Introduction to Management Accounting, 15e **(Horngren)**
Chapter 2 Introduction to Cost Behavior and Cost-Volume Relationships

2.1 Questions

1) To predict costs and manage them on a day-to-day basis, managers must identify:
A) cost of resources used
B) cost drivers
C) key activities and resources used to perform activities
D) all of the above
Answer: D
Diff: 2 Page Ref: 35
LO: 2-1
AACSB: None

2) Cost drivers are _____.
A) the different functions in the value chain
B) different types of functional areas in the firm
C) measures of activities that require the use of resources and thereby cause costs
D) different types of cost calculations
Answer: C
Diff: 2 Page Ref: 35
LO: 2-1
AACSB: None

3) Which of the following statements about costs is FALSE?
A) An organization may have cost drivers across various activities of its value chain.
B) It is important to identify the appropriate cost drivers.
C) One of the main goals of management accounting is helping managers control costs.
D) Managers can control costs without understanding how activities of an organization affects its costs.
Answer: D
Diff: 2 Page Ref: 35-36
LO: 2-1
AACSB: None

4) To control costs, managers should focus their efforts on managing _____.
A) products or services
B) revenues from products or services
C) activities required to make, sell and deliver products or services
D) production costs of products or services
Answer: C
Diff: 2 Page Ref: 36
LO: 2-1
AACSB: None

5) Consider the following activity: The installation of seats by an airplane manufacturer in a commercial airplane. What is an appropriate cost driver for the labor resources used for this activity?
A) number of service center hours
B) number of labor hours used for installation
C) number of mechanic hours
D) number of engineering hours
Answer: B
Diff: 2 Page Ref: 36
LO: 2-1
AACSB: Analytic Skills, Reflective Thinking

6) Consider the following activity: The installation of seats by an airplane manufacturer in a commercial airplane. What is an appropriate cost driver for the cost of the seats?
A) number of seats installed
B) number of labor hours used for installation
C) number of mechanic hours
D) number of engineering hours
Answer: A
Diff: 2 Page Ref: 36
LO: 2-1
AACSB: Analytic Skills, Reflective Thinking

7) Consider the following activity: The installation of seats by an airplane manufacturer in a commercial airplane. What is an appropriate cost driver for the salary of the supervisor in charge of this activity?
A) number of mechanic hours
B) number of engineering hours
C) number of workers supervised
D) weight of the seats installed
Answer: C
Diff: 2 Page Ref: 36
LO: 2-1
AACSB: Analytic Skills, Reflective Thinking

8) Which of the following cost drivers would NOT be appropriate for the customer services activity of the value chain?
A) number of service calls
B) hours spent servicing products
C) number of engineering hours by research and development staff
D) number of service call workers
Answer: C
Diff: 2 Page Ref: 37
LO: 2-1
AACSB: Analytic Skills, Reflective Thinking

9) Consider the following activity: Several product and process engineers are working to make improvements to several existing products. These improvements revolve around safety and durability issues. What is an appropriate cost driver for this activity?
A) number of engineering hours
B) number of products
C) number of parts per product
D) all of the above
Answer: D
Diff: 2 Page Ref: 37
LO: 2-1
AACSB: Analytic Skills, Reflective Thinking

10) Several machines are used in the factory to manufacture a simple product. What is an appropriate cost driver for the depreciation expense on the machines?
A) number of advertisements
B) number of service calls
C) number of machine hours
D) number of hours spent servicing defective products
Answer: C
Diff: 2 Page Ref: 37
LO: 2-1
AACSB: Analytic Skills, Reflective Thinking

11) Which value chain function would use the following cost driver: number of advertisements?
A) production
B) distribution
C) marketing
D) customer service
Answer: C
Diff: 2 Page Ref: 37
LO: 2-1
AACSB: Analytic Skills, Reflective Thinking

12) Which value chain function would use the following cost driver: weight of items delivered?
A) marketing
B) distribution
C) customer service
D) none of the above
Answer: B
Diff: 2 Page Ref: 37
LO: 2-1
AACSB: Analytic Skills, Reflective Thinking

13) A key factor in controlling costs is focusing on the revenues a product or service generates.
Answer: FALSE
Diff: 1 Page Ref: 36
LO: 2-1
AACSB: None

14) A good example of a cost driver for production labor wages is the number of engineering hours worked.
Answer: FALSE
Diff: 1 Page Ref: 37
LO: 2-1
AACSB: Analytic Skills

15) A good example of a cost driver for production supervisor salaries is the number of people supervised.
Answer: TRUE
Diff: 2 Page Ref: 37
LO: 2-1
AACSB: Analytic Skills

2.2 Questions

1) When analyzing costs, accountants should think of variable costs on a _____ basis and fixed costs on a _____ basis.
A) total; total
B) per-unit; per-unit
C) total; per-unit
D) per-unit; total
Answer: D
Diff: 1 Page Ref: 37
LO: 2-2
AACSB: None

2) As sales volume decreases in the relevant range, fixed costs per unit _____, but total fixed costs _____.
A) increase; do not change
B) decrease: do not change
C) do not change; increase
D) do not change; decrease
Answer: A
Diff: 2 Page Ref: 37
LO: 2-2
AACSB: None

3) As sales volume increases in the relevant range, a fixed cost does not change _____, but the fixed cost _____ becomes progressively smaller.
A) per-unit; total
B) in total; per-unit
C) per-unit; per-unit
D) in total; per year
Answer: B
Diff: 1 Page Ref: 37
LO: 2-2
AACSB: Analytic Skills

4) As the sales volume increases in the relevant range, variable costs per unit _____ but total variable costs _____.
A) do not change; increase
B) do not change; decrease
C) increase; do not change
D) decrease; do not change
Answer: A
Diff: 1 Page Ref: 37
LO: 2-2
AACSB: Analytic Skills

5) Which of the following costs is a variable cost?
A) rental expense for factory building for manufacturer of electronics
B) lease cost for factory machine for manufacturer of electronics
C) fuel for airplane for airline
D) depreciation expense of airplane for airline
Answer: C
Diff: 1 Page Ref: 37-38
LO: 2-2
AACSB: Analytic Skills

6) Last year, XYZ Company sold 10,000 units that cost $40,000 to produce. This cost included $4,000 in fixed computer resource costs, $6,000 in fixed labor cost and $3.00 per unit for communications resource costs. XYZ Company expects to sell 20,000 units next year. Resource costs are expected to be in the same relevant range next year. What are the total estimated costs for next year?
A) $70,000
B) $75,000
C) $80,000
D) $84,000
Answer: A
Diff: 2 Page Ref: 37-38
LO: 2-2
AACSB: Analytic Skills

7) What happens when the cost-driver level increases within the relevant range?
A) total fixed costs remain unchanged
B) fixed costs per unit increases
C) total variable costs decrease
D) variable costs per unit increases
Answer: A
Diff: 2 Page Ref: 38
LO: 2-2
AACSB: Analytic Skills

8) What happens when the cost-driver activity level increases within the relevant range?
A) total fixed costs increase
B) fixed costs per unit decrease
C) total variable costs decrease
D) variable costs per unit decrease
Answer: B
Diff: 2 Page Ref: 38
LO: 2-2
AACSB: Analytic Skills

9) What happens when the cost-driver activity level decreases within the relevant range?
A) total fixed costs increase
B) fixed costs per unit decrease
C) total variable costs decrease
D) variable costs per unit decrease
Answer: C
Diff: 2 Page Ref: 38
LO: 2-2
AACSB: Analytic Skills

10) What happens when the cost-driver activity level decreases within the relevant range?
A) total fixed costs increase
B) fixed costs per unit decrease
C) total variable costs increase
D) variable costs per unit are unchanged
Answer: D
Diff: 2 Page Ref: 38
LO: 2-2
AACSB: Analytic Skills

11) Fixed costs _____.
A) are fixed on a per-unit basis, but vary in total
B) vary on a per-unit basis, but are fixed in total
C) are fixed on a per-unit basis, and fixed in total
D) vary on a per-unit basis, and vary in total
Answer: B
Diff: 1 Page Ref: 38
LO: 2-2
AACSB: None

12) Variable costs _____.
A) vary per unit
B) are fixed in total
C) decrease in total as the cost-driver activity level increases
D) are fixed per unit and vary in total
Answer: D
Diff: 1 Page Ref: 38
LO: 2-2
AACSB: None

13) Which of the following costs is a fixed cost?
A) cost of dairy ingredients used to produce ice cream
B) factory supervisory salaries
C) fuel used by delivery trucks
D) labor wages of workers who mix dairy ingredients to make ice cream
Answer: B
Diff: 2 Page Ref: 40
LO: 2-2
AACSB: Analytic Skills, Reflective Thinking

14) An increase in total variable costs usually indicates _____.
A) the cost-driver activity level is decreasing
B) the cost-driver activity level is increasing
C) variable costs per unit is decreasing
D) fixed costs per unit is increasing
Answer: B
Diff: 2 Page Ref: 41
LO: 2-2
AACSB: Analytic Skills

15) An accountant may have difficulty classifying costs as fixed or variable because _____.
A) costs may behave in a nonlinear way
B) costs may be affected by more than one cost driver
C) it depends on the decision situation
D) all of the above
Answer: D
Diff: 2 Page Ref: 41-42
LO: 2-2
AACSB: None

16) The relevant range applies to _____.
A) variable costs
B) fixed costs
C) fixed costs and variable costs
D) none of the above
Answer: C
Diff: 2 Page Ref: 41
LO: 2-2
AACSB: None

17) Total fixed costs increase when volume increases in the relevant range.
Answer: FALSE
Diff: 1 Page Ref: 37
LO: 2-2
AACSB: None

18) The relevant range is the limit of cost-driver level within which a specific relationship between costs and the cost driver is valid.
Answer: TRUE
Diff: 1 Page Ref: 41
LO: 2-2
AACSB: None

19) Costs may behave in a linear or a nonlinear manner.
Answer: TRUE
Diff: 1 Page Ref: 41-42
LO: 2-2
AACSB: None

20) Only one cost driver may affect a cost at any given time.
Answer: FALSE
Diff: 1 Page Ref: 42
LO: 2-2
AACSB: None

21) With very short time spans, more costs are fixed and fewer are variable.
Answer: TRUE
Diff: 1 Page Ref: 42
LO: 2-2
AACSB: None

2.3 Questions

1) The level of sales at which revenues equal expenses and net income is zero is called the _____.
A) margin of safety
B) contribution margin
C) break-even point
D) point of no return
Answer: C
Diff: 1 Page Ref: 43
LO: 2-3
AACSB: None

2) Hot Company, a producer of salsa, has the following information:

Income tax rate	30%
Selling price per unit	$8.00
Variable cost per unit	$3.00
Total fixed costs	$90,000.00

The contribution margin per unit is _____.
A) $2.00
B) $3.00
C) $5.00
D) $8.00
Answer: C
Diff: 1 Page Ref: 44, 45
LO: 2-3
AACSB: Analytic Skills

3) Walnut Corporation sells desks at $480 per desk. The variable costs associated with each desk are $372. Total fixed costs for the period are $456,840. The contribution margin per desk is _____.
A) $51
B) $108
C) $126
D) $195
Answer: B
Diff: 1 Page Ref: 44, 45
LO: 2-3
AACSB: Analytic Skills

4) Cherry Wood Company sells desks at $480 per desk. The variable costs are $372 per desk. Total fixed costs for the period are $456,840. The contribution margin ratio is _____.
A) 22.5%
B) 29.0%
C) 40.6%
D) 77.5%
Answer: A
Diff: 1 Page Ref: 45
LO: 2-3
AACSB: Analytic Skills

5) On Fire Company, a producer of electronic devices, has the following information:

Selling price per unit	$5.00
Variable cost per unit	$3.00
Total fixed costs	$90,000.00

The contribution-margin ratio is _____.
A) 30%
B) 40%
C) 60%
D) 100%
Answer: B
Diff: 1 Page Ref: 45
LO: 2-3
AACSB: Analytic Skills

6) Suppose a Holiday Inn Hotel has annual fixed costs applicable to its rooms of $1.2 million for its 300-room hotel. Average daily room rents are $50 per room and average variable costs are $10 for each room rented. It operates 365 days per year. If the hotel is completely full throughout the year, what is net income for one year?
A) $(1,188,000)
B) $3,180,000
C) $4,275,000
D) $5,475,000
Answer: B
Diff: 2 Page Ref: 45
LO: 2-3
AACSB: Analytic Skills

7) Company ZZZ has the following information available:

Selling price per unit	$100
Variable cost per unit	$45
Fixed costs per year	$420,000
Expected sales per year	20,000 units

What is the expected operating income for a year?
A) $480,000
B) $680,000
C) $1,580,000
D) none of the above
Answer: B
Diff: 1 Page Ref: 45
LO: 2-3
AACSB: Analytic Skills

8) Suppose a Holiday Inn Hotel has annual fixed costs applicable to its rooms of $1.2 million for its 300-room hotel. Average daily room rents are $50 per room and average variable costs are $10 for each room rented. It operates 365 days per year. If the hotel is one-half full throughout the entire year, what is the amount of net income for one year?
A) $(1,192,500)
B) $990,000
C) $1,590,000
D) $2,737,500
Answer: B
Diff: 2 Page Ref: 45
LO: 2-3
AACSB: Analytic Skills

9) Mercy Hospital has total variable costs of 80% of total revenues and fixed costs of $20 million per year. There are 70,000 estimated patient-days for next year. What is the break-even point expressed in total revenue?
A) $10 million
B) $12.5 million
C) $20 million
D) $100 million
Answer: D
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

10) Sizzling Company, a producer of electronic components, has the following information:

Income tax rate	30%
Selling price per unit	$5.00
Variable cost per unit	$3.00
Total fixed costs	$90,000.00

The break-even point in dollars is _____.
A) $150,000
B) $180,000
C) $225,000
D) $270,000
Answer: C
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

11) Oakes Corporation sells desks at $480 per desk. The variable costs are $372 per desk. Total fixed costs for the period are $456,840. The break-even point in desks is _____.
A) 952
B) 1,228
C) 4,230
D) 5,458
Answer: C
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

12) Knotty Company sells desks at $480 per desk. The variable costs are $372 per desk. Total fixed costs for the period are $456,840. The break-even volume in dollars is _____.
A) $456,840
B) $1,573,560
C) $2,030,400
D) none of these answers is correct
Answer: C
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

13) HugME Company produces dolls. Each doll sells for $20.00. Variable costs per unit are $14.00 and total fixed costs for the period are $435,000. What is the break-even point in units?
A) 21,750
B) 31,071
C) 51,176
D) 72,500
Answer: D
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

14) HugME Company produces dolls. Each doll sells for $20.00. Variable costs per unit are $14.00 and total fixed costs for the period are $435,000. What is the break-even volume in dollars?
A) $435,000
B) $621,429
C) $1,023,529
D) $1,450,000
Answer: D
Diff: 1 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

15) HugME Company produces dolls. Each doll sells for $20.00. Variable costs are $14.00 per unit. If the break-even volume in dollars is $1,446,000, then the total fixed costs for the period are _____.
A) $361,500
B) $433,800
C) $516,425
D) $1,446,000
Answer: B
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

16) Assume the sales price is $34 per unit and the variable cost is $19 per unit. The break-even point is 12,000 units. What are total fixed costs?
A) $180,000
B) $190,000
C) $340,000
D) $530,000
Answer: A
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

17) Assume the sales price is $100 per unit and the variable cost is $75 per unit. Total fixed costs are $150,000. Then the break-even volume in dollar sales is _____.
A) $1,500
B) $150,000
C) $200,000
D) $600,000
Answer: D
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

18) Assume the sales price is $100 per unit and the total fixed costs are $75,000. The break-even volume in dollar sales is $250,000. What is the variable cost per unit?
A) $30
B) $70
C) $100
D) $125
Answer: B
Diff: 3 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

19) General Hospital has variable costs of 90% of total revenues and total fixed costs of $50 million per year. There are 50,000 patient-days estimated for next year. What is the average daily revenue per patient necessary to breakeven?
A) $250
B) $1,000
C) $4,000
D) $10,000
Answer: D
Diff: 3 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills, Reflective Thinking

20) Suppose a Holiday Inn Hotel has annual fixed costs applicable to its rooms of $1.2 million for its 300-room hotel. Average daily room rents are $50 per room, and average variable costs are $10 for each room rented. It operates 365 days per year. What is the break-even point in number of rooms rented?
A) 24,000
B) 30,000
C) 100,000
D) 120,000
Answer: B
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

21) Suppose a Holiday Inn Hotel has annual fixed costs applicable to its rooms of $1.2 million for its 300-room hotel. Average daily room rents are $50 per room and average variable costs are $10 for each room rented. It operates 365 days per year. What percent of occupancy is needed to breakeven?
A) 3.65%
B) 25%
C) 27.4%
D) 34.3%
Answer: C
Diff: 3 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills, Reflective Thinking

22) Deadwood Hospital has variable costs of 50% of total revenues and fixed costs of $40 million per year. There are 40,000 patient-days estimated for the next year. The break-even point expressed in total revenue is _____.
A) $10 million
B) $40 million
C) $80 million
D) $90 million
Answer: C
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

23) Medina Hospital has variable costs of 75% of total revenues and fixed costs of $40 million per year. There are 40,000 patient-days estimated for next year. What is the average daily revenue per patient necessary to breakeven?
A) $250
B) $1,000
C) $4,000
D) $20,000
Answer: C
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

24) The sales price is $30 per unit, the contribution margin is $8 per unit and total fixed costs are $32,000. What is the break-even point in units?
A) 857
B) 1,200
C) 2,000
D) 4,000
Answer: D
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

25) If the total amount of fixed costs increases, what is the effect on the break-even point? (Assume no other changes.)
A) The break-even point increases.
B) The break-even point decreases.
C) The break-even point remains the same.
D) The break-even point will be zero.
Answer: A
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

26) If the variable cost per unit increases, what is the effect on the break-even point? (Assume no other changes.)
A) The break-even point increases.
B) The break-even point decreases.
C) The break-even point remains the same.
D) The break-even point is zero.
Answer: A
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

27) If the selling price per unit increases, what is the effect on the break-even point? (Assume no other changes.)
A) The break-even point increases.
B) The break-even point decreases.
C) The break-even point remains the same.
D) The break-even point is zero.
Answer: B
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

28) The break-even point is the level of sales at which revenue equals fixed costs.
Answer: FALSE
Diff: 1 Page Ref: 43
LO: 2-3
AACSB: None

29) At the break-even point, net income may be positive.
Answer: FALSE
Diff: 1 Page Ref: 43
LO: 2-3
AACSB: Analytic Skills

30) The break-even point is when enough units are sold that total contribution margin equals total variable costs.
Answer: FALSE
Diff: 1 Page Ref: 43
LO: 2-3
AACSB: None

31) The equation for the income statement is:
Sales — Variable Expenses- Fixed Expenses = Net Income
Answer: TRUE
Diff: 1 Page Ref: 45
LO: 2-3
AACSB: None

32) Wildwood Corporation produces one product. Total fixed costs are $500,000. The unit selling price is $68.50 and the unit variable cost is $50.95.

Required:
A) Compute the contribution margin per unit.
B) Compute the contribution-margin ratio.
C) Compute the break-even point in units.
D) Compute the break-even volume in dollars.
Answer:
A) $68.50-$50.95= $17.55
B) $17.55/$68.50= 0.2562
C) $500,000/$17.55 = 28,490 units
D) 28,490 x $68.50 = $1,951,565
Diff: 2 Page Ref: 44-46
LO: 2-3
AACSB: Analytic Skills

33) Brunswick Manufacturing has prepared the following income statement:

Sales	$450,000
Cost of goods sold	200,000
Gross margin	250,000
Operating expenses	196,000
Operating income	$54,000

According to company records, $50,000 of Cost of Goods Sold and $166,000 of Operating Expenses are fixed.

Required:
A) Compute the contribution margin.
B) Compute the contribution margin ratio.
C) Compute the break-even volume in sales dollars.
Answer:
A) Fixed costs = $50,000 + $166,000 = $216,000
Variable costs = $150,000 + $30,000 = $180,000
Contribution Margin = $450,000 - $180,000 = $270,000
B) $270,000/$450,000 = 60%
C) $216,000/60% = $360,000
Diff: 2 Page Ref: 44-46
LO: 2-3
AACSB: Analytic Skills

34) Explosion Company produces one type of product. Total fixed costs are $100,000. Unit variable costs are $6.00. The break-even point is 25,000 units. Planned unit sales are 30,000.

Required:
A) Compute the selling price per unit.
B) Compute the contribution-margin ratio.
C) Compute the break-even volume in dollars.
Answer:
A) $\frac{\$100,000}{X - \$6} = 25,000$
$(X - 6)25,000 = 100,000$
$X = \$10$
B) ($10 - $6)/$10 = 0.40
C) 25,000 x $10 = $250,000
Diff: 2 Page Ref: 45-46
LO: 2-3
AACSB: Analytic Skills

35) The Eastman Family Restaurant is open 24 hours per day. Fixed costs are $24,000 per month. Variable costs are estimated at $9.60 per meal. The average revenue is $12 per meal.

Required:
A) Compute the break-even point in meals.
B) Compute the break-even volume in dollars.
Answer:
A) $24,000/($12.00 - $9.60) = 10,000 meals
B) 10,000 meals × $12 per meal = $120,000
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

36) Frances Company produces only one product. The selling price is $95 per unit and the variable cost is $65 per unit. Total fixed costs are $130,000.

Required:
A) Compute break-even point in units.
B) Compute break-even volume in dollars.
Answer:
A) $130,00/($95 -$65) = 4,333 units
B) 4,333 units × $95 = $411,635
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

37) Southwest Hospital has fixed costs of $100 million per year. Variable costs represent approximately 80% of the total revenue. There are 50,000 patient-days estimated for next year.

Required:
A) What is the break-even point expressed in total revenue?
B) What is the average daily revenue per patient necessary to break even?
Answer:
A) $100 million/(1 — 0.80) = $500 million
B) $500 million/ 50,000 = $10,000
Diff: 2 Page Ref: 46
LO: 2-3
AACSB: Analytic Skills

2.4 Questions

1) The horizontal axis on the cost-volume-profit graph is the _____.
A) dollars of cost
B) sales volume in units
C) dollars of revenue
D) net income
Answer: B
Diff: 1 Page Ref: 47
LO: 2-4
AACSB: None

2) The vertical axis on the cost-volume-profit graph is the _____.
A) dollars of cost
B) sales volume in units
C) dollars of revenue
D) dollars of cost and revenue
Answer: D
Diff: 1 Page Ref: 47
LO: 2-4
AACSB: None

3) Which of the following is NOT an underlying assumption of cost-volume-profit analysis?
A) We can classify expenses into fixed and variable categories.
B) Sales mix will be constant.
C) Revenues and expenses are linear over the relevant range.
D) There will be changes in efficiency or productivity.
Answer: D
Diff: 1 Page Ref: 48
LO: 2-4
AACSB: None

4) What action will decrease a company's break-even point?
A) reducing total fixed costs
B) decreasing contribution margin per unit
C) increasing variable cost per unit
D) decreasing the selling price per unit
Answer: A
Diff: 2 Page Ref: 48
LO: 2-4
AACSB: Analytic Skills

5) Assume ZZZ Company has the following information available:

Selling price per unit	$100
Variable cost per unit	$45
Fixed costs per year	$420,000
Expected sales per year (units)	20,000

If fixed costs increase $200,000, what is the expected operating income?
A) $280,000
B) $480,000
C) $680,000
D) $1,380,000
Answer: B
Diff: 2 Page Ref: 48
LO: 2-4
AACSB: Analytic Skills

6) Assume ZZZ Company has the following information available:

Selling price per unit	$100
Variable cost per unit	$45
Fixed costs per year	$420,000
Expected sales per year(units)	20,000

If fixed costs increase $200,000, what is the break-even point in units?
A) 11,273
B) 12,000
C) 13,000
D) none of the above
Answer: A
Diff: 2 Page Ref: 48
LO: 2-4
AACSB: Analytic Skills

7) The following information is available for Donald Corporation:

Total fixed costs	$333,500
Variable costs per unit	$99
Selling price per unit	$154

If total fixed costs increased to $394,850, then the break-even volume in dollars would increase by _____.
A) 10.0%
B) 12.3%
C) 18.4%
D) 34.3%
Answer: C
Diff: 3 Page Ref: 48
LO: 2-4
AACSB: Analytic Skills

8) Assume the following information for Janice Company:

Selling price per unit	$144
Variable costs per unit	$80
Total fixed costs	$80,000

If fixed costs increased by 10% and management wanted to maintain the original break-even point, then the selling price per unit would have to be increased to _____.
A) $150.40
B) $155.20
C) $158.40
D) $208.00
Answer: A
Diff: 3 Page Ref: 48
LO: 2-4
AACSB: Analytic Skills

9) Assume ZZZ Company has the following information available:

Selling price per unit	$100
Variable cost per unit	$45
Fixed costs per year	$420,000
Expected sales per year	20,000 units

If variable costs increase to $65 per unit, what is the expected net income for one year?
A) $280,000
B) $700,000
C) $880,000
D) $1,580,000
Answer: A
Diff: 2 Page Ref: 48-49
LO: 2-4
AACSB: Analytic Skills

10) Assume fixed costs are constant and contribution margin per unit is reduced 50 percent. What will happen to the break-even point in units?
A) It will decrease 50 percent.
B) It will increase 100 percent.
C) It will be the same.
D) It will increase 50 percent.
Answer: B
Diff: 3 Page Ref: 48-49
LO: 2-4
AACSB: Analytic Skills

11) If the contribution margin per unit increases, what is the effect on the break-even point? (Assume no other changes.)
A) The break-even point increases.
B) The break-even point decreases.
C) The break-even point remains the same.
D) The break-even point will be zero.
Answer: B
Diff: 2 Page Ref: 48-49
LO: 2-4
AACSB: Analytic Skills

12) Company XX has the following information available:

Selling price per unit	$100
Variable cost per unit	$45
Fixed costs per year	$420,000
Expected sales per year (units)	20,000

If variable costs increase to $65 per unit, what is the break-even point in units?
A) 12,000
B) 13,000
C) 20,000
D) none of the above
Answer: A
Diff: 2 Page Ref: 48-49
LO: 2-4
AACSB: Analytic Skills

13) YY Company has the following information available:

Selling price per unit	$100
Variable cost per unit	$45
Fixed costs per year	$420,000
Expected sales per year (units)	20,000

If variable costs increase to $65 per unit and fixed costs increase $200,000, what is the break-even point in units?
A) 11,273
B) 12,000
C) 20,000
D) 17,714
Answer: D
Diff: 3 Page Ref: 48-49
LO: 2-4
AACSB: Analytic Skills

14) The break-even point is located at the intersection of the total revenue line and the total expenses line on a cost-volume-profit graph.
Answer: TRUE
Diff: 2 Page Ref: 47
LO: 2-4
AACSB: Analytic Skills

15) The CVP graph shows profit and loss at different rates of activity.
Answer: TRUE
Diff: 2 Page Ref: 47
LO: 2-4
AACSB: None

16) The CVP graph shows how costs behave over different relevant ranges.
Answer: FALSE
Diff: 2 Page Ref: 47
LO: 2-4
AACSB: None

17) The horizontal axis on the CVP graph is the dollars of cost and revenue.
Answer: FALSE
Diff: 1 Page Ref: 47
LO: 2-4
AACSB: None

18) On the CVP graph, the horizontal difference between the sales line and the total expenses line measures the net income or net loss.
Answer: FALSE
Diff: 2 Page Ref: 47
LO: 2-4
AACSB: None

19) The CVP graph uses the assumption that expenses are linear over the relevant range.
Answer: TRUE
Diff: 1 Page Ref: 48
LO: 2-4
AACSB: None

20) An assumption of the CVP analysis is that changes in efficiency are expected.
Answer: FALSE
Diff: 1 Page Ref: 48
LO: 2-4
AACSB: None

21) The sales mix is the relative proportions or combinations of quantities of different products that constitute total sales.
Answer: TRUE
Diff: 1 Page Ref: 48
LO: 2-4
AACSB: None

22) An assumption of the CVP analysis is that the sales mix can fluctuate.
Answer: FALSE
Diff: 1 Page Ref: 48
LO: 2-4
AACSB: None

23) The break-even point may be reduced by reducing total fixed costs and holding everything else constant.
Answer: TRUE
Diff: 2 Page Ref: 48
LO: 2-4
AACSB: Analytic Skills

24) The break-even point may be reduced by increasing the per unit variable cost.
Answer: FALSE
Diff: 2 Page Ref: 48
LO: 2-4
AACSB: Analytic Skills

25) An increase in the sales price per unit will cause a decrease in the break-even point.
Answer: TRUE
Diff: 2 Page Ref: 49
LO: 2-4
AACSB: Analytic Skills

2.5 Questions

1) The _____ is the change in total results under a new condition, in comparison with some given or known condition.
A) incremental effect
B) detrimental effect
C) conditional effect
D) exclusive effect
Answer: A
Diff: 1 Page Ref: 49
LO: 2-5
AACSB: None

2) Gokey Company has a contribution-margin ratio of 0.30. Targeted net income is $76,800 and targeted sales volume in dollars is $480,000. What are total fixed costs?
A) $23,000
B) $44,160
C) $67,200
D) $144,000
Answer: C
Diff: 3 Page Ref: 49
LO: 2-5
AACSB: Analytic Skills

3) Key Company has a targeted sales volume of 62,300 units. Total fixed costs are $31,200. The contribution margin per unit is $1.20. What is targeted net income?
A) $31,200
B) $37,440
C) $43,560
D) $74,760
Answer: C
Diff: 2 Page Ref: 49
LO: 2-5
AACSB: Analytic Skills

4) Goy Company has a break-even point of 88,000 units. The contribution margin per unit is $9.60. The desired pre-tax profit is $18,096. How many units must be sold to achieve the desired profit?
A) 1,885 units
B) 88,000 units
C) 89,885 units
D) indeterminate
Answer: C
Diff: 2 Page Ref: 49
LO: 2-5
AACSB: Analytic Skills

5) Assume the following facts:

Sales price	$180 per unit
Variable cost	$100 per unit
Total fixed costs	$39,600
Targeted net income	$52,800

How many units must be sold to achieve the targeted net income?
A) 513
B) 629
C) 963
D) 1,155
Answer: D
Diff: 2 Page Ref: 49
LO: 2-5
AACSB: Analytic Skills

6) Hell Company has the following information available:

Selling price per unit	$5.00
Variable cost per unit	$3.50
Total fixed costs	$90,000.00
Targeted net income	$30,000.00

How many units must be sold to achieve the targeted net income?
A) 10,000 units
B) 27,000 units
C) 45,000 units
D) 80,000 units
Answer: D
Diff: 2 Page Ref: 49
LO: 2-5
AACSB: Analytic Skills

7) The following information is available for Kinsner Corporation:

Total fixed costs	$313,500
Variable costs per unit	$99
Selling price per unit	$154

If management has a targeted net income of $46,200, then the number of units that must be sold is _____.
A) 2,036 units
B) 2,336 units
C) 5,700 units
D) 6,540 units
Answer: D
Diff: 2 Page Ref: 49-50
LO: 2-5
AACSB: Analytic Skills

8) The following information is available for Kismer Corporation:

Total fixed costs	$313,500
Variable costs per unit	$90
Selling price per unit	$150

If management has a targeted net income of $59,400, then sales revenue should be _____.
A) $239,721
B) $580,067
C) $671,220
D) $932,250
Answer: D
Diff: 2 Page Ref: 49-50
LO: 2-5
AACSB: Analytic Skills

9) As sales exceed the break-even point, a firm with a high contribution-margin percentage _____.
A) increases profits faster than does a firm with a low contribution-margin percentage
B) increases profits at the same rate as a firm with a low contribution-margin percentage
C) decreases profits at the same rate as a firm with a low contribution-margin percentage
D) increases profits slower than does a firm with a low contribution-margin percentage
Answer: A
Diff: 2 Page Ref: 53
LO: 2-5
AACSB: Analytic Skills

10) _____ is the ratio of fixed costs to variable costs.
A) Contribution margin
B) Break-even point
C) Operating leverage
D) The margin of safety
Answer: C
Diff: 1 Page Ref: 53
LO: 2-5
AACSB: None

11) Which of the following statements about highly leveraged companies is true?
A) Fixed costs are high and variable costs are low.
B) Large changes in sales volume result in larger changes in net income.
C) There is more risk with highly leveraged companies.
D) All of these answers are correct.
Answer: D
Diff: 2 Page Ref: 53
LO: 2-5
AACSB: None

12) What is the margin of safety?
A) planned unit sales minus break-even unit sales
B) actual unit sales minus planned unit sales
C) sales price minus fixed expenses
D) equals contribution margin
Answer: A
Diff: 1 Page Ref: 54
LO: 2-5
AACSB: None

13) Berea Company expects to sell 19,000 units. Total fixed costs are $84,000 and the contribution margin per unit is $6.00. Berea's tax rate is 40%. What is the margin of safety in units?
A) 3,000 units
B) 5,000 units
C) 7,500 units
D) 14,000 units
Answer: B
Diff: 2 Page Ref: 54
LO: 2-5
AACSB: Analytic Skills

14) The benefits of using a computer model in CVP analysis always exceed the costs.
Answer: FALSE
Diff: 1 Page Ref: 51
LO: 2-5
AACSB: None

15) Generally, companies that spend heavily for advertising are willing to do so because they have low contribution-margin percentages.
Answer: FALSE
Diff: 1 Page Ref: 52
LO: 2-5
AACSB: None

16) An industry that has a high contribution-margin percentage is the airlines.
Answer: TRUE
Diff: 1 Page Ref: 52
LO: 2-5
AACSB: None

17) Manufacturers of industrial equipment have high contribution-margin percentages.
Answer: FALSE
Diff: 1 Page Ref: 52
LO: 2-5
AACSB: None

18) Operating leverage is the ratio of fixed costs to variable costs.
Answer: TRUE
Diff: 1 Page Ref: 53
LO: 2-5
AACSB: None

19) Highly leveraged companies have low fixed costs and high variable costs.
Answer: FALSE
Diff: 2 Page Ref: 53
LO: 2-5
AACSB: None

20) In highly leveraged companies, small changes in sales volume result in large changes in net income.
Answer: TRUE
Diff: 2 Page Ref: 53
LO: 2-5
AACSB: None

21) Highly leveraged companies are less risky than companies with low leverage.
Answer: FALSE
Diff: 2 Page Ref: 53
LO: 2-5
AACSB: None

22) A small margin of safety may indicate a risky situation.
Answer: TRUE
Diff: 2 Page Ref: 54
LO: 2-5
AACSB: None

23) The Eastman Family Restaurant is open 24 hours per day. Fixed costs are $24,000 per month. Variable costs are estimated at $9.60 per meal. The average revenue is $12 per meal. The restaurant wished to earn a profit before taxes of $6,000 per month.

Required:
A) Compute the number of meals that must be served to earn a profit before taxes of $6,000 per month.
B) Assume that fixed costs increase to $30,000 per month. How many additional meals must be served to earn a profit before taxes of $6,000 per month?
Answer:
A) ($24,000 + $6,000)/ ($12.00 - $9.60) = 12,500 meals
B) ($30,000 - $24,000)/($12.00 - $9.60) = 2,500 meals
Diff: 3 Page Ref: 48-49
LO: 2-5
AACSB: Analytic Skills

24) Sole Company manufactures running shoes. The selling price is $80 per pair (unit) and variable costs are $60 per pair(unit). The sales volume of $776,000 generates $100,750 of net income before taxes.

Required:
A) Compute total fixed costs.
B) Compute total variable costs.
C) Compute the break-even point in units.
D) Compute the quantity of units above the break-even point to reach targeted net income before taxes.
Answer:
A) $776,000/ $80= 9,700 units
Variable costs= $60 x 9,700 = $582,000
Fixed costs= $776,000 - $582,000 - $100,750 = $93,250
B) 9,700 x $60 = $582,000
C) $93,250/ ($80 - $60) = 4,662.5 = 4,663 units
D) 9,700 — 4,663 = 5,037 units
Diff: 2 Page Ref: 49
LO: 2-5
AACSB: Analytic Skills

2.6 Questions

1) _____ is the excess of sales over the cost of goods sold.
A) Gross margin
B) Contribution-margin ratio
C) Variable-cost ratio
D) Contribution margin
Answer: A
Diff: 1 Page Ref: 54
LO: 2-6
AACSB: None

2) Contribution margin is equal to _____.
A) sales minus variable costs
B) sales minus fixed costs
C) sales minus variable production costs
D) sales minus production costs
Answer: A
Diff: 1 Page Ref: 54
LO: 2-6
AACSB: None

3) The following information is available for a company:

Sales	$1,000,000
Selling expenses—variable	22,000
Selling expenses—fixed	33,000
Administrative expenses—variable	30,000
Administrative expenses—fixed	10,000
Cost of goods sold—variable	400,000
Cost of goods sold—fixed	100,000

What is the contribution margin for this company?
A) $500,000
B) $548,000
C) $578,000
D) $600,000
Answer: B
Diff: 2 Page Ref: 54
LO: 2-6
AACSB: Analytic Skills

4) The following information for Company Tired is:

Sales	$1,000,000
Selling expenses—variable	22,000
Selling expenses—fixed	33,000
Administrative expenses—variable	30,000
Administrative expenses—fixed	10,000
Cost of goods sold—variable	400,000
Cost of goods sold—fixed	100,000

What is the gross margin for this company?
A) $500,000
B) $548,000
C) $578,000
D) $600,000
Answer: A
Diff: 2 Page Ref: 54
LO: 2-6
AACSB: Analytic Skills

5) The following information is available for Company ZZ:

Sales	$1,000,000
Selling expenses—variable	22,000
Selling expenses—fixed	33,000
Administrative expenses—variable	30,000
Administrative expenses—fixed	10,000
Cost of goods sold—variable	400,000
Cost of goods sold—fixed	100,000

If sales increase to $1,500,000, what is operating income?
A) $405,000
B) $500,000
C) $548,000
D) $679,000
Answer: D
Diff: 3 Page Ref: 54
LO: 2-6
AACSB: Analytic Skills

6) Gross margin is the same as contribution margin for most companies.
Answer: FALSE
Diff: 2 Page Ref: 54
LO: 2-6
AACSB: None

7) Gross margin focuses on sales in relation to variable costs.
Answer: FALSE
Diff: 1 Page Ref: 54
LO: 2-6
AACSB: None

8) Cost of goods sold is the cost of the merchandise that a company acquires or produces and then sells.
Answer: TRUE
Diff: 1 Page Ref: 54
LO: 2-6
AACSB: None

9) Selling expenses are found in the cost of goods sold.
Answer: FALSE
Diff: 1 Page Ref: 54
LO: 2-6
AACSB: None

2.7 Questions

1) _____ is the relative proportions or combinations of quantities of different products that comprise total sales.
A) Sales mix
B) Constant mix
C) Fluctuating mix
D) Variable cost ratio
Answer: A
Diff: 1 Page Ref: 57
LO: 2-7
AACSB: None

2) Assume the following facts for two products, Zip and Zap:

	Zip	Zap
Sales mix	3 units	1 unit
Selling price per unit	$21.60	$28.80
Variable costs per unit	$14.40	$16.80

If total fixed costs are $53,760, the break-even point in units would be _____.
A) 4,800 units of Zip and 1,600 units of Zap
B) 1,200 units of Zip and 400 units of Zap
C) 1,600 units of Zip and 4,800 units of Zap
D) 8,400 units of Zip and 2,800 units of Zap
Answer: A
Diff: 3 Page Ref: 57
LO: 2-7
AACSB: Analytic Skills

3) Assume the following information for two products, Hawaii Fantasy and Hawaii Joy.

	Hawaii Fantasy	Hawaii Joy
Sales mix	4 units	1 unit
Selling price per unit	$15	$100
Variable cost per unit	$9	$20

Fixed expenses total $475,800 per year. What is the breakeven point in units for each product?
A) 4,575 units of Hawaii Fantasy and 18,300 units of Hawaii Joy
B) 18,300 units of Hawaii Fantasy and 18,300 units of Hawaii Joy
C) 18,300 units of Hawaii Fantasy and 4,575 units of Hawaii Joy
D) none of the above
Answer: C
Diff: 3 Page Ref: 57
LO: 2-7
AACSB: Analytic Skills

4) If the proportions of different products in a sales mix change, the _____.
A) contribution margin per unit for each product increases
B) break-even point will change
C) contribution margin per unit for each product decreases
D) net income will not change
Answer: B
Diff: 2 Page Ref: 58
LO: 2-7
AACSB: None

5) Nearly all companies sell more than one product, and thus, they must be concerned with sales mix.
Answer: TRUE
Diff: 1 Page Ref: 57
LO: 2-7
AACSB: None

6) When changes occur in the sales mix, there is no effect on the cost-volume-profit relationships.
Answer: FALSE
Diff: 2 Page Ref: 58
LO: 2-7
AACSB: None

7) Due to limited resources, sales of every type of product cannot be maximized.
Answer: TRUE
Diff: 2 Page Ref: 58
LO: 2-7
AACSB: None

8) The profitability of a given product guides managers when deciding which product to emphasize in a sales mix.
Answer: TRUE
Diff: 2 Page Ref: 58
LO: 2-7
AACSB: None

9) Lakers Company produces two products. The following information is available:

	Product X	Product Y
Selling price per unit	$46	$36
Variable cost per unit	$38	$24

Total fixed costs are $234,000. Lakers plans to sell 21,000 units of Product X and 7,000 units of Product Y.

Required:
A) Compute the contribution margin for each product.
B) What is the expected net income?
C) Assume the sales mix is 3 units of Product X for every 1 unit of Product Y.
What is the break-even point in units for each product?
D) Assume the sales mix is 3 units of Product X for every 2 units of Product Y.
What is the break-even point in units for each product?
Answer:
A) Product X: Contribution margin = $46 - $38 = $8
Product Y: Contribution margin = $36 - $24 = $12
B) Contribution margin ($8 x 21,000) + ($12 x 7,000) = $252,000

Fixed costs	234,000
Net income	$18,000

C) ($8 x 3)Z + ($12 x 1)Z - $234,000 = 0
$24Z + $12Z = $234,000
Z = 6,500 units
Product X: 6,500 x 3 = 19,500 units
Product Y: 6,500 units
D) ($8 x 3)Z + ($12 x 2)Z - $234,000 = 0
$24Z + $24Z = $234,000
Z = 4,875 units
Product X: 4,875 x 3 = 14,625 units
Product Y: 4,875 x 2 = 9,750 units
Diff: 3 Page Ref: 57
LO: 2-7
AACSB: Analytic Skills

2.8 Questions

1) Company TTT has the following information available:

Total fixed costs	$84,000
Targeted after-tax net income	$18,000
Contribution margin per unit	$6.20
Tax rate	40%

How many units must be sold to achieve the targeted after-tax net income?
A) 14,223
B) 17,853
C) 18,387
D) 21,504
Answer: C
Diff: 3 Page Ref: 59
LO: 2-8
AACSB: Analytic Skills

2) The Forever Memories Company has the following information available:

Targeted after-tax net income	$67,500
Total fixed costs	$370,000
Contribution margin per unit	$2
Tax rate	40%

How many units should be sold to achieve the targeted after-tax net income?
A) 160,833
B) 167,250
C) 218,750
D) 241,250
Answer: D
Diff: 2 Page Ref: 59
LO: 2-8
AACSB: Analytic Skills

3) The SLOW Company has the following information available:

Total fixed costs	$350,000
Expected sales(units)	100,000
Contribution margin per unit	$7.50
Tax rate	30%

What is the after-tax net income?
A) $280,000
B) $350,000
C) $400,000
D) $877,500
Answer: A
Diff: 3 Page Ref: 59
LO: 2-8
AACSB: Analytic Skills

4) Assume the following information for Marie Company:

Selling price per unit	$100
Variable cost per unit	$80
Total fixed costs	$80,000
After-tax net income	$24,000
Tax rate	40%

To achieve the targeted after-tax net income, what amount of sales in dollars is necessary?
A) $400,000
B) $520,000
C) $600,000
D) $660,000
Answer: C
Diff: 2 Page Ref: 59
LO: 2-8
AACSB: Analytic Skills

5) Assume the following information for Andrew Company:

Selling price per unit	$100
Variable cost per unit	$80
Total fixed costs	$80,000
After-tax net income	$40,800
Tax rate	40%

How many units must be sold to achieve the after-tax net income?
A) 6,040
B) 7,400
C) 7,770
D) 7,800
Answer: B
Diff: 2 Page Ref: 59
LO: 2-8
AACSB: Analytic Skills

6) MYC Company has the following information available:

Income tax rate	30%
Selling price per unit	$5.00
Variable cost per unit	$3.00
Total fixed costs	$90,000.00

If MYC Company wants a targeted after-tax net income of $14,000, how many units must be sold?
A) 45,000
B) 52,000
C) 55,000
D) 60,000
Answer: C
Diff: 2 Page Ref: 59
LO: 2-8
AACSB: Analytic Skills

7) ADEL Company has the following information:

Income tax rate	40%
Selling price per unit	$7.50
Variable cost per unit	$2.50
Total fixed costs	$100,000
Target after-tax net income	$42,000

Assume the tax rate decreases to 30%. How many fewer units can be sold to retain the same after-tax net income of $42,000?
A) 1,000
B) 2,000
C) 32,000
D) 34,000
Answer: B
Diff: 3 Page Ref: 59
LO: 2-8
AACSB: Analytic Skills

8) Zachary Company wishes to earn after-tax net income of $18,000. Total fixed costs are $84,000 and the contribution margin is $6.00 per unit. Zachary's tax rate is 40%. The number of units that must be sold to breakeven is _____.
A) 14,000
B) 17,000
C) 19,000
D) 21,500
Answer: A
Diff: 2 Page Ref: 59
LO: 2-8
AACSB: Analytic Skills

9) Strongsville Company wishes to earn after-tax net income of $18,000. Total fixed costs are $84,000 and the contribution margin is $6.00 per unit. Strongsville's tax rate is 40%. The number of units that must be sold to earn the targeted net income is _____.
A) 14,000
B) 17,000
C) 19,000
D) 21,500
Answer: C
Diff: 2 Page Ref: 59
LO: 2-8
AACSB: Analytic Skills

10) A change in the tax rate will not affect the break-even point.
Answer: TRUE
Diff: 2 Page Ref: 59
LO: 2-8
AACSB: Analytic Skills

11) The Love Company has provided the following information:

Income tax rate	30%
Selling price per unit	$6.60
Variable cost per unit	$5.28
Total fixed costs	$46,200.00

Required:
A) Compute the break-even point in units.
B) Compute the sales volume in units necessary to generate an after-tax net income of $10,000.
C) Compute the sales volume in units necessary to generate an after-tax net income of $20,000.
Answer:
A) 46,200/($6.60 - $5.28) = 35,000 units
$10,000/ 0.70 = $14,285.71
($14,285.71 + $46,200)/($1.32) = 45,822.51 = 45,823 units

$20,000/ 0.70 = $28,571.43
($28,571.43 + $46,200)/($1.32) = 56,645.02 = 56,646 units
Diff: 2 Page Ref: 46 and 59
LO: 2-8
AACSB: Analytic Skills

12) Young Corporation has determined the contribution margin ratio is 35% and the income tax rate is 40%.

Required:
A) Assume break-even volume in dollars is $1,500,000. What are total fixed costs?
B) Assume Young Corporation wants after-tax net income of $300,000. What volume of sales in dollars is necessary to achieve this net income?
Answer:
A) $1,500,000 x 0.35 = $525,000
B) $300,000/ 0.6= $500,000
($500,000 + $525,000)/0.35 = $2,928,571.4
Diff: 2 Page Ref: 46, 59
LO: 2-8
AACSB: Analytic Skills