-profit analysis is used, the need for a cost accounting system is eliminated.

**FALSE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 1 Easy

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Topic: Cost-Volume Relationships

3. With variable costs, the cost per unit varies with changes in volume.

**FALSE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Topic: Cost-Volume Relationships

4. With fixed costs, the cost per unit varies with changes in volume.

**TRUE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Topic: Cost-Volume Relationships

5. Any business that operates at less than capacity will have smaller fixed costs than variable costs.

**FALSE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Learning Objective: 20-02 Explain how economies of scale can reduce unit costs.

Topic: Cost-Volume Relationships

Topic: Economies of Scale

6. Executive salaries are typically considered variable costs.

**FALSE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Topic: Cost-Volume Relationships

7. As volume increases, per unit variable costs will decrease on a per-unit basis and stay the same in total.

**FALSE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Topic: Cost-Volume Relationships

8. As volume increases, per unit fixed costs stay the same.

**FALSE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Learning Objective: 20-02 Explain how economies of scale can reduce unit costs.

Topic: Cost-Volume Relationships

Topic: Economies of Scale

9. As volume increases, total fixed costs remain the same.

**TRUE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Learning Objective: 20-02 Explain how economies of scale can reduce unit costs.

Topic: Cost-Volume Relationships

Topic: Economies of Scale

10. One characteristic common to all types of costs is the tendency to rise and fall in direct proportion to changes in the volume of business output.

**FALSE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Topic: Cost-Volume Relationships

11. Economies of scale can be achieved by using facilities more intensively.

**TRUE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-02 Explain how economies of scale can reduce unit costs.

Topic: Economies of Scale

12. The range over which output may be expected to vary is called the relevant range.

**TRUE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-02 Explain how economies of scale can reduce unit costs.

Topic: Economies of Scale

13. The volume of output that causes fixed costs to be equal in amount to total revenue is called the break-even point.

**FALSE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-03 Prepare a cost-volume-profit graph.

Topic: Preparing and Using a Cost-Volume-Profit Graph

14. The break-even point is the level of activity at which operating income is equal to cost of goods sold.

**FALSE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-03 Prepare a cost-volume-profit graph.

Topic: Preparing and Using a Cost-Volume-Profit Graph

15. The contribution margin is the difference between total revenue and fixed costs.

**FALSE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

16. The higher the unit contribution margin, the higher the volume of unit sales required to cover a given amount of fixed costs.

**FALSE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

17. Contribution margin equals total revenue minus variable costs.

**TRUE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

18. The contribution margin is the amount by which revenue exceeds variable costs.

**TRUE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

19. Contribution margin ratio is equal to contribution margin per unit divided by unit sales price.

**TRUE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

20. The margin of safety sales volume times the contribution margin ratio equals operating income.

**TRUE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

21. Margin of safety is the dollar amount by which actual sales volume exceeds the break-even sales volume.

**TRUE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

22. Cost-volume-profit analysis is often complex when applied to a company with different products.

**TRUE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-08 Use CVP when a company sells multiple products.

Topic: CVP Analysis When a Company Sells Many Products

23. Sales of products with high contribution margins often are described as quantity sales.

**FALSE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-08 Use CVP when a company sells multiple products.

Topic: CVP Analysis When a Company Sells Many Products

24. The high-low method is the only method to be used when determining semivariable costs.

**FALSE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Determining Semivariable Cost Elements: The High-Low Method

25. In cost-volume-profit analysis, the number of units sold is assumed to be equal to the number of units produced.

**TRUE**

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Determining Semivariable Cost Elements: The High-Low Method

**Multiple Choice Questions**

26. Which of the following is an example of a fixed cost for an airline?

**A**. Depreciation on the corporate headquarters

B. Fuel costs

C. Income taxes expense

D. Passengers' meals

AACSB: Analytical Thinking

AICPA: BB Industry

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Topic: Cost-Volume Relationships

27. Fixed costs would include all of the following except:

A. Rent for the warehouse.

B. Annual salary of the CEO.

C. Depreciation.

**D**. Sales commission expense.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Topic: Cost-Volume Relationships

28. Which of the following is typically a variable cost?

A. Insurance expense

B. Amortization expense

**C**. Sales commission expense

D. Executive salaries expense

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 1 Easy

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Topic: Cost-Volume Relationships

29. Within the relevant range, fixed costs:

A. Fall as sales volume falls.

B. Rise as sales volume rises.

C. Rise as sales volume falls.

**D**. Remain steady when sales volume changes.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 1 Easy

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Topic: Cost-Volume Relationships

30. When volume increases, fixed cost per unit:

A. Increases.

**B**. Decreases.

C. Stays the same.

D. Increases or decreases, depending upon the situation.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Topic: Cost-Volume Relationships

31. A semivariable cost:

A. Increases and decreases directly and proportionately with changes in volume.

**B**. Changes in response to a change in volume, but not proportionately.

C. Increases if volume increases, but remains constant if volume decreases.

D. Changes inversely in response to a change in volume.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Topic: Cost-Volume Relationships

32. A company's relevant range of production is:

A. The production range from zero to 100% of plant capacity.

**B**. The production range over which CVP assumptions are valid.

C. The production range beyond the break-even point.

D. The production range that covers fixed but not variable costs.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-02 Explain how economies of scale can reduce unit costs.

Topic: Economies of Scale

33. In cost-volume-profit analysis, income tax expense:

A. Is included among the monthly operating expenses as a variable cost.

B. Is considered a fixed cost of doing business.

C. Is treated as a semivariable cost that is partially dependent upon sales volume.

**D**. Is generally ignored.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 2 Medium

Learning Objective: 20-03 Prepare a cost-volume-profit graph.

Topic: Preparing and Using a Cost-Volume-Profit Graph

34. The break-even point in a cost-volume-profit graph is always found:

A. At 50% of full capacity.

B. At the sales volume resulting in the lowest average unit cost.

C. At the volume at which total revenue equals total variable costs.

**D**. At the volume at which total revenue equals total fixed costs plus total variable costs.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-03 Prepare a cost-volume-profit graph.

Topic: Preparing and Using a Cost-Volume-Profit Graph

35. Management expects total sales of $40 million, a margin of safety of $10 million, and a contribution margin ratio of 45%. Which of the following estimated amounts is not consistent with this information?

A. Variable costs, $22 million

B. Fixed costs, $13.5 million

**C**. Operating income, $6 million

D. Break-even sales volume, $30 million

Feedback:

Variable costs = $40,000,000 − ($40,000,000 × 0.45) = $22,000,000

Fixed costs = $30,000,000 × 0.45 = $13,500,000

Break-even sales volume = $40,000,000 − $10,000,000 = $30,000,000

Only Operating income is not consistent ($4,500,000).

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Analyze

Difficulty: 3 Hard

Learning Objective: 20-03 Prepare a cost-volume-profit graph.

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: Preparing and Using a Cost-Volume-Profit Graph

Topic: Contribution Margin: A Key Relationship

Topic: How Many Units Must We Sell?

36. How will a company's contribution margin be affected by an investment in equipment that increases fixed costs in order to achieve a reduction in direct labor cost?

**A**. Contribution margin will increase.

B. Contribution margin will fall.

C. Contribution margin will either increase or decrease depending on the relative magnitudes of the changes in fixed and variable costs.

D. Contribution margin will remain the same.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

37. A 45% contribution margin ratio means that:

A. The company should contribute 45% of its operating income to qualified charities for maximum tax benefits.

B. 55% of the company's revenue is consumed by fixed and variable costs.

C. The company's revenue has increased by 45% during the current accounting period.

**D**. 45% of the company's revenue is available to cover fixed costs and to contribute toward operating income.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

38. The contribution margin ratio is expressed as:

**A**. A percentage of revenue.

B. A total dollar amount for the period.

C. A contribution margin per unit.

D. Total contribution margin amount.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

39. A company with monthly revenue of $120,000, variable costs of $50,000, and fixed costs of $40,000 has a contribution margin of:

A. $90,000.

B. $80,000.

**C**. $70,000.

D. $30,000.

Feedback:

$120,000 − $50,000 = $70,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

40. A company with monthly fixed costs of $170,000 expects to earn monthly operating income of $25,000 by selling 6,500 units per month. What is the company's expected unit contribution margin?

**A**. $30 per unit

B. $26 per unit

C. $22 per unit

D. The information given is insufficient to determine unit contribution margin.

Feedback:

$170,000 + $25,000 = 6,500 × CM; CM = $30

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

41. If the monthly sales volume required to break even is $190,000 and monthly fixed costs are $55,900, the contribution margin ratio is closest to:

**A**. 29%.

B. 71%.

C. 23%.

D. 340%.

Feedback:

$190,000 × CM = $55,900; CM = 29%

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Analyze

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

42. If the unit sales price is $12, variable costs are $6 per unit and fixed costs are $26,000 what is the contribution margin ratio per unit?

A. 40%

**B**. 50%

C. 60%

D. 70%

Feedback:

($12 − $6) ÷ $12 = 50%

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

43. A company's most profitable products are often those which:

**A**. Have the highest contribution margin ratios and the highest sales volumes.

B. Have the highest contribution margin ratios and the lowest sales volumes.

C. Have the lowest contribution margin ratios and the highest sales volumes.

D. Have the lowest contribution margin ratios and the lowest sales volumes.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

44. Millar Company produces a single product that it sells for $89 a unit. If the fixed costs of manufacturing and selling the product are $68,400 a month and the variable costs are $57 a unit, which of the below is correct?

A. The fixed costs amount to $32 per unit at any level of output within a relevant volume range.

B. The company will break even with a sales volume of $68,400 a month.

C. An increase in sales volume above $68,400 a month will cause an increase in fixed costs.

**D**. The contribution margin per unit of product is $32.

Feedback:

$89 − $57 = $32

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Analyze

Difficulty: 3 Hard

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

45. In comparison to selling a product with a low contribution margin ratio, selling a product with a high contribution margin ratio always:

**A**. Requires less dollar sales volume to cover a given level of fixed costs.

B. Results in a greater margin of safety.

C. Results in higher operating income.

D. Results in a higher contribution margin per unit sold.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

46. The contribution margin ratio is computed as:

**A**. Sales minus variable costs, divided by sales.

B. Fixed costs plus variable costs, divided by sales.

C. Sales minus fixed costs, divided by sales.

D. Sales divided by variable costs.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

[Section Break 47-51]

[The following information applies to the questions displayed below.]

Mitchell Corporation manufactures a single product. The selling price is $85 per unit, and variable costs amount to $68 per unit. The fixed costs are $16,500 per month.

47. Refer to the information above. What is the contribution margin ratio of Mitchell 's product?

A. 65%

B. 80%

C. 72%

**D**. 20%

Feedback:

($85 − $68) ÷ $85 = 20%

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

48. Refer to the information above. What is the monthly sales volume in dollars necessary to break-even?

**A**. $82,500

B. $66,500

C. $97,059

D. $77,500

Feedback:

$16,500 ÷ 0.20 = $82,500

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

49. Refer to the information above. How many units must be sold each month to earn a monthly operating income of $8,000? (Round your final answer up to the nearest whole number.)

A. 971 units

**B**. 1,442 units

C. 122,500 units

D. 353 units

Feedback:

($16,500 + $8,000) ÷ $17 = 1,441.18, rounded up to 1,442

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

50. Refer to the information above. What will be the monthly margin of safety (in dollars) if 1,800 units are sold each month?

A. $82,500

**B**. $70,500

C. $12,000

D. $16,500

Feedback:

(1,800 × $85) − $82,500 = $70,500

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 3 Hard

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

51. Refer to the information above. What will be Mitchell's monthly operating income if 1,800 units are sold each month?

A. $136,500

B. $70,500

C. $30,600

**D**. $14,100

Feedback:

(1,800 × $17) − $16,500 = $14,100

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

[Section Break 52-54]

[The following information applies to the questions displayed below.]

The following data are available for product no. CK74, manufactured and sold by Ruby Corporation:

|  |  |  |  |
| --- | --- | --- | --- |
| Maximum capacity with present facilities |  | 4,500 | units |
| Total fixed cost (per period) | $ | 986,337 |  |
| Variable cost per unit | $ | 120.29 |  |
| Sales price per unit | $ | 200.48 |  |

52. Refer to the information above. The contribution margin per unit for product no. CK74 is:

A. $26.

**B**. $80.19

C. $117.

D. $63.

Feedback:

$200.48 − $120.29 = $80.19

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

53. Refer to the information above. The number of units of CK74 that Ruby must sell to break- even is:

A. 30,000.

B. 20,500.

C. 8,200.

**D**. 12,300.

Feedback:

$986,337 ÷ $80.19 = 12,300

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

54. Refer to the information above. The dollar sales volume necessary to produce operating income of $245,000 is closest to: (Round the answer to the nearest whole number.)

A. $2,052,228.

B. $4,124,000.

C. $2,465,842.

**D**. $3,078,343.

Feedback:

($986,337 + $245,000) ÷ 0.4 = $3,078,342.50, rounded to $3,078,343

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 3 Hard

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

55. In order to calculate break-even sales units, fixed costs are divided by the:

**A**. Contribution margin per unit.

B. Contribution margin percentage.

C. Target operating income.

D. Sales volume.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

56. All other things held constant, how will an increase in selling price affect the break-even point measured in units?

**A**. The break-even point will decrease.

B. The break-even point will increase.

C. The break-even point will remain constant.

D. The effect on the break-even point can't be predicted with certainty.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

57. If unit sales prices are $7 and variable costs are $5 per unit, how many units would have to be sold to break-even if fixed costs equal $8,000?

A. 2,000 units

B. 3,000 units

**C**. 4,000 units

D. 3,800 units

Feedback:

$8,000 ÷ ($7.00 − $5.00) = 4,000 units

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

58. If the unit sales price is $7 and variable costs are $3, how many units have to be sold to earn a profit of $3,600 if fixed costs equal $5,000?

A. 900 units

B. 1,250 units

C. 1,500 units

**D**. 2,150 units

Feedback:

($5,000 + $3,600) ÷ ($7.00 − $3.00) = 2,150 units

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

59. If the unit sales price is $12, variable costs are $6 per unit, and fixed costs are $36,000, what sales volume (in dollars) is necessary to break-even?

A. $90,000

**B**. $72,000

C. $70,000

D. $60,000

Feedback:

$36,000 ÷ 0.50 = $72,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

60. If the unit sales price is $14, variable costs are $7 per unit and fixed costs are $42,000, how many units must be sold to earn an income of $250,000? (Round the answer up to the next whole number.)

A. 52,142 units

**B**. 41,715 units

C. 34,762 units

D. 29,796 units

Feedback:

($42,000 + $250,000) ÷ $7 = 41,715 units

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

61. If monthly fixed costs are $21,000 and the contribution margin ratio is 42%, the monthly sales volume required to break even is:

A. $8,820.

**B**. $50,000.

C. $78,000.

D. $39,207.

Feedback:

$21,000 ÷ 0.42 = $50,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Analyze

Difficulty: 3 Hard

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

[Section Break 62-66]

[The following information applies to the questions displayed below.]

Accents Associates sells only one product, with a current selling price of $70 per unit. Variable costs are 40% of this selling price, and fixed costs are $12,000 per month. Management has decided to reduce the selling price to $65 per unit in an effort to increase sales. Assume that the cost of the product and fixed operating expenses are not changed by this reduction in selling price.

62. Refer to the information above. At the current selling price of $70 per unit, the contribution margin ratio is:

**A**. 60%.

B. 40%.

C. 67%.

D. 120%.

Feedback:

($70 − $28) ÷ $70 = 60%

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

63. Refer to the information above. At the current selling price of $70 per unit, the dollar volume of sales per month necessary for Accents to break-even is:

A. $12,000.

**B**. $20,000.

C. $30,000.

D. Some other amount.

Feedback:

$12,000 ÷ 0.6 = $20,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

64. Refer to the information above. At the current selling price of $70 per unit, what dollar volume of sales per month is required for Accents to earn a monthly operating income of $15,000?

A. $25,000

B. $30,000

**C**. $45,000

D. Some other amount

Feedback:

($12,000 + $15,000) ÷ 0.6 = $45,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

65. Refer to the information above. At the reduced selling price of $65 per unit, the contribution margin ratio is: (Round the answer to one decimal place.)

A. 43.1%.

**B**. 56.9%.

C. 52.8%.

D. 60.0%.

Feedback:

($65 − $28) ÷ $65 = 56.9%

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

66. Refer to the information above. At the reduced selling price of $65 per unit, what dollar volume of sales per month is required to break-even? (Round your intermediate percentage to one decimal place and final answer to nearest whole dollar.)

A. $27,842

B. $22,727

**C**. $21,090

D. $29,540

Feedback:

$12,000 ÷ 0.569 = $21,089.63, or $21,090

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

[Section Break 67-71]

[The following information applies to the questions displayed below.]

Grand Gimmicks Company produces a single product with a current selling price of $170. Variable costs are $130 per unit, and fixed costs per month average $6,240. Management is considering increasing the selling price to $190 per unit. Assume that the variable cost per unit of the product and monthly fixed expenses will not change as a result of the proposed increase in selling price.

67. Refer to the information above. At the current selling price of $170 per unit, the contribution margin ratio is approximately:

**A**. 23.5%.

B. 76.4%.

C. 34.7%.

D. 21.3%.

Feedback:

($170 − $130) ÷ $170 = 23.5%

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

68. Refer to the information above. At the current selling price of $170 per unit, closest to what dollar volume of sales per month is required for Grand Gimmicks to break-even? (Round your intermediate percentage to one decimal place and final answer to the nearest whole dollar.)

A. $6,178

B. $8,299

**C**. $26,554

D. $20,800

Feedback:

$6,240 ÷ 0.235 = $26,553.19, rounded up to $26,554

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

69. Refer to the information above. At the current selling price of $170 per unit, closest to what dollar volume of sales per month is necessary for Grand Gimmicks to generate monthly operating income of $12,000? (Round the intermediate percentage to one decimal place.)

A. $24,162

B. $51,063

C. $58,838

**D**. $77,617

Feedback:

($12,000 + $6,240) ÷ 0.235 = $77,617.02

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

70. Refer to the information above. At the proposed increased selling price of $190 per unit, the contribution margin ratio is closest to:

A. 60.2%.

**B**. 31.6%.

C. 68.4%.

D. 50.8%.

Feedback:

($190 − $130) ÷ $190 = 31.6%

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

71. Refer to the information above. At the proposed increased selling price of $190 per unit, closest to what dollar volume of sales per month is required to break-even? (Round your intermediate percentage to one decimal place.)

**A**. $19,747

B. $10,400

C. $9,123

D. $18,480

Feedback:

$6,240 ÷ 0.316 = $19,746.8, rounded up to $19,747

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

72. The margin of safety is calculated by:

A. Dividing fixed costs plus target income by the contribution margin.

B. Subtracting break-even income from current income.

**C**. Subtracting break-even sales from current sales.

D. Subtracting fixed costs from current contribution margin.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

73. The dollar amount by which sales can decline before an operating loss is incurred is called the:

A. Contribution margin.

B. Contribution margin ratio.

**C**. Margin of safety.

D. Relevant range.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

74. A company with an operating income of $72,000 and a contribution margin ratio of 56% has a margin of safety of: (Round the answer to the nearest whole number.)

A. $40,320.

**B**. $128,571.

C. $163,636.

D. It is not possible to determine the margin of safety from the information provided.

Feedback:

$72,000 ÷ 0.56 = $128,571

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

75. In the area of cost-volume-profit analysis, the contribution margin ratio shows how much each dollar of sales contributes to:

**A**. Cover the fixed costs of the business and providing operating income.

B. Fixed expenses and variable expenses.

C. Variable expenses and interest charges.

D. Variable expenses when production is at normal capacity.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

76. If a product sells for $8, variable costs are $6 and fixed costs are $150,000, what would total sales have to be in order to break-even?

A. $390,000

B. $399,999

**C**. $600,000

D. $699,999

Feedback:

$150,000 ÷ ($8 − $6) = 75,000 × $8 = $600,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Analyze

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

77. The following information is available:

|  |  |  |  |
| --- | --- | --- | --- |
| Sales | $ | 90,000 |  |
| Break-even sales | $ | 50,000 |  |
| Contribution margin ratio |  | 26 | % |

What is the operating income?

A. $40,000

B. $50,000

C. $8,000

**D**. $10,400

Feedback:

($90,000 − $50,000) × 0.26 = $10,400

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

78. Product X sells for $35 per unit and has related variable costs of $25 per unit. The fixed costs of producing product X are $65,000 per month. How many units of product X must be sold each month to earn a monthly operating income of $85,000?

A. 2,833 units

B. 6,000 units

**C**. 15,000 units

D. 10,000 units

Feedback:

($65,000 + $85,000) ÷ $10 = 15,000 units

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

[Section Break 79-83]

[The following information applies to the questions displayed below.]

Sultan Company produces a single product. The selling price is $50 per unit, and variable costs amount to $20 per unit. Sultan's fixed costs per month total $80,000.

79. Refer to the information above. What is the contribution margin ratio of Sultan 's product?

A. 25%

B. 75%

**C**. 60%

D. 40%

Feedback:

($50 − $20) ÷ $50 = 60%

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Topic: Contribution Margin: A Key Relationship

80. Refer to the information above. What is the monthly sales volume in dollars necessary to break-even? (Round the answer to the nearest dollar.)

A. $320,000

B. $106,667

C. $200,000

**D**. $133,333

Feedback:

$80,000 ÷ 0.6 = $133,333

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

81. Refer to the information above. How many units must be sold each month to earn a monthly operating income of $25,000?

A. 833 units

B. 2,300 units

**C**. 3,500 units

D. Some other amount

Feedback:

($80,000 + $25,000) ÷ $30 = 3,500

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

82. Refer to the information above. What will be the monthly margin of safety (in dollars) if 3,000 units are sold each month? (Round the answer to the nearest dollar.)

**A**. $16,667

B. $100,000

C. $43,333

D. $150,000

Feedback:

(3,000 × $50) − $133,333 = $16,667

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Analyze

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

83. Refer to the information above. What will be Sultan 's monthly operating income if 3,700 units are sold each month?

A. $15,000

**B**. $31,000

C. $75,000

D. $105,000

Feedback:

(3,700 × $30) − $80,000 = $31,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Analyze

Difficulty: 2 Medium

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: How Many Units Must We Sell?

84. A product sells for $125, variable costs are $80, and fixed costs are $45,000. If the selling price can be increased by 20% with a similar increase in variable costs, how many fewer units would have to be sold to earn $300,000? (Round the answer to the nearest unit.)

A. 5,595 units

B. 7,667 units

**C**. 1,278 units

D. 6,389 units

Feedback:

[($45,000 + $300,000) ÷ ($125 − $80)] − [($45,000 + $300,000) ÷ {($125 × 120%) − ($80 × 120%)}] = 1,278 units

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 3 Hard

Learning Objective: 20-06 Use the contribution margin ratio to estimate the change in operating income caused by a change in sales volume.

Topic: What Change in Operating Income Do We Anticipate?

85. Operating income can be calculated by:

A. Dividing fixed costs by the contribution margin ratio.

B. Multiplying fixed costs by the contribution margin ratio.

**C**. Multiplying the margin of safety by the contribution margin ratio.

D. Dividing the margin of safety by the contribution margin ratio.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-06 Use the contribution margin ratio to estimate the change in operating income caused by a change in sales volume.

Topic: What Change in Operating Income Do We Anticipate?

86. Montclair Company earns an average contribution margin ratio of 40% on its sales. The local store manager estimates that he can increase monthly sales volume by $45,000 by spending an additional $7,000 per month for direct mail advertising. Compute the monthly increase in operating income if the manager's estimate about the increased sales volume is accurate.

**A**. $11,000

B. $23,000

C. $16,000

D. $18,000

Feedback:

($45,000 × 0.4) − $7,000 = $11,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Analyze

Difficulty: 3 Hard

Learning Objective: 20-07 Use CVP relationships to evaluate a new marketing strategy.

Topic: Business Applications of CVP

87. Raymond & Sons generates an average contribution margin ratio of 45% on its sales. Management estimates that by spending $3,500 more per month to rent additional facilities, the business will be able to increase operating income by $10,000 per month. Management must feel that the additional facilities will increase monthly sales volume (in dollars) by:

A. $4,725.

B. $8,775.

C. $13,500.

**D**. $30,000.

Feedback:

0.45x − $3,500 = $10,000

0.45x = $13,500

x = $30,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Analyze

Difficulty: 3 Hard

Learning Objective: 20-07 Use CVP relationships to evaluate a new marketing strategy.

Topic: Business Applications of CVP

88. The Davidson Company's breakeven point in units is 40,000. Assuming that variable costs are 60% and fixed costs are $300,000, what is the company's projected operating income if sales are $1,000,000?

A. $750,000

**B**. $100,000

C. $250,000

D. $400,000

Feedback:

($1,000,000 × 40%) − $300,000 = $100,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-07 Use CVP relationships to evaluate a new marketing strategy.

Topic: Business Applications of CVP

89. The Gillett Company's breakeven point in units is 25,000. Assuming that variable costs are 50% and fixed costs are $500,000, what is the company's projected operating income if sales are $1,250,000?

A. $750,000

B. $100,000

**C**. $125,000

D. $400,000

Feedback:

($1,250,000 × 50%) − $500,000 = $125,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-07 Use CVP relationships to evaluate a new marketing strategy.

Topic: Business Applications of CVP

90. The Parry Company’s breakeven point in units is 20,000. Assuming that variable costs are 30% and fixed costs are $100,000, what is the company’s projected operating income if sales are $750,000?

**A**. $425,000

B. $125,000

C. $250,000

D. $400,000

Feedback:

($750,000 × (100% − 30%)) − $100,000 = $425,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-07 Use CVP relationships to evaluate a new marketing strategy.

Topic: Business Applications of CVP

[Section Break 91-92]

[The following information applies to the questions displayed below.]

Grayson Enterprises manufactures springs and shock absorbers. Springs account for 40% of the company's total sales revenue, whereas shocks account for about 60%. The contribution margin ratios for springs and shocks are 45% and 35%, respectively. Grayson's fixed costs average $450,000 per month.

91. Refer to the information above. Grayson's monthly break-even point expressed in sales dollars is: (Round the answer to the nearest dollar.)

A. $1,000,000.

B. $1,285,714.

**C**. $1,153,846.

D. $2,285,714.

Feedback:

$450,000 ÷ [(0.40 × 0.45) + (0.60 × 0.35)] = $1,153,846

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 3 Hard

Learning Objective: 20-08 Use CVP when a company sells multiple products.

Topic: CVP Analysis When a Company Sells Many Products

92. Refer to the information above. In order to earn an operating income of $252,000, Grayson's monthly sales must be:

A. $1,700,000.

B. $1,750,000.

**C**. $1,800,000.

D. $1,850,000.

Feedback:

($450,000 + $252,000) ÷ [(0.40 × 0.45) + (0.60 × 0.35)] = $1,800,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 3 Hard

Learning Objective: 20-08 Use CVP when a company sells multiple products.

Topic: CVP Analysis When a Company Sells Many Products

93. Nanu Corporation manufactures two products; data are shown below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Contribution Margin Ratio** |  | **Relative Sales Mix** | | |
| Product X | 40% |  |  | 40% |  |
| Product Y | 30% |  |  | 60% |  |

If Nanu's monthly fixed costs average $425,000, what is its break-even point expressed in sales dollars?

A. $1,320,000

**B**. $1,250,000

C. $1,400,000

D. $990,000

Feedback:

Average contribution margin = (40% × 40%) + (30% × $60%) = 34%

$425,000 ÷ 34% = $1,250,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 3 Hard

Learning Objective: 20-08 Use CVP when a company sells multiple products.

Topic: CVP Analysis When a Company Sells Many Products

94. Unique Corporation manufactures two products; data are shown below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Contribution Margin Ratio** |  | **Relative Sales Mix** | | |
| Product D | 50% |  |  | 40% |  |
| Product F | 30% |  |  | 60% |  |

If Unique's monthly fixed costs average $400,000, what is its break-even point expressed in sales dollars? (Round the answer to the nearest dollar.)

A. $1,320,462

B. $1,250,000

C. $1,400,000

**D**. $1,052,632

Feedback:

Average contribution margin = (50% × 40%) + (30% × 60%) = 38%

$400,000 ÷ 38% = $1,052,632 rounded

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 3 Hard

Learning Objective: 20-08 Use CVP when a company sells multiple products.

Topic: CVP Analysis When a Company Sells Many Products

95. Stupper Corporation manufactures two products; data are shown below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Contribution Margin Ratio** |  | **Relative Sales Mix** | | |
| Product D | 50% |  |  | 60% |  |
| Product F | 60% |  |  | 40% |  |

If Stupper's monthly fixed costs average $200,000, what is its break-even point expressed in sales dollars? (Round the answer to the nearest dollar.)

A. $320,000

B. $250,000

**C**. $370,370

D. $152,632

Feedback:

Average contribution margin = (50% × 60%) + (60% × 40%) = 54%

$200,000 ÷ 54% = $370,370 rounded

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 3 Hard

Learning Objective: 20-08 Use CVP when a company sells multiple products.

Topic: CVP Analysis When a Company Sells Many Products

[Section Break 96-98]

[The following information applies to the questions displayed below.]

The following information is available regarding the total manufacturing overhead of Olsen Company for a recent four-month period.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Machine Hours** |  | **Manufacturing Overhead** | | |
| April | 90,000 |  | $ | 170,000 |  |
| May | 80,000 |  | $ | 153,000 |  |
| June | 110,000 |  | $ | 198,000 |  |
| July | 95,000 |  | $ | 181,000 |  |

96. Refer to the information above. Using the high-low method, compute the variable element of manufacturing overhead cost per machine hour.

A. $0.87 per machine hour

**B**. $1.50 per machine hour

C. $1.40 per machine hour

D. $2.10 per machine hour

Feedback:

($198,000 − $153,000) ÷ (110,000 − 80,000) = $1.50

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Determining Semivariable Cost Elements: The High-Low Method

97. Refer to the information above. Using the high-low method, compute the fixed element of Olsen's monthly overhead cost.

**A**. $33,000

B. $35,000

C. $37,500

D. $40,000

Feedback:

$198,000 − ($1.50 × 110,000) = $33,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Determining Semivariable Cost Elements: The High-Low Method

98. Refer to the information above. Olsen's projected August operations will require approximately 120,000 machine hours. Using the high-low method, compute total manufacturing overhead estimated for August.

A. $165,000

B. $187,500

C. $197,500

**D**. $213,000

Feedback:

$33,000 + ($1.50 × 120,000) = $213,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Determining Semivariable Cost Elements: The High-Low Method

[Section Break 99-101]

[The following information applies to the questions displayed below.]

The levels of production and of manufacturing overhead for the first five months of the current year for Duke & Duchess Products are shown below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Units Produced** |  | **Manufacturing**  **Overhead** | | |
| January | 11,500 |  | $ | 58,650 |  |
| February | 12,250 |  | $ | 59,413 |  |
| March | 11,125 |  | $ | 58,262 |  |
| April | 11,950 |  | $ | 59,104 |  |
| May | 10,750 |  | $ | 57,889 |  |

99. Refer to the information above. Using the high-low method, compute the variable element of manufacturing overhead per unit. (Round your answer to two decimal places.)

A. $0.83 per unit

**B**. $1.02 per unit

C. $0.95 per unit

D. $0.08 per unit

Feedback:

($59,413 − $57,889) ÷ (12,250 − 10,750) = $1.016 (rounded to $1.02)

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Determining Semivariable Cost Elements: The High-Low Method

100. Refer to the information above. Using the high-low method, Duke & Duchess's monthly fixed overhead cost is closest to which of the following? (Round your intermediate computations to two decimal places.)

A. $59,413

B. $12,495

C. $12,250

**D**. $46,918

Feedback:

$59,413 − ($1.02 × 12,250) = $46,918

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Determining Semivariable Cost Elements: The High-Low Method

101. Refer to the information above. In June, Duke & Duchess expects to manufacture 18,000 units. Using the high-low method, compute the total estimated manufacturing overhead for June. (Round your intermediate computations to two decimal places.)

**A**. $65,278

B. $61,668

C. $63,948

D. $18,360

Feedback:

$46,918 + (18,000 × $1.02) = $65,278

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Determining Semivariable Cost Elements: The High-Low Method

[Section break 102-103]

[The following information applies to the questions displayed below.]

The monthly high and low levels of direct labor hours and of total manufacturing overhead for Onyx Company are as shown:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Direct Labor Hours** |  | **Manufacturing**  **Overhead** | | |
| Highest observed level | 8,000 |  | $ | 34,000 |  |
| Lowest observed level | 4,000 |  | $ | 26,000 |  |

102. Refer to the information above. On the basis of the above data, the cost formula for Onyx's monthly manufacturing overhead can be expressed as:

A. $18.00 average cost per direct labor hour.

B. $1.80 average cost per direct labor hour.

C. $26,000 fixed cost plus $1.50 per direct labor hour.

**D**. $18,000 fixed cost plus $2.00 per direct labor hour.

Feedback:

($34,000 − $26,000) ÷ (8,000 − 4,000) = $2 variable cost; $34,000 − ($2 × 8,000) = $18,000 fixed cost

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Determining Semivariable Cost Elements: The High-Low Method

103. Refer to the information above. In a month in which 6,500 direct labor hours are worked, Onyx's manufacturing overhead should be approximately:

A. $18,000.

B. $28,000.

**C**. $31,000.

D. $35,000.

Feedback:

(6,500 × $2) + $18,000 = $31,000

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Accessibility: Keyboard Navigation

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Determining Semivariable Cost Elements: The High-Low Method

**Essay Questions**

104. Consider variable and fixed costs.

Instructions:

(A) What is the effect of an increase or decrease in activity upon variable costs per unit of activity?

(B) What is the effect of an increase or decrease in activity upon total fixed costs?

Answer:

(A) Since total variable costs rise (or fall) in proportion to an increase (or decrease) in activity, variable costs per unit of activity remain relatively constant.

(B) Total fixed costs tend to remain constant despite increases or decreases in the level of business activity– so long as the level of activity remains within the relevant range.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: Cost-Volume Relationships

Topic: How Many Units Must We Sell?

105. Listed below are nine technical accounting terms introduced or emphasized in this chapter:



Instructions:

Each of the following statements may (or may not) describe one of these technical terms. In the space provided beside each statement, indicate the accounting term described, or answer "None" if the statement does not correctly describe any of the terms.

\_\_\_\_\_\_\_\_\_\_ (a) The amount by which sales revenue exceeds total variable cost expressed as a percentage of sales.

\_\_\_\_\_\_\_\_\_\_ (b) The amount by which sales volume exceeds the break-even point.

\_\_\_\_\_\_\_\_\_\_ (c) The study of financial statements by a potential investor or creditor as a means of evaluating the profitability and solvency of a business.

\_\_\_\_\_\_\_\_\_\_ (d) A type of activity that has a causal effect in the occurrence of a particular cost.

\_\_\_\_\_\_\_\_\_\_ (e) The level of sales at which revenue equals operating expenses.

\_\_\_\_\_\_\_\_\_\_ (f) A cost that responds to changes in sales volume by less than a proportionate amount.

\_\_\_\_\_\_\_\_\_\_ (g) A mathematical technique used to determine the fixed and variable elements of a mixed or semi-variable cost.

Answer:

(a) Contribution margin ratio

(b) Margin of safety

(c) None

(d) Cost driver

(e) Break-even point

(f) None

(g) High-low method

Feedback:

(c) The statement describes financial statement analysis. Cost-volume-profit analysis requires more detailed data than are available in financial statements and generally is performed by managers, rather than outsiders.

(f) This describes semi-variable costs.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Remember

Difficulty: 1 Easy

Learning Objective: 20-01 Explain how fixed, variable, and semivariable costs respond to changes in the volume of business activity.

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Cost-Volume Relationships

Topic: Contribution Margin: A Key Relationship

Topic: How Many Units Must We Sell?

Topic: Determining Semivariable Cost Elements: The High-Low Method

106. What is meant by the phrase "relevant range of activity?"

Answer:

The relevant range represents the operating levels (such as between 35% and 85% of full capacity) over which output is likely to vary and for which the assumptions made about cost behavior are reasonably realistic. When the level of activity falls outside the relevant range, assumptions as to the total amount of fixed costs, the variable cost per unit, and the degree of variability of semi-variable costs may no longer be valid.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-02 Explain how economies of scale can reduce unit costs.

Topic: Economies of Scale

107. Describe the important relationships shown on a cost-volume-profit graph.

Answer:

The important relationships shown on a cost-volume-profit graph are changes in revenue, costs, and operating income in relation to changes in the level of business activity. The point at which a business moves from a loss to a profit position (the break-even point) is also shown, but this is relatively less important because the objective of a business endeavor is to earn a high rate of return on investment, not to break even.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

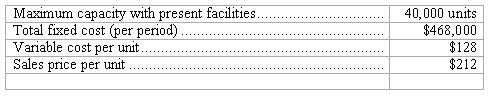
Blooms: Understand

Difficulty: 2 Medium

Learning Objective: 20-03 Prepare a cost-volume-profit graph.

Topic: Preparing and Using a Cost-Volume-Profit Graph

108. The following data are available for a product manufactured and sold by Logan Company:



Instructions:

Compute the following:

(A) Contribution margin per unit

(B) Number of units that must be sold to break-even (Round units to the next highest full unit.)

(C) Dollar sales volume to produce income of $864,000 before taxes (Round units to the next highest full unit.)

Answer:

(A) $84

(B) 5,572 units

(C) $3,361,896

Feedback:

(A) $212 sales price − $128 variable cost per unit = $84

(B) $468,000 ÷ $84 = $5,572 units

(C) ($468,000 + $864,000) ÷ $84 = 15,858 units × $212 = $3,361,896

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: Contribution Margin: A Key Relationship

Topic: How Many Units Must We Sell?

109. Spotless, Inc., sells only one product. The sales price per unit is $50, with variable cost per unit of $40. Fixed costs are $60,000 per month. Maximum capacity is 34,000 units per month.

Instructions:

Answer the following questions:

(A) To break-even, how many units must Spotless sell per month?

(B) If Spotless, Inc., sold 25,000 units, what would be its operating income for the month?

(C) At present capacity, what is the maximum operating income Spotless can expect to earn per month?

(D) Assuming that direct labor cost can be reduced by $2 per unit, what would the maximum operating income be per month?

Answer:

(A) 6,000

(B) $190,000

(C) $280,000

(D) $348,000

Feedback:

(A) $60,000 fixed costs ÷ $10 contribution margin = 6,000 units

(B) (25,000 × $50 per unit) sales revenue − (25,000 units × $40 per unit) variable costs − $60,000 fixed costs = $190,000 operating income

(C) (34,000 × $50 per unit) sales revenue − (34,000 units × $40 per unit) variable costs − $60,000 fixed costs = $280,000 operating income

(D) (34,000 × $50 per unit) sales revenue − (34,000 units × $38 per unit) variable costs − $60,000 fixed costs = $348,000 operating income

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: Contribution Margin: A Key Relationship

Topic: How Many Units Must We Sell?

110. Gary Corporation manufactures a single product. The selling price is $104 per unit, and variable costs amount to $78 per unit. The fixed costs are $36,000 per month (round any units to the next highest full unit).

Instructions:

Answer the following questions:

(A) What is the contribution margin per unit?

(B) What is the contribution margin ratio?

(C) What is the monthly sales volume (in dollars) at the break-even point?

(D) How many units must be sold each month to earn a monthly operating income of $32,000?

(E) What is the monthly margin of safety (in dollars) if 3,000 units are sold each month?

(F) What will be the monthly operating income if 3,000 units are sold each month?

Answer:

(A) $26 per unit

(B) 25%

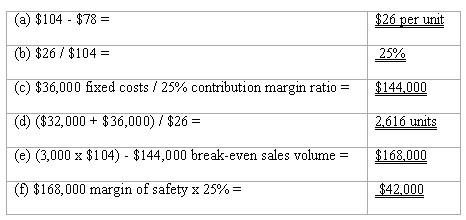
(C) $144,000

(D) 2,616 units

(E) $168,000

(F) $42,000

Feedback:



AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Apply

Difficulty: 3 Hard

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: Contribution Margin: A Key Relationship

Topic: How Many Units Must We Sell?

111. Fantasy Corporation manufactures a single product. The selling price is $125 per unit, and variable costs amount to $81 per unit. The fixed costs are $28,500 per month (round any units to the next highest full unit).

Instructions:

Answer the following questions:

(A) What is the contribution margin per unit?

(B) What is the contribution margin ratio? (Rounded to 1 decimal place)

(C) What is the monthly sales volume (in dollars) at the break-even point?

(D) How many units must be sold each month to earn a monthly operating income of $50,000?

(E) What is the monthly margin of safety (in dollars) if 1,500 units are sold each month?

(F) What will be the monthly operating income if 1,500 units are sold each month?

Answer:

(A) $44 per unit

(B) 35.2%

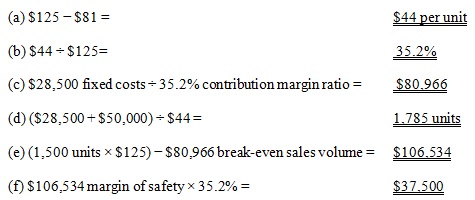
(C) $80,966

(D) 1,785 units

(E) $106,534

(F) $37,500

Feedback:



AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Apply

Difficulty: 3 Hard

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: Contribution Margin: A Key Relationship

Topic: How Many Units Must We Sell?

112. International, Inc. expects total sales of $55 million, a margin of safety of $25 million, and a contribution margin ratio of 25%.

Instructions:

Compute the following:

(A) Variable costs

(B) Break-even sales volume (in dollars)

(C) Fixed costs

(D) Operating income

Answer:

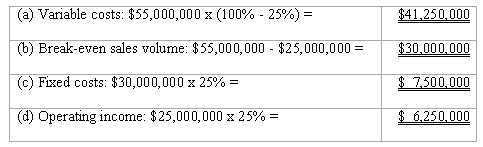
(A) $41,250,000

(B) $30,000,000

(C) $7,500,000

(D) $6,250,000

Feedback:



AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: Contribution Margin: A Key Relationship

Topic: How Many Units Must We Sell?

113. A manufacturing company experiencing severe financial difficulties has applied for a large government guaranteed loan. As a condition for obtaining the guarantee, the government mandates that the company significantly reduce its annual break-even point.

Instructions:

What steps might the company take to achieve the required reduction in its break-even point?

Answer:

The company must 1) increase its contribution margin ratio, and/or 2) reduce periodic fixed costs. The contribution margin ratio will increase as a result of a reduction in any unit variable cost. Thus, the company may attempt to reduce the amount of direct labor cost per unit. This could be accomplished by negotiating more favorable wage rates from labor. The per-unit cost of direct materials could be reduced by obtaining price concessions from suppliers. An increase in sales price would also increase the contribution margin ratio. However, it is unlikely that a struggling firm would have the market power to raise prices and maintain market share. Attempts to reduce fixed costs could include disposal of plant assets associated with excess capacity. Efforts to re-engineer the production process might include: reductions in setup time; product simplification intended to reduce ordering, receiving and inspection costs; process improvements to eliminate unnecessary handling and storage; etc.

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Analyze

Difficulty: 3 Hard

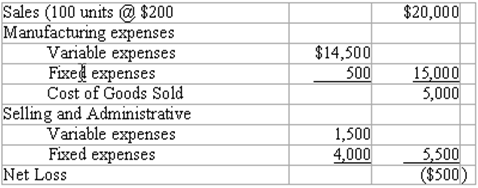
Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: Contribution Margin: A Key Relationship

Topic: How Many Units Must We Sell?

114. A manufacturing company produced the following report:



Instructions:

Answer the following questions:

(A) How many units would have to be sold to break -even?

(B) If fixed overhead were to increase by $1,800 what would be the break-even point in units?

(C) What is operating income if sales increase by 25%?

Answer:

(A) 113 units

(B) 158 units

(C) $500

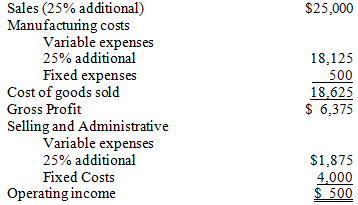
Feedback:

(A) Contribution margin: $200 − $145 − $15 = $40

(500 + 4,000) ÷ $40 = 112.5 (rounded to 113 units)

(B) (500 + 4,000 + 1,800) ÷ $ 40 = 157.5 or 158 units

(C)



AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Analyze

Difficulty: 3 Hard

Learning Objective: 20-04 Compute contribution margin and explain its usefulness.

Learning Objective: 20-05 Determine the sales volume required to earn a desired level of operating income.

Topic: Contribution Margin: A Key Relationship

Topic: How Many Units Must We Sell?

115. Pet Park International sells cat food and dog food. Its monthly fixed costs average $620,000. Cat food sales represent 80% of the company's total revenue. Dog food sales constitute the remaining 20%. The company has provided the following information expressed on a per-case basis:

|  |  |  |
| --- | --- | --- |
|  | **Selling** | **Contribution** |
|  | **Price** | **Margin** |
| Cat food | $40 | $16 |
| Dog food | $30 | $9 |

Instructions:

(A) Determine the total monthly sales revenue required to break-even. (Round your answer to the nearest whole dollar.)

(B) Determine the total monthly sales revenue required to earn an operating income of $135,000.

(C) Determine the company's margin of safety at a monthly sales level of $2,500,000.

(D) If monthly fixed costs increase by $10,000, determine the break-even point, expressed in sales dollars.

Answer:

(A) $1,631,579

(B) $1,986,842

(C) $868,421

(D) $1,657,895

Feedback:

(A) $620,000 ÷ [(80% × 40%) + (20% × 30%)] = $1,631,579

(B) (620,000 + $135,000) ÷ [(80% × 40%) + (20% × 30%)] = $1,986,842

(C) $2,500,000 − $1,631,579 = $868,421

(D) ($620,000 + $10,000) ÷ [(80% × 40%) + (20% × 30%)] = $1,657,895

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Analyze

Difficulty: 3 Hard

Learning Objective: 20-08 Use CVP when a company sells multiple products.

Topic: CVP Analysis When a Company Sells Many Products

116. First-Class Company sells a single product. The per-unit selling price is $250, and variable costs are 60% of this selling price. Fixed costs are currently $68,000 per month.

Instructions:

(A) Calculate the monthly break-even point in units

(B) First-Class is considering the acquisition of new robotic equipment. Depreciation on the new robots will increase monthly fixed costs by $8,000, but reduce variable costs to 50% of the current selling price. If First-Class acquires the robots what will be the new monthly break-even point in units?

Answer:

(A) 680 units

(B) 608 units

Feedback:

(A) Break-even point: $68,000 ÷ ($250 − (0.60 × $250)) = 680 units

(B) New break-even point: $76,000 ÷ ($250 − (0.50 × $250)) = 608 units

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-06 Use the contribution margin ratio to estimate the change in operating income caused by a change in sales volume.

Topic: What Change in Operating Income Do We Anticipate?

117. Stan Todd, Inc. wants to manufacture a new cell phone that can be worn on the wrist. Information from doing market research shows that he can sell this phone for $25 each. His fixed costs would be $145,000 a year and variable costs would amount to $10 per phone.

Instructions:

Answer the following questions:

(A) What would the contribution margin ratio be?

(B) What sales volume in units would Stan need to break-even?

(C) What sales volume in units would Stan need to earn $200,000 profit?

(D) What would be the margin of safety if he sold 25,000 units (use the information calculated in #2)?

Answer:

(A) 60%

(B) 9,667 units

(C) 23,000 units

(D) $383,325

Feedback:

(A) $25 − $10 = $15; $15 ÷ $25 or 60%

(B) Break-even = $145,000 ÷ $15 = 9,667 units

(C) To earn a profit of $200,000: ($200,000 + $145,000) ÷ $15 = 23,000 units

(D) 25,000 × $25 = $625,000

$625,000 − ($25 × 9,667) = $383,325

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-06 Use the contribution margin ratio to estimate the change in operating income caused by a change in sales volume.

Topic: What Change in Operating Income Do We Anticipate?

118. Diana Company, a sole proprietorship, sells only one product. The regular price is $160. Variable costs are 55% of this selling price, and fixed costs are $8,400 a month.

Management decides to decrease the selling price from $160 to $145 per unit. Assume that the cost of the product and the fixed operating expenses are not changed by this pricing decision.

Instructions:

Answer the following questions:

(A) At the original selling price of $160 a unit, what is the contribution margin ratio?

(B) At the original selling price of $160 a unit, what dollar volume of sales per month is required for Diana Company to break-even? (Round your answer to the nearest whole dollar.)

(C) At the original selling price of $160 a unit, what dollar volume of sales per month is required for Diana Company to earn a monthly operating income of $6,500? (Round your answer to the nearest whole dollar.)

(D) At the reduced selling price of $145 a unit, what is the contribution margin ratio?

(E) At the reduced selling price of $145 a unit, what dollar volume of sales per month is required to break-even? (Round your intermediate percentage to one decimal place and final answer to the nearest whole dollar.)

Answer:

(A) 45%

(B) $18,667

(C) $33,111

(D) 39.3%

(E) $21,374

Feedback:

(A) Sales price (100%) minus variable costs (55%) = 45%

(B) Sales Volume = (Fixed Costs + Operating Income) ÷ Contribution Margin Ratio = ($8,400 + $0) ÷ 0.45 = $18,667

(C) Sales Volume = (Fixed Costs + Operating Income) ÷ Contribution Margin Ratio = ($8,400 + $6,500) ÷ 0.45 = $33,111

(D) Contribution margin ratio = [$145 − ($160 × 0.55)] ÷ $145 = 39.3%

(E) Sales Volume = (Fixed Costs + Operating Income) ÷ Contribution Margin Ratio = ($8,400 + $0) ÷ 39.3% = $21,374

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-06 Use the contribution margin ratio to estimate the change in operating income caused by a change in sales volume.

Topic: What Change in Operating Income Do We Anticipate?

119. Mitchum, Inc. produced different amounts of product X each month as follows:

|  |  |  |
| --- | --- | --- |
|  | **Units** | **Costs** |
| April | 370 | $21,300 |
| May | 420 | $22,050 |
| June | 350 | $21,000 |
| July | 550 | $24,000 |
| August | 450 | $22,500 |

Using the high-low method, determine:

(A) The variable expense per unit

(B) The fixed expense

(C) If Mitchum produced 410 units what would total expenses be?

Answer:

(A) $15

(B) $15,750

(C) $21,900



Feedback:

(A)

|  |  |  |  |
| --- | --- | --- | --- |
| Highest Activity Lowest Activity | July June | 550 units  350 | $24,000 cost  $21,000 |
| Changes |  | 200 | $3,000 |

Variable cost per unit = $3,000 ÷ 200 = $15

(B) Fixed cost = $24,000 − (550 × $15) = $24,000 − $8,250 = $15,750

(C) $15,750 + (410 × $15) = $21,900

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Apply

Difficulty: 3 Hard

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Determining Semivariable Cost Elements: The High-Low Method

120. The following information is available regarding the total manufacturing overhead costs of Paymore, Inc., for five months of the current year:

|  |  |  |
| --- | --- | --- |
|  | **Machine** | **Manufacturing** |
|  | **Hours** | **Overhead Costs** |
| February | 6,900 | $6,250 |
| March | 5,000 | $5,375 |
| April | 6,300 | $6,025 |
| May | 9,333 | $7,975 |
| June | 6,833 | $6,050 |

Instructions:

(A) Using the high-low method, compute the following (Round your answers to the nearest whole number):

(1) The variable element of overhead cost per machine-hour

(2) The fixed element of monthly overhead cost

(B) Use the cost relationship determined in part (A) to estimate the total manufacturing overhead costs for July, given that 7,250 machine-hours are scheduled.

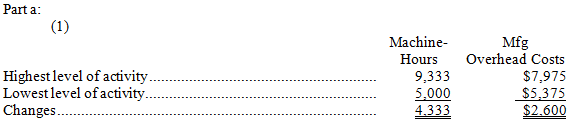
Answer:

(A) (1) $0.60

(A) (2) $2,375

(B) $6,725

Feedback:



(A)(1) Variable cost = $2,600 ÷ 4,333 units = $0.60 per machine-hour

(A)(2) $7,975 total cost − ($0.60 per machine-hour × 9,333 machine-hours) = $2,375 fixed costs

(B) $2,375 fixed costs + ($0.60 per machine-hour × 7,250 machine-hours) variable cost = $6,725 total cost

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Determining Semivariable Cost Elements: The High-Low Method

121. The following information is available regarding the total repair costs of Alexander Design Company for six months of the current year:

|  |  |  |
| --- | --- | --- |
|  | Units Produced | Repair  Cost |
| January | 1,500 | $15,875 |
| February | 1,750 | $16,500 |
| March | 1,000 | $11,250 |
| April | 1,250 | $15,250 |
| May | 1,875 | $17,750 |
| June | 2,250 | $20,250 |

Instructions:

(A) Using the high-low method, compute the following:

(1) The variable element of repair cost per unit of production

(2) The fixed element of the monthly repair cost

(B) Use the cost relationship determined in part (A) to estimate the total repair cost for July, given that production is scheduled for 2,300 units.

Answer:

(A) (1) $7.20 per unit

(A) (2) $4,050 fixed costs

(B) $20,610 total costs

Feedback:

(A)(1)



Variable cost = $9,000 ÷ 1,250 units = $7.20 per unit

(A)(2) $20,250 total cost − ($7.20 per unit × 2,250 units) = $4,050 fixed costs

(B) $4,050 fixed costs + ($7.20 per unit × 2,300 units) variable cost = $20,610 total cost

AACSB: Analytical Thinking

AICPA: BB Critical Thinking

AICPA: FN Measurement

Blooms: Apply

Difficulty: 2 Medium

Learning Objective: 20-09 Determine semivariable cost elements.

Topic: Determining Semivariable Cost Elements: The High-Low Method