Chapter 17: Absorption, Variable, and Throughput Costing

MULTIPLE CHOICE QUESTIONS

1. Under variable costing, fixed manufacturing overhead is:
   A. expensed immediately when incurred.
   B. never expensed.
   C. applied directly to Finished-Goods Inventory.
   D. applied directly to Work-in-Process Inventory.
   E. treated in the same manner as variable manufacturing overhead.

   Answer: A LO: 1 Type: RC

2. All of the following are inventoried under variable costing except:
   A. direct materials.
   B. direct labor.
   C. variable manufacturing overhead.
   D. fixed manufacturing overhead.
   E. items "C" and "D" above.

   Answer: D LO: 1 Type: RC

3. All of the following are expensed under variable costing except:
   A. variable manufacturing overhead.
   B. fixed manufacturing overhead.
   C. variable selling and administrative costs.
   D. fixed selling and administrative costs.
   E. items "C" and "D" above.

   Answer: A LO: 1 Type: RC

4. All of the following costs are inventoried under absorption costing except:
   A. direct materials.
   B. direct labor.
   C. variable manufacturing overhead.
   D. fixed manufacturing overhead.
   E. fixed administrative salaries.

   Answer: E LO: 1 Type: RC

5. All of the following are inventoried under absorption costing except:
   A. direct labor.
   B. raw materials used in production.
   C. utilities cost consumed in manufacturing.
   D. sales commissions.
   E. machine lubricant used in production.

   Answer: D LO: 1 Type: N

6. The underlying difference between absorption costing and variable costing lies in the treatment of:
   A. direct labor.
   B. variable manufacturing overhead.
   C. fixed manufacturing overhead.
   D. variable selling and administrative expenses.
   E. fixed selling and administrative expenses.

   Answer: C LO: 1 Type: RC

7. Which of the following costs would be treated differently under absorption costing and variable costing?

	Direct Labor	Variable Manufacturing Overhead	Fixed Administrative Expenses
A.	Yes	No	Yes
B.	Yes	Yes	Yes
C.	No	Yes	No
D.	No	No	Yes
E.	No	No	No

   Answer: E LO: 1 Type: RC

8. Lone Star has computed the following unit costs for the year just ended:

Direct material used	$12
Direct labor	18
Variable manufacturing overhead	25
Fixed manufacturing overhead	29
Variable selling and administrative cost	10
Fixed selling and administrative cost	17

   Under variable costing, each unit of the company's inventory would be carried at:
   A. $35.
   B. $55.
   C. $65.
   D. $84.
   E. some other amount.

   Answer: B LO: 1 Type: A

9. Prescott Corporation has computed the following unit costs for the year just ended:

Direct material used	$18
Direct labor	27
Variable manufacturing overhead	30
Fixed manufacturing overhead	32
Variable selling and administrative cost	9
Fixed selling and administrative cost	17

Under absorption costing, each unit of the company's inventory would be carried at:
A. $75.
B. $107.
C. $116.
D. $133.
E. some other amount.

Answer: B LO: 1 Type: A

10. Santa Fe Corporation has computed the following unit costs for the year just ended:

Direct material used	$25
Direct labor	19
Variable manufacturing overhead	35
Fixed manufacturing overhead	40
Variable selling and administrative cost	17
Fixed selling and administrative cost	32

Which of the following choices correctly depicts the per-unit cost of inventory under variable costing and absorption costing?

	Variable Costing	Absorption Costing
A.	$79	$119
B.	$79	$151
C.	$96	$119
D.	$96	$151

E. Some other combination of figures not listed above.

Answer: A LO: 1 Type: A

11. Delaware has computed the following unit costs for the year just ended:

Variable manufacturing cost	$85
Fixed manufacturing cost	20
Variable selling and administrative cost	18
Fixed selling and administrative cost	11

Which of the following choices correctly depicts the per-unit cost of inventory under variable costing and absorption costing?
A. Variable, $85; absorption, $105.
B. Variable, $85; absorption, $116.
C. Variable, $103; absorption, $105.
D. Variable, $103; absorption, $116.
E. Some other combination of figures not listed above.

Answer: A LO: 1 Type: A

Use the following to answer questions 12-13:

Indiana Company incurred the following costs during the past year when planned production and actual production each totaled 20,000 units:

Direct materials used	$280,000
Direct labor	120,000
Variable manufacturing overhead	160,000
Fixed manufacturing overhead	100,000
Variable selling and administrative costs	60,000
Fixed selling and administrative costs	90,000

12. If Indiana uses variable costing, the total inventoriable costs for the year would be:
A. $400,000.
B. $460,000.
C. $560,000.
D. $620,000.
E. $660,000.

Answer: C LO: 1 Type: A

13. The per-unit inventoriable cost under absorption costing is:
A. $9.50.
B. $25.00.
C. $28.00.
D. $33.00.
E. $40.50.

Answer: D LO: 1 Type: A

14. Consider the following comments about absorption- and variable-costing income statements:

    I. A variable-costing income statement discloses a firm's contribution margin.
    II. Cost of goods sold on an absorption-costing income statement includes fixed costs.
    III. The amount of variable selling and administrative cost is the same on absorption- and variable-costing income statements.

    Which of the above statements is (are) true?
    A. I only.
    B. II only.
    C. I and II.
    D. II and III.
    E. I, II, and III.

    Answer: E LO: 2, 3 Type: N

15. Roberts, which began business at the start of the current year, had the following data:

    Planned and actual production: 40,000 units
    Sales: 37,000 units at $15 per unit
    Production costs:
        Variable: $4 per unit
        Fixed: $260,000
    Selling and administrative costs:
        Variable: $1 per unit
        Fixed: $32,000

    The gross margin that the company would disclose on an absorption-costing income statement is:
    A. $97,500.
    B. $147,000.
    C. $166,500.
    D. $370,000.
    E. some other amount.

    Answer: C LO: 2 Type: A

16. McAfee, which began business at the start of the current year, had the following data:

Planned and actual production: 40,000 units
Sales: 37,000 units at $15 per unit
Production costs:
Variable: $4 per unit
Fixed: $260,000
Selling and administrative costs:
Variable: $1 per unit
Fixed: $32,000

The contribution margin that the company would disclose on an absorption-costing income statement is:
A. $0.
B. $147,000.
C. $166,500.
D. $370,000.
E. some other amount.

Answer: A LO: 2 Type: A

17. Chicago began business at the start of the current year. The company planned to produce 25,000 units, and actual production conformed to expectations. Sales totaled 22,000 units at $30 each. Costs incurred were:

Fixed manufacturing overhead	$150,000
Fixed selling and administrative cost	100,000
Variable manufacturing cost per unit	8
Variable selling and administrative cost per unit	2

If there were no variances, the company's absorption-costing net income would be:
A. $190,000.
B. $202,000.
C. $208,000.
D. $220,000.
E. some other amount.

Answer: C LO: 2 Type: A

18. Norton, which began business at the start of the current year, had the following data:

Planned and actual production: 40,000 units
Sales: 37,000 units at $15 per unit
Production costs:
  Variable: $4 per unit
  Fixed: $260,000
Selling and administrative costs:
  Variable: $1 per unit
  Fixed: $32,000

The contribution margin that the company would disclose on a variable-costing income statement is:
A. $97,500.
B. $147,000.
C. $166,500.
D. $370,000.
E. some other amount.

Answer: D LO: 3 Type: A

19. Madison began business at the start of the current year. The company planned to produce 30,000 units, and actual production conformed to expectations. Sales totaled 28,000 units at $32 each. Costs incurred were:

Fixed manufacturing overhead	$150,000
Fixed selling and administrative cost	90,000
Variable manufacturing cost per unit	11
Variable selling and administrative cost per unit	2

If there were no variances, the company's variable-costing net income would be:
A. $270,000.
B. $292,000.
C. $308,000.
D. $532,000.
E. some other amount.

Answer: B LO: 3 Type: A

20. The following data relate to Lobo Corporation for the year just ended:

Sales revenue	$750,000
Cost of goods sold:	
Variable portion	370,000
Fixed portion	110,000
Variable selling and administrative cost	50,000
Fixed selling and administrative cost	75,000

Which of the following statements is correct?

A. Lobo's variable-costing income statement would reveal a gross margin of $270,000.
B. Lobo's variable costing income statement would reveal a contribution margin of $330,000.
C. Lobo's absorption-costing income statement would reveal a contribution margin of $330,000.
D. Lobo's absorption costing income statement would reveal a gross margin of $330,000.
E. Lobo's absorption-costing income statement would reveal a gross margin of $145,000.

Answer: B LO: 2, 3 Type: A

Use the following to answer questions 21-22:

Franz began business at the start of this year and had the following costs: variable manufacturing cost per unit, $9; fixed manufacturing costs, $60,000; variable selling and administrative costs per unit, $2; and fixed selling and administrative costs, $220,000. The company sells its units for $45 each. Additional data follow.

Planned production in units	10,000
Actual production in units	10,000
Number of units sold	8,500

There were no variances.

21. The net income (loss) under absorption costing is:
    A. $(7,500).
    B. $9,000.
    C. $15,000.
    D. $18,000.
    E. some other amount.

    Answer: D LO: 2 Type: A

22. The net income (loss) under variable costing is:
    A. $(7,500).
    B. $9,000.
    C. $15,000.
    D. $18,000.
    E. some other amount.

    Answer: B LO: 3 Type: A

23. Income reported under absorption costing and variable costing is:
    A. always the same.
    B. typically different.
    C. always higher under absorption costing.
    D. always higher under variable costing.
    E. always the same or higher under absorption costing.

    Answer: B LO: 4 Type: RC

24. Gomez's inventory increased during the year. On the basis of this information, income reported under absorption costing:
    A. will be the same as that reported under variable costing.
    B. will be higher than that reported under variable costing.
    C. will be lower than that reported under variable costing.
    D. will differ from that reported under variable costing, the direction of which cannot be determined from the information given.
    E. will be less than that reported in the previous period.

    Answer: B LO: 4 Type: N

25. Which of the following conditions would cause absorption-costing net income to be lower than variable-costing net income?
    A. Units sold exceeded units produced.
    B. Units sold equaled units produced.
    C. Units sold were less than units produced.
    D. Sales prices decreased.
    E. Selling expenses increased.

    Answer: A LO: 4 Type: N

26. Which of the following situations would cause variable-costing net income to be lower than absorption-costing net income?
    A. Units sold equaled 39,000 and units produced equaled 42,000.
    B. Units sold and units produced were both 42,000.
    C. Units sold equaled 55,000 and units produced equaled 49,000.
    D. Sales prices decreased by $7 per unit during the accounting period.
    E. Selling expenses increased by 10% during the accounting period.

    Answer: A LO: 4 Type: N

27. Consider the following statements about absorption- and variable-costing net income:
    I. Yearly income reported under absorption costing will differ from income reported under variable costing if production and sales volumes differ.
    II. Long-run, total income reported under absorption costing will often be close to that reported under variable costing.
    III. Differences in income under absorption and variable costing can often be reconciled by multiplying the change in inventory (in units) by the variable manufacturing overhead cost per unit.

    Which of the above statements is (are) true?
    A. I only.
    B. II only.
    C. III only.
    D. I and II.
    E. II and III.

    Answer: D LO: 4 Type: RC

28. Which of the following formulas can often reconcile the difference between absorption- and variable-costing net income?
    A. Change in inventory units x predetermined variable-overhead rate per unit.
    B. Change in inventory units ÷ predetermined variable-overhead rate per unit.
    C. Change in inventory units x predetermined fixed-overhead rate per unit.
    D. Change in inventory units ÷ predetermined fixed-overhead rate per unit.
    E. (Absorption-costing net income - variable-costing net income) x fixed-overhead rate per unit.

    Answer: C LO: 4 Type: RC

29. Monex reported $65,000 of net income for the year by using absorption costing. The company had no beginning inventory, planned and actual production of 20,000 units, and sales of 18,000 units. Standard variable manufacturing costs were $20 per unit, and total budgeted fixed manufacturing overhead was $100,000. If there were no variances, net income under variable costing would be:
    A. $15,000.
    B. $55,000.
    C. $65,000.
    D. $75,000.
    E. $115,000.

    Answer: B LO: 4 Type: A

30. Canyon reported $106,000 of net income for the year by using variable costing. The company had no beginning inventory, planned and actual production of 50,000 units, and sales of 47,000 units. Standard variable manufacturing costs were $15 per unit, and total budgeted fixed manufacturing overhead was $150,000. If there were no variances, net income under absorption costing would be:
A. $52,000.
B. $97,000.
C. $106,000.
D. $115,000.
E. $160,000.

Answer: D LO: 4 Type: A

31. Consider the following statements about absorption costing and variable costing:

I. Variable costing is consistent with contribution reporting and cost-volume-profit analysis.
II. Absorption costing must be used for external financial reporting.
III. A number of companies use both absorption costing and variable costing.

Which of the above statements is (are) true?
A. I only.
B. II only.
C. III only.
D. I and II.
E. I, II, and III.

Answer: E LO: 5, 6 Type: RC

32. Consider the following statements about absorption costing and variable costing:

I. Variable costing is consistent with contribution reporting and cost-volume-profit analysis.
II. Variable costing must be used for external financial reporting.
III. A number of companies use both absorption costing and variable costing.

Which of the above statements is (are) true?
A. I only.
B. II only.
C. III only.
D. I and II.
E. I and III.

Answer: E LO: 5, 6 Type: RC

33. For external-reporting purposes, generally accepted accounting principles require that net income be based on:
    A. absorption costing.
    B. variable costing.
    C. direct costing.
    D. semivariable costing.
    E. activity-based costing.

    Answer: A LO: 6 Type: RC

34. Under throughput costing, the cost of a unit typically includes:
    A. selling costs.
    B. fixed manufacturing overhead.
    C. the direct costs incurred whenever a unit is manufactured.
    D. administrative costs.
    E. all of the above.

    Answer: C LO: 7 Type: RC

35. Which of the following methods defines product cost as the unit-level cost incurred each time a unit is manufactured?
    A. Throughput costing.
    B. Indirect costing.
    C. Process costing.
    D. Absorption costing.
    E. Back-flush costing.

    Answer: A LO: 7 Type: RC

36. Orion's management recently committed to incurring direct labor and all manufacturing overhead charges regardless of the number of units produced. Under throughput costing, the company's cost of goods sold would include charges for:
    A. selling and administrative costs.
    B. direct materials.
    C. direct labor and manufacturing overhead.
    D. direct materials, direct labor, and manufacturing overhead.
    E. direct materials, direct labor, manufacturing overhead, and selling and administrative costs.

    Answer: B LO: 8 Type: N

37. Highline Company reported the following costs for the year just ended:

Throughput manufacturing costs	$180,000
Non-throughput manufacturing costs	600,000
Selling and administrative costs	125,000

If Highline uses throughput costing and had sales revenues for the period of $950,000, which of the following choices correctly depicts the company's cost of goods sold and net income?

	Cost of Goods Sold	Net Income
A.	$180,000	$45,000
B.	$180,000	$645,000
C.	$305,000	$45,000
D.	$305,000	$645,000
E.	Some other combination of figures not listed above.	

Answer: A LO: 8 Type: A

38. The fixed-overhead volume variance under variable costing:
    A. coincides with the fixed manufacturing overhead that was applied to production.
    B. is deducted on the income statement.
    C. does not exist.
    D. will equal the fixed-overhead budget variance.
    E. must be unfavorable.

Answer: C LO: 9 Type: RC

39. Which of the following differs between absorption costing and variable costing?
    A. The number of units produced.
    B. The fixed-overhead volume variance.
    C. Sales revenues.
    D. The treatment of variable manufacturing overhead.
    E. Income tax rates.

Answer: B LO: 9 Type: RC

EXERCISES

Characteristics of Absorption Costing and Variable Costing

40. Consider the statements that follow.

    1. Variable selling costs are expensed when incurred.
    2. The income statement discloses a company's contribution margin.
    3. Fixed manufacturing overhead is attached to each unit produced.
    4. Direct labor becomes part of a unit's cost.
    5. Sales revenue minus cost of goods sold equals contribution margin.
    6. This method must be used for external financial reporting.
    7. Fixed selling and administrative expenses are treated in the same manner as fixed manufacturing overhead.
    8. This method is sometimes called full costing.
    9. This method requires the calculation of a fixed manufacturing cost per unit.

    Required:
    Determine which of the nine statements:
    A. Relate only to absorption costing.
    B. Relate only to variable costing.
    C. Relate to both absorption costing and variable costing.
    D. Relate to neither absorption costing nor variable costing.

    LO: 1, 2, 3, 6 Type: RC, N

    Answer:
    A. 3, 6, 8, 9
    B. 2, 7
    C. 1, 4
    D. 5

Miscellaneous Calculations: Variable and Absorption Costing

41. Information taken from Grille Corporation's May accounting records follows.

Direct materials used	$150,000
Direct labor	80,000
Variable manufacturing overhead	30,000
Fixed manufacturing overhead	100,000
Variable selling and administrative costs	51,000
Fixed selling and administrative costs	60,000
Sales revenues	625,000

Required:

A. Assuming the use of variable costing, compute the inventoriable costs for the month.
B. Compute the month's inventoriable costs by using absorption costing.
C. Assume that anticipated and actual production totaled 20,000 units, and that 18,000 units were sold during May. Determine the amount of fixed manufacturing overhead and fixed selling and administrative costs that would be expensed for the month under (1) variable costing and (2) absorption costing.
D. Assume the same data as in requirement "C." Compute the contribution margin that would be reported on a variable-costing income statement.

LO: 1, 2, 3 Type: A

Answer:

A.

Direct materials used	$150,000
Direct labor	80,000
Variable manufacturing overhead	30,000
Total	$260,000

B.

Direct materials used	$150,000
Direct labor	80,000
Variable manufacturing overhead	30,000
Fixed manufacturing overhead	100,000
Total	$360,000

C. 1. Fixed manufacturing overhead: $100,000
Fixed selling and administrative costs: $60,000

2. Fixed manufacturing overhead: ($100,000 ÷ 20,000 units) x 18,000 units = $90,000
Fixed selling and administrative costs: $60,000

D. Variable manufacturing costs: $150,000 + $80,000 + $30,000 = $260,000
Variable manufacturing costs per unit: $260,000 ÷ 20,000 units = $13
Contribution margin: $625,000 - [(18,000 x $13) + $51,000] = $340,000

Miscellaneous Calculations: Variable and Absorption Costing

42. Sosa, Inc., began operations at the start of the current year, having a production target of 60,000 units. Actual production totaled 60,000 units, and the company sold 90% of its manufacturing output at $55 per unit. The following costs were incurred:

Manufacturing:	
Direct materials used	$300,000
Direct labor	420,000
Variable manufacturing overhead	360,000
Fixed manufacturing overhead	600,000
Selling and administrative:	
Variable	120,000
Fixed	630,000

Required:

A. Assuming the use of variable costing, compute the cost of Sosa's ending finished-goods inventory.
B. Compute the company's contribution margin. Would Sosa disclose the contribution margin on a variable-costing income statement or an absorption-costing income statement?
C. Assuming the use of absorption costing, how much fixed selling and administrative cost would Sosa include in the ending finished-goods inventory?
D. Compute the company's gross margin.

LO: 1, 2, 3 Type: RC, A

Answer:

A. Variable production costs total $1,080,000 ($300,000 + $420,000 + $360,000), or $18 per unit ($1,080,000 ÷ 60,000 units). Since 6,000 units remain in inventory [0 + 60,000 - (60,000 x 90%)], the ending finished goods totals $108,000 (6,000 x $18).

B.

Sales revenue (60,000 units x 90% x $55)		$2,970,000
Less: Variable cost of goods sold		
(60,000 units x 90% x $18)	$972,000	
Variable selling and administrative	120,000	1,092,000
Contribution margin		$1,878,000

The contribution margin is disclosed on a variable-costing income statement.

C. None. All fixed selling and administrative cost is treated as a period cost and expensed against revenue.

D. The cost of a unit would increase by $10 ($600,000 ÷ 60,000 units) because of the addition of fixed manufacturing overhead. Thus:

Sales revenue	$2,970,000
Cost of goods sold (60,000 units x 90% x $28)	1,512,000
Gross margin	$1,458,000

Absorption- and Variable-Costing Income Calculations

43. The following data relate to Venture Company, a new corporation, during a period when the firm produced and sold 100,000 units and 90,000 units, respectively:

Direct materials used	$400,000
Direct labor	200,000
Fixed manufacturing overhead	250,000
Variable manufacturing overhead	120,000
Fixed selling and administrative expenses	300,000
Variable selling and administrative expenses	45,000

The company met its original planned production target of 100,000 units. There were no variances during the period, and the firm's selling price is $15 per unit.

Required:

A. What is the cost of Venture's end-of-period finished-goods inventory under the variable-costing method?
B. Calculate the company's variable-costing net income.
C. Calculate the company's absorption-costing net income.

LO: 1, 2, 3 Type: A

Answer:

A. Ending finished-goods inventory (units): 0 + 100,000 - 90,000 = 10,000
Inventoriable costs under variable costing:

Direct materials used	$400,000
Direct labor	200,000
Variable manufacturing overhead	120,000
Total	$720,000

Variable cost per unit produced: $720,000 ÷ 100,000 units = $7.20 per unit
Ending inventory: 10,000 units x $7.20 = $72,000

B.

Sales revenue (90,000 units x $15)	$1,350,000
Less: Variable costs [(90,000 units x $7.20) + $45,000]	693,000
Contribution margin	$ 657,000
Less: Fixed costs ($250,000 + $300,000)	550,000
Net income	$ 107,000

C. Predetermined fixed overhead rate: $250,000 ÷ 100,000 units = $2.50
Absorption cost per unit: $7.20 + $2.50 = $9.70

Sales revenue (90,000 units x $15)	$1,350,000
Less: Cost of goods sold (90,000 units x $9.70)	873,000
Gross margin	$ 477,000
Less: Operating costs ($300,000 + $45,000)	345,000
Net income	$ 132,000

Absorption- and Variable-Costing Inventory/Income Calculations

44. The following data relate to Hunter, Inc., a new company:

Planned and actual production	200,000 units
Sales at $48 per unit	170,000 units
Manufacturing costs:	
Variable	$18 per unit
Fixed	$840,000
Selling and administrative costs:	
Variable	$7 per unit
Fixed	$925,000

There were no variances during the period.

Required:

A. Determine the number of units in the ending finished-goods inventory.
B. Calculate the cost of the ending finished-goods inventory under (1) variable costing and (2) absorption costing.
C. Determine the company's variable-costing net income.
D. Determine the company's absorption-costing net income.

LO: 1, 2, 3 Type: A

Answer:

A. Ending finished-goods inventory: 0 + 200,000 - 170,000 = 30,000 units

B. Variable costing: 30,000 units x $18 = $540,000
Absorption costing:
Predetermined fixed overhead rate: $840,000 ÷ 200,000 units = $4.20;
30,000 units x ($18.00 + $4.20) = $666,000

C.

Sales revenue (170,000 units x $48)	$8,160,000
Less: Variable costs [170,000 units x ($18 + $7)]	4,250,000
Contribution margin	$3,910,000
Less: Fixed costs ($840,000 + $925,000)	1,765,000
Net income	$2,145,000

D.

Sales revenue (170,000 units x $48)	$8,160,000
Less: Cost of goods sold [170,000 units x ($18.00 + $4.20)]	3,774,000
Gross margin	$4,386,000
Less: Operating costs [(170,000 units x $7) + $925,000]	2,115,000
Net income	$2,271,000

Conversion of Absorption-Cost Data to Variable-Cost Data; Working Backwards

45. Kim, Inc., began business at the start of the current year and maintains its accounting records on an absorption-cost basis. The following selected information appeared on the company's income statement and end-of-year balance sheet:

Income-statement data:	
Sales revenues (35,000 units x $22)	$770,000
Gross margin	210,000
Total sales and administrative expenses	160,000
Balance-sheet data:	
Ending finished-goods inventory (12,000 units)	192,000

Kim achieved its planned production level for the year. The company's fixed manufacturing overhead totaled $141,000, and the firm paid a 10% commission based on gross sales dollars to its sales force.

Required:
A. How many units did Kim plan to produce during the year.
B. How much fixed manufacturing overhead did the company apply to each unit produced?
C. Compute Kim's cost of goods sold.
D. How much variable cost did the company attach to each unit manufactured?

LO: 1, 2, 3 Type: A, N

Answer:

A. Sales (35,000 units) + ending finished-goods inventory (12,000 units) = production (47,000 units). Note: There is no beginning finished-goods inventory.

B. Since planned and actual production figures are the same, Kim applied $3 to each unit ($141,000 ÷ 47,000 units).

C.

Sales revenue	$770,000
Gross margin	210,000
Cost of goods sold	$560,000

D. Kim attached $13 to each unit. This figure can be derived by analyzing cost of goods sold:

Cost of goods sold	$560,000
Fixed cost in cost of goods sold (35,000 units x $3)	105,000
Variable cost of goods sold	$455,000

$455,000 ÷ 35,000 units = $13

The same $13 figure can be obtained by studying the ending finished-good inventory:

Ending finished-goods inventory	$192,000
Fixed cost (12,000 units x $3)	36,000
Variable cost	$156,000

$156,000 ÷ 12,000 units = $13

Reconciliation of Absorption- and Variable-Costing Income

46. Houston Company has per-unit fixed and variable manufacturing costs of $40 and $15, respectively. Variable selling and administrative costs are $9 per unit. Consider the two cases that follow for the firm.

    Case A: Variable-costing net income, $110,000; sales, 6,000 units; production, 6,000 units
    Case B: Variable-costing net income, $178,000; sales, 7,500 units; production, 7,100 units

    Required:
    A. From a product-costing perspective, what is the basic difference between absorption costing and variable costing?
    B. Compute Houston's absorption-costing net income in Case A.
    C. Compute Houston's absorption-costing net income in Case B.

    LO: 1, 4 Type: RC, A

    Answer:
    A. The difference between absorption costing and variable costing lies in the treatment of fixed manufacturing overhead. Under absorption costing, fixed manufacturing overhead is a product cost and attached to each unit produced. In contrast, under variable costing, it is written off (expensed) as a period cost.

    B. Since the number of units sold equals the number of units produced, variable- and absorption-income figures are the same: $110,000.

    C. With sales of 7,500 units and production of 7,100 units, income computed under absorption costing includes $16,000 (400 units x $40) of prior-period fixed manufacturing overhead. Absorption income is therefore $162,000 ($178,000 - $16,000).

Reconciliation of Absorption- and Variable-Costing Income

47. Beachcraft Corporation has fixed manufacturing cost of $12 per unit. Consider the three independent cases that follow.

    Case A: Absorption- and variable costing net income each totaled $240,000 in a period when the firm produced 18,000 units.

    Case B: Absorption-costing net income totaled $320,000 in a period when finished-goods inventory levels rose by 7,000 units.

    Case C: Absorption-costing net income and variable-costing net income respectively totaled $220,000 and $250,000 in a period when the beginning finished-goods inventory was 14,000 units.

    Required:
    A. In Case A, how many units were sold during the period?
    B. In Case B, how much income would Beachcraft report under variable costing?
    C. In Case C, how many units were in the ending finished-goods inventory?

    LO: 4 Type: A

    Answer:
    A. Absorption- and variable costing income will be the same amount when inventory levels are unchanged. Thus, sales totaled 18,000 units.

    B. The difference between absorption-costing income and variable-costing income is $84,000 (7,000 units x $12). Given that inventories are rising, variable-costing net income will amount to $236,000 ($320,000 - $84,000).

    C. The $30,000 difference in income ($250,000 - $220,000) is explained by the change in inventory units, multiplied by the fixed overhead per unit. Thus, the inventory changed by 2,500 units ($30,000 ÷ $12). Given that absorption income is less than income computed by the variable-costing method, inventory levels must have decreased, resulting in an ending inventory level of 11,500 units (14,000 - 2,500).

Throughput Costing, Absorption Costing, Variable Costing

48. Coastal Corporation, which uses throughput costing, began operations at the start of the current year. Planned and actual production equaled 20,000 units, and sales totaled 17,500 units at $95 per unit. Cost data for the year were as follows:

Direct materials (per unit)	$ 18
Conversion cost:	
Direct labor	160,000
Variable manufacturing overhead	280,000
Fixed manufacturing overhead	340,000
Selling and administrative costs (total)	430,000

The company classifies direct materials as a throughput cost.

Required:

A. Compute the company's total cost for the year.
B. How much of this cost would be held in year-end inventory under (1) absorption costing, (2) variable costing, and (3) throughput costing?
C. How much of the company's total cost for the year would appear on the period's income statement under (1) absorption costing, (2) variable costing, and (3) throughput costing?
D. Compute the year's throughput-costing net income.

LO: 1, 2, 3, 7 Type: A, N

Answer:

A.

Direct materials (20,000 units x $18)	$ 360,000
Direct labor	160,000
Variable manufacturing overhead	280,000
Fixed manufacturing overhead	340,000
Selling and administrative costs	430,000
Total	$1,570,000

B. The year-end inventory of 2,500 units (20,000 - 17,500) is costed as follows:

	Absorption Costing	Variable Costing	Throughput Costing
Direct materials	$ 360,000	$360,000	$360,000
Direct labor	160,000	160,000	
Variable manufacturing overhead	280,000	280,000	
Fixed manufacturing overhead	340,000		
Total product cost	$1,140,000	$800,000	$360,000
Cost per unit (Total ÷ 20,000 units)	$57	$40	$18
Year-end inventory (2,500 units x cost per unit)	$142,500	$100,000	$45,000

C. The total costs would be allocated between the current period's income statement and the year-end inventory on the balance sheet. Thus:

Absorption costing: $1,570,000 - $142,500 = $1,427,500
Variable costing: $1,570,000 - $100,000 = $1,470,000
Throughput costing: $1,570,000 - $45,000 = $1,525,000

D. Throughput income: Sales revenue (17,500 units x $95) - $1,525,000 = $137,500

Throughput Costing

49. Krell Corporation, which uses throughput costing, began operations at the start of the current year (20x1). Planned and actual production equaled 40,000 units, and sales totaled 35,000 units at $80 per unit. Cost data for 20x1 were as follows:

Direct materials (per unit)	$ 20
Conversion cost:	
Direct labor	215,000
Variable manufacturing overhead	340,000
Fixed manufacturing overhead	528,000
Selling and administrative costs:	
Variable (per unit)	8
Fixed	220,000

The company classifies direct materials as a throughput cost.

Required:
A. What is meant by the term "throughput costing"?
B. Compute the cost of the company's year-end inventory.
C. Prepare Krell's income statement for the year.

LO: 1, 7 Type: RC, A

Answer:

A. Throughput costing is a technique that assigns only the unit-level spending amounts for direct costs as the cost of products or services. In this case, direct materials is the only item that qualifies as a throughput cost.

B. Ending inventory: 0 + 40,000 units - 35,000 units = 5,000 units; 5,000 units x $20 = $100,000

C.

Krell Corporation
Throughput-Costing Income Statement
For the Year Ended December 31, 20x1

Sales revenue (35,000 units x $80)	$2,800,000
Less: Cost of goods sold (35,000 units x $20)	700,000
Gross margin	$2,100,000
Less: Operating costs	
Direct labor	$ 215,000
Variable manufacturing overhead	340,000
Fixed manufacturing overhead	528,000
Variable selling and administrative costs (35,000 units x $8)	280,000
Fixed selling and administrative costs	220,000
Total operating costs	$1,583,000
Net income	$ 517,000

Variable- and Absorption-Costing Income Statements, Volume Variance

50. Outdoors Company manufactures sleeping bags that sell for $30 each. The variable standard costs of production are $19.50. Budgeted fixed manufacturing overhead is $100,000, and budgeted production is 10,000 sleeping bags. The company actually manufactured 12,500 bags, of which 11,000 were sold. There were no variances during the year except for the fixed-overhead volume variance. Variable selling and administrative costs are $0.50 per sleeping bag sold; fixed selling and administrative costs are $5,000.

Required:

A. Calculate the standard product cost per sleeping bag under absorption costing and variable costing.
B. Compute the fixed-overhead volume variance.
C. Prepare income statements for the year by using absorption costing and variable costing.

LO: 2, 3, 9 Type: A

Answer:

A. The absorption cost is $29.50 [$19.50 + ($100,000 ÷ 10,000 units)], and the variable cost is $19.50.

B. Volume variance = budgeted fixed overhead - fixed overhead applied
= $100,000 - (12,500 units x $10)
= $(25,000) or $25,000F

C.

Outdoors Company
Absorption-Costing Income Statement
For the Year Ended December 31, 20xx

Sales revenue (11,000 units x $30)	$330,000
Less: Cost of goods sold (11,000 units x $29.50)	324,500
Gross margin (at standard)	$ 5,500
Add: Fixed-overhead volume variance	25,000
Gross margin (at actual)	$ 30,500
Less: Operating expenses [(11,000 units x $0.50) + $5,000]	10,500
Net income	$ 20,000

Outdoors Company
Variable-Costing Income Statement
For the Year Ended December 31, 20xx

Sales revenue (11,000 units x $30)		$330,000
Less: Var. cost of goods sold (11,000 units x $19.50)	$214,500	
Var. operating expenses (11,000 units x $0.50)	5,500	220,000
Contribution margin		$110,000
Less: Fixed costs ($100,000 + $5,000)		105,000
Net income		$ 5,000

DISCUSSION QUESTIONS

Absorption Costing, Variable Costing, and Terminology

51. Absorption and variable costing are two different methods of measuring income and costing inventory.

    Required:

    A. Product costs are defined as costs associated with the manufacturing process. How does the operational definition of product cost differ between absorption costing and variable costing?
    B. An absorption-costing income statement will report gross profit or gross margin whereas a variable-costing income statement will report contribution margin. What is the difference between these terms?
    C. BoSan, Inc., has greatly modified its manufacturing process to reduce non-value-added activities and has also adopted the just-in-time philosophy. As a result, the average finished-goods inventory has dropped from six weeks' supply to eight business days' supply. In view of these changes, will the difference in operating income between variable costing and absorption costing be greater or less than in the past? Explain.

    LO: 1, 2, 3, 6 Type: RC, N

    Answer:

    A. The sole difference between the two methods is that fixed manufacturing overhead costs are defined as a product cost under absorption costing and as a period cost under variable costing.

    B. Gross profit (gross margin) is the difference between sales and cost of goods sold. Cost of goods sold includes variable and fixed manufacturing costs. Contribution margin, on the other hand, is the difference between sales and variable expenses, namely, variable cost of goods sold and variable operating expenses. Fixed costs are ignored when calculating the contribution margin.

    C. These changes should reduce the differences in operating income between absorption costing and variable costing. Inventories of work-in-process and finished goods are much smaller than previously; thus, changes in inventories will be much less significant, which reduces differences in income.

Reconciliation of Absorption- and Variable-Costing Income

52. The difference in net income between absorption and variable costing can be explained by the change in finished-goods inventory (in units) multiplied by the standard fixed manufacturing overhead rate.

    Required:
    Explain why this calculation accounts for the difference noted.

    LO: 4 Type: RC

    Answer:
    The only difference between the two methods is the treatment of fixed manufacturing overhead. Such amounts are expensed under variable costing whereas with absorption costing, a predetermined amount is attached to each unit manufactured. This applied overhead moves back and forth between the balance sheet and the income statement depending on what happens to inventory during the period (i.e., increase or decrease). Because of this situation, the change in inventory multiplied by the fixed manufacturing overhead per unit corresponds with the difference in reported income between absorption costing and variable costing.