

Chapter 9 Income Effects of Denominator Level on Inventory Valuation

9.1 Identify the factors important to choosing the denominator level used to calculate fixed overhead allocation rates.

1) Using either the theoretical capacity or practical capacity as the denominator-level concept will result in the same production-volume variance.

Answer: FALSE

Explanation: Theoretical capacity will result in a larger variance.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-1

2) Determining the "right" level of capacity is an important strategic decision.

Answer: TRUE

Diff: 1 Type: TF

Skill: Understand

Objective: LO 9-1

3) Both theoretical and practical capacity measure capacity in terms of demand for the output.

Answer: FALSE

Explanation: Both theoretical and practical capacity measure capacity in terms of what a plant can supply—available capacity.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-1

4) Normal capacity utilization is the expected level of capacity utilization for the current budget period, which is typically one year.

Answer: FALSE

Explanation: *Master-budget capacity utilization* is the expected level of capacity utilization for the current budget period, which is typically one year.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-1

5) Normal capacity utilization is not the same as master-budget capacity utilization.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-1

6) Off-limits idle capacity refers to the unused capacity in facilities that are not located on the company's primary location.

Answer: FALSE

Explanation: Off-limits capacity refers to unavoidable operating interruptions.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-1

7) The Canada Revenue Agency requires companies to use practical capacity as the denominator-level concept.

Answer: FALSE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-1

8) Both ASPE/IFRS and the CRA accept practical capacity for external reporting purposes.

Answer: FALSE

Explanation: The drawback of practical capacity is that neither ASPE/IFRS nor CRA accept this denominator for external reporting purposes.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-1

9) _____ is the level of capacity based on producing at full capacity all the time.

A) Practical capacity

B) Theoretical capacity

C) Normal capacity

D) Demand capacity

E) Master-budget capacity

Answer: B

Diff: 1 Type: MC

Skill: Remember

Objective: LO 9-1

10) Theoretical capacity is based on which of the following assumptions?

A) that absorption costing is used

B) that variable costing is used

C) production will occur at peak capacity all the time

D) production will occur at peak capacity where feasible (e.g., except for maintenance downtime)

E) production can never occur at peak capacity

Answer: C

Diff: 1 Type: MC

Skill: Remember

Objective: LO 9-1

11) Practical capacity is based on which of the following assumptions?

- A) that absorption costing is used
- B) that variable costing is used
- C) Production will occur at peak efficiency all the time.
- D) Production will occur at peak capacity where feasible (e.g., except for maintenance downtime, repairs, holidays, etc.).
- E) Production can never occur at peak capacity.

Answer: D

Diff: 1 Type: MC

Skill: Remember

Objective: LO 9-1

12) The denominator-level concept based on capacity utilization that satisfies average customer demand that includes seasonal and cyclical factors is called

- A) theoretical capacity.
- B) practical capacity.
- C) normal capacity.
- D) master-budget capacity.
- E) supply capacity.

Answer: C

Diff: 1 Type: MC

Skill: Remember

Objective: LO 9-1

13) The denominator-level concept based on capacity utilization for the anticipated level of output that will satisfy customer demand for a single operating cycle is the

- A) theoretical budget capacity.
- B) practical budget capacity.
- C) normal capacity.
- D) master-budget capacity.
- E) supply capacity.

Answer: D

Diff: 1 Type: MC

Skill: Remember

Objective: LO 9-1

14) A major reason for choosing _____ utilization over _____, is the difficulty in forecasting.

- A) theoretical capacity; master-budget
- B) practical capacity; master-budget
- C) normal capacity utilization; master-budget
- D) master-budget; theoretical capacity
- E) master-budget; normal capacity utilization

Answer: E

Diff: 2 Type: MC

Skill: Understand

Objective: LO 9-1

Answer the following question(s) using the information below.

A manufacturing firm is able to produce 2,000 pairs of shoes per hour, at maximum efficiency. There are three eight-hour shifts each day. Production is actually 1,600 pairs of shoes per hour due to unavoidable operating interruptions. The plant is expected to run every day but was only able to operate for 27 days in September.

15) What is the theoretical capacity for the month of September?

- A) 1,488,000 shoes
- B) 1,440,000 shoes
- C) 1,036,800 shoes
- D) 1,296,000 shoes
- E) 1,152,000 shoes

Answer: B

Explanation: B) $2,000 \text{ units} \times 24 \text{ hours} \times 30 \text{ days} = 1,440,000 \text{ pairs of shoes}$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-1

16) What is the practical capacity for the month of September?

- A) 1,488,000 pairs of shoes
- B) 1,440,000 pairs of shoes
- C) 1,036,800 pairs of shoes
- D) 1,296,000 pairs of shoes
- E) 1,152,000 pairs of shoes

Answer: E

Explanation: E) $1,600 \text{ units} \times 24 \text{ hours} \times 30 \text{ days} = 1,152,000 \text{ pairs of shoes}$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-1

17) The budgeted fixed manufacturing cost rate is the lowest for

- A) practical capacity.
- B) supply capacity.
- C) master-budget capacity utilization.
- D) normal capacity utilization.
- E) theoretical capacity.

Answer: E

Diff: 2 Type: MC

Skill: Understand

Objective: LO 9-1

- 18) _____ provides the denominator-level capacity based on demand for more than one budget cycle .
- A) Practical capacity
 - B) Theoretical capacity
 - C) Master-budget capacity utilization
 - D) Normal capacity utilization
 - E) Supply capacity

Answer: C

Diff: 2 Type: MC

Skill: Remember

Objective: LO 9-1

Answer the following question(s) using the information below.

A manufacturing firm is able to produce 1,000 pairs of shoes per hour, at maximum efficiency. There are three eight-hour shifts each day. Due to unavoidable operating interruptions, production averages 800 units per hour. In the month of June the plant actually operated only 25 days due to avoidable shut downs.

- 19) What is the theoretical capacity for the month of April?

- A) 600,000 units
- B) 720,000 units
- C) 744,400 units
- D) 576,000 units
- E) 480,000 units

Answer: B

Explanation: B) $1,000 \text{ units} \times 24 \text{ hours} \times 30 \text{ days} = 720,000 \text{ units}$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-1

- 20) What is the practical capacity for the month of April?

- A) 600,000 units
- B) 720,000 units
- C) 744,400 units
- D) 576,000 units
- E) 480,000 units

Answer: D

Explanation: D) $800 \text{ units} \times 24 \text{ hours} \times 30 \text{ days} = 576,000 \text{ units}$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-1

21) From the perspective of long-run product costing it is best to use

- A) master-budget capacity utilization to highlight unused capacity.
- B) normal capacity utilization for benchmarking purposes.
- C) practical capacity for pricing decisions.
- D) theoretical capacity for performance evaluation.
- E) supply capacity to satisfy customer demand.

Answer: C

Diff: 3 Type: MC

Skill: Understand

Objective: LO 9-1

22) External reporting requires the use of _____ capacity in the denominator, taking into account off-limits idle capacity.

- A) theoretical
- B) practical
- C) budget
- D) normal
- E) practical or normal

Answer: D

Diff: 2 Type: MC

Skill: Remember

Objective: LO 9-1

23) The Canada Revenue Agency effectively eliminates the use of certain denominator-level concepts through its income tax rulings. The accepted concept(s) for tax purpose is (are)

- A) theoretical capacity and practical capacity.
- B) master-budget capacity and theoretical capacity.
- C) practical capacity.
- D) master-budget capacity.
- E) normal capacity or master-budget capacity.

Answer: D

Diff: 2 Type: MC

Skill: Remember

Objective: LO 9-1

24) Wallace's Wrench Company manufactures socket wrenches. For next month the vice-president of production plans on producing 4,400 wrenches per day. The company can produce as many as 5,000 wrenches per day, but are more likely to produce 4,500 per day. The demand for wrenches for the next three years is expected to average 4,250 wrenches per day. Fixed manufacturing costs per month total \$336,600. The company works 20 days a month due to local zoning restrictions. Fixed manufacturing overhead is charged on a per wrench basis.

Required:

- What is the theoretical fixed manufacturing overhead rate per wrench?
- What is the practical fixed manufacturing overhead rate per wrench?
- What is the normal fixed manufacturing overhead rate per wrench?
- What is the master-budget fixed manufacturing overhead rate per wrench?

Answer:

- Theoretical overhead rate = $\$336,600 / (5,000 \times 20) = \3.366
- Practical overhead rate = $\$336,600 / (4,500 \times 20) = \3.74
- Normal overhead rate = $\$336,600 / (4,250 \times 20) = \3.96
- Master-budget overhead rate = $\$336,600 / (4,400 \times 20) = \3.825

Diff: 2 Type: ES

Skill: Apply

Objective: LO 9-1

25) Sierra Tool Manufacturing Ltd. manufactures hammers at their Hamilton facility. For next month the vice-president of production plans on producing 2,700 hammers per day. The company can produce as many as 4,000 hammers per day, but are more likely to produce 3,500 per day. The demand for wrenches for the next three years is expected to average 3,100 wrenches per day. Fixed manufacturing costs per month total \$282,400. The company works 22 days a month due to local zoning restrictions. Fixed manufacturing overhead is charged on a per wrench basis.

Required:

- What is the theoretical fixed manufacturing overhead rate per wrench?
- What is the practical fixed manufacturing overhead rate per wrench?
- What is the normal fixed manufacturing overhead rate per wrench?
- What is the master-budget fixed manufacturing overhead rate per wrench?

Answer:

- Theoretical overhead rate = $\$282,400 / (4,000 \times 22) = \3.21
- Practical overhead rate = $\$282,400 / (3,500 \times 22) = \3.67
- Normal overhead rate = $\$282,400 / (3,100 \times 22) = \4.14
- Master-budget overhead rate = $\$282,400 / (2,700 \times 22) = \4.75

Diff: 2 Type: ES

Skill: Apply

Objective: LO 9-1

9.2 Explain how the choice of denominator affects capacity management, costing, pricing, and performance evaluation.

1) Theoretical capacity is rarely used to calculate the budgeted fixed manufacturing cost per case because it departs significantly from the real capacity available to a company.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-2

2) The downward demand spiral for a company is the continuing reduction in the demand for its products that occurs when prices of competitors' products are not met and higher unit costs result in more reluctance to meet competitors' prices.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-2

3) Using practical capacity is best for evaluating the marketing manager's performance for a particular year.

Answer: FALSE

Explanation: Using *master-budget capacity* is best for evaluating the marketing manager's performance.

Diff: 3 Type: TF

Skill: Understand

Objective: LO 9-2

4) Master-budget capacity utilization can be more reliably estimated than normal capacity utilization.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 9-2

5) Unused capacity is considered wasted resources and the result of poor planning.

Answer: FALSE

Explanation: Unused capacity is not considered wasted resources because capacity has to be purchased in "large chunks" to accommodate future needs, not just the needs of the current period.

Diff: 1 Type: TF

Skill: Understand

Objective: LO 9-2

6) The *master-budget capacity utilization*, rather than normal capacity utilization or practical capacity, is what

should be used for evaluating a marketing manager's performance in the current year.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-2

7) Which denominator-level concept results in the highest amount of fixed manufacturing overhead costs per unit of ending inventory when seasonal demand is low?

- A) theoretical capacity
- B) practical capacity
- C) normal capacity
- D) master-budget capacity
- E) supply capacity

Answer: D

Diff: 2 Type: MC

Skill: Understand

Objective: LO 9-2

8) Master-budget capacity utilization

- A) hides the amount of unused capacity.
- B) represents the maximum units of production for current capacity.
- C) provides the best cost estimate for benchmarking purposes.
- D) when used for product costing results in the lowest cost estimate of the four capacity options.
- E) represents the long-term utilization expected to meet customer demand.

Answer: A

Diff: 3 Type: MC

Skill: Understand

Objective: LO 9-2

9) Using _____ capacity fixes the cost of capacity at the cost of supplying the capacity regardless of the demand for capacity.

- A) practical
- B) theoretical
- C) supply
- D) demand
- E) master-budget

Answer: A

Diff: 2 Type: MC

Skill: Understand

Objective: LO 9-2

10) _____ utilization is an average that provides no meaningful feedback to the marketing manager for a particular year.

- A) Normal capacity
- B) Master-budget capacity
- C) Practical capacity
- D) Flexible budget capacity
- E) Planned unused capacity

Answer: A

Diff: 1 Type: MC

Skill: Remember

Objective: LO 9-2

11) The marketing manager's performance evaluation is most fair when based on a denominator level using

- A) practical capacity.
- B) theoretical capacity.
- C) master-budget capacity.
- D) normal capacity.
- E) supply capacity.

Answer: C

Diff: 2 Type: MC

Skill: Understand

Objective: LO 9-2

12) Explain how using master-budget capacity utilization for setting prices can lead to a downward demand spiral.

Answer: If master-budget capacity utilization is used as the denominator level for determining fixed manufacturing costs per unit, the cost includes a charge for unused capacity. If prices are based on this cost, the product may be priced higher than competitor's products. With a higher selling price, volume of sales will probably decrease reducing the expected number of future sales. Lower expected sales leads to a lower denominator level, which in turn results in an even higher selling price and even lower sales volume, etc.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 9-2

13) Should a company with high fixed costs and unused capacity raise selling prices to try to fully recoup its costs?

Answer: No, companies in this situation might experience greater reductions in the demand of their products if they continue to raise selling prices. This would result in the fixed capacity costs being spread over fewer and fewer units, increasing reported costs, resulting in more pressure to raise prices.

Diff: 3 Type: ES

Skill: Understand

Objective: LO 9-2

14) How does the capacity level chosen to compute the budgeted fixed overhead cost rate affect the production-volume variance?

Answer: The chosen capacity level is directly related to the size and direction of the production-volume variance. When the chosen capacity level exceeds the actual production level, there will be an unfavourable production-volume variance; when the chosen capacity level is less than the actual production level, there will be a favourable production-volume variance.

Diff: 3 Type: ES

Skill: Understand

Objective: LO 9-2

15)

- a. List the four different measures of capacity.
- b. Which measure of capacity is best for setting prices? Why?
- c. Which measure of capacity is best for evaluating the performance of the marketing manager for the current year? Why?

Answer:

- a. Theoretical capacity, practical capacity, normal capacity utilization, and master-budget capacity utilization are the four measures of capacity.
- b. Practical capacity is best to use when setting prices because only the actual cost of capacity used for production is included in the cost of a unit.
- c. Master-budget capacity utilization is best for evaluating performance of managers over the current year because the manager should only be held accountable for budgeted sales of the current year and not production capacity, especially when there is unused capacity.
- d. Normal capacity.

Diff: 2 Type: ES

Skill: Remember

Objective: LO 9-2

9.3 Distinguish absorption from variable costing; prepare and explain the differences in operating income under each costing policy.

1) Full product costs under absorption costing include only inventoriable costs and upstream costs.

Answer: FALSE

Explanation: Include only inventoriable costs.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

2) Variable costing includes all direct manufacturing costs and all manufacturing overhead costs.

Answer: FALSE

Explanation: Only variable manufacturing costs are included.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-3

3) Companies using absorption costing do not need to make any distinction between variable and fixed costs in their accounting system for inventory costing purposes.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 9-3

4) The difference between variable costing and absorption costing centres on accounting for variable costs.

Answer: FALSE

Explanation: Centres on the accounting for fixed costs.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

5) Another common term used by some companies for variable costing is *direct costing*.

Answer: TRUE

Diff: 2 Type: TF

Objective: LO 9-3

6) The distinction between variable costs and fixed costs is highlighted in variable costing via the contribution-margin format while the distinction between manufacturing and nonmanufacturing costs is central to absorption and is highlighted by the gross-margin format.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

7) Variable manufacturing costs are accounted for in the same manner on the income statement regardless of whether absorption or variable costing is used.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-3

8) Direct costing is not truly synonymous with variable costing since variable costing does not include all direct costs as inventoriable costs.

Answer: TRUE

Diff: 1 Type: TF

Objective: LO 9-3

9) Variable costing does not include variable indirect manufacturing costs as inventoriable costs.

Answer: FALSE

Explanation: Variable manufacturing costs are inventoriable.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

10) Variable costs of value chain areas other than manufacturing are typically written off as period costs regardless of the costing method used.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

11) Absorption-costing income statements cannot easily differentiate between variable and fixed costs.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-3

12) The period-to-period change in operating income under variable costing is driven by unit level of sales, if the fixed costs are constant.

Answer: TRUE

Diff: 1 Type: TF

Skill: Understand

Objective: LO 9-3

13) Variable costing will generally report less operating income than absorption costing when the inventory level decreases.

Answer: FALSE

Explanation: Less inventory results from sales exceeding production. Therefore, fixed costs absorbed in the previous period are recognized in the current period so operating income will be lower for absorption costing and higher for variable costing.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

14) Absorption costing defers the fixed manufacturing costs in ending inventory to a future period, but variable costing expenses these costs in the current period.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

15) Changes in inventory levels do not affect income amounts between variable and absorption costing because the difference in accounting for fixed manufacturing overhead offsets the effect.

Answer: FALSE

Explanation: Changes in inventory levels affect the recognition of fixed costs carried in inventory.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

16) Absorption costing prevents managers from increasing production to levels above customer demand, as a means of inflating operating income.

Answer: FALSE

Explanation: Managers evaluated by operating income are motivated to increase production so that more fixed costs are inventoried and cost of goods sold is reduced.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

17) Each unit in inventory under absorption costing absorbs fixed manufacturing costs.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-3

18) Absorption costing can be criticized as a method that encourages managers to make decisions that may be contrary to the long-term interest of the company.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

19) The main difference between variable costing and absorption costing is the way in which fixed manufacturing costs are accounted.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-3

20) The gross-margin format of the income statement highlights the lump sum of fixed manufacturing costs.

Answer: FALSE

Explanation: The gross-margin format of the income statement distinguishes manufacturing costs from nonmanufacturing costs, but it does not highlight the lump sum of fixed manufacturing costs.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

21) In absorption costing, all nonmanufacturing costs are subtracted from gross margin.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-3

22) Direct costing is a perfect way to describe the variable-costing inventory method.

Answer: FALSE

Explanation: Direct costing is a less than perfect way to describe this method because not all variable costs are inventoriable costs.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

23) Period-to-period changes in operating income under absorption costing are driven by variations in *both* the unit level of sales and the unit level of production.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

24) The heart of the difference between variable and absorption costing for financial reporting is accounting for fixed manufacturing and variable non-manufacturing costs.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-3

25) The distinction between absorption costing and variable costing is most important for which type of industry?

A) manufacturing

B) marketing

C) retail

D) service

E) educational

Answer: A

Diff: 1 Type: MC

Skill: Remember

Objective: LO 9-3

26) When all fixed manufacturing costs and variable manufacturing costs are included as inventoriable costs, the method being used is

A) absorption costing.

B) fixed overhead costing.

C) manufacturing overhead costing.

D) variable costing.

E) direct costing.

Answer: A

Diff: 1 Type: MC

Skill: Remember

Objective: LO 9-3

27) The method of costing that excludes fixed manufacturing costs from inventoriable costs is known as

A) absorption costing.

B) fixed overhead costing.

C) manufacturing overhead costing.

D) variable costing.

E) full manufacturing costing.

Answer: D

Diff: 1 Type: MC

Skill: Remember

Objective: LO 9-3

Use the information below to answer the following question(s).

Honda Heaven produces and sells an auto part for \$20.00 per unit. Direct materials are \$8 per unit, while direct manufacturing labour averages \$1.50 per unit. Variable manufacturing overhead is \$0.50 per unit and fixed manufacturing overhead is \$250,000 per year. Administrative expenses, all fixed, run \$90,000 per year, with sales commissions of \$2 per part. Production is 100,000 parts per year. And this year, 75,000 boxes were sold.

28) What is Honda Heaven's inventory cost per box using variable costing?

- A) \$9.50
- B) \$10.00
- C) \$12.50
- D) \$13.40
- E) \$15.40

Answer: B

Explanation: B) $\$8.00 + \$1.50 + \$0.50 = \10.00

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

29) What is Honda Heaven's inventoriable cost per box using absorption costing?

- A) \$9.50
- B) \$10.00
- C) \$12.50
- D) \$13.40
- E) \$15.40

Answer: C

Explanation: C) $\$8.00 + \$1.50 + \$0.50 + (\$250,000/100,000) = \$12.50$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

30) Under variable costing, which of the following expenses is inventoriable?

- A) variable manufacturing overhead
- B) direct manufacturing labour and fixed manufacturing overhead
- C) marketing and direct manufacturing labour
- D) variable manufacturing overhead and administrative
- E) variable and fixed manufacturing overhead

Answer: A

Diff: 2 Type: MC

Skill: Remember

Objective: LO 9-3

31) Absorption costing is also known as

- A) direct costing.
- B) full absorption costing.
- C) non-traditional costing.
- D) manufacturing costing.
- E) variable costing.

Answer: B

Diff: 2 Type: MC

Skill: Remember

Objective: LO 9-3

32) Variable costing regards fixed manufacturing overhead as

- A) an unexpired cost.
- B) an inventoriable cost.
- C) a period expense.
- D) a product cost.
- E) a deferred asset.

Answer: C

Diff: 1 Type: MC

Skill: Remember

Objective: LO 9-3

Use the information below to answer the following question(s).

Beauty Supply Company manufactures shampoo. The supervisor has provided the following information and stated that standard costing is used for manufacturing, marketing, and administrative costs.

	January	February
Beginning inventory	0	---
Production	2,500	3,000
Sales	2,250	3,025

Other information:		
Selling price		\$20.00
Standard variable manufacturing cost/unit		\$8.00
Standard variable market/admin. cost/unit		\$4.00
Standard fixed manufacturing overhead cost/month		\$40,000
Standard fixed market/admin. cost/month		\$20,000
Budgeted denominator level per month (output units)		4,000

There were no beginning or ending inventories of materials or work-in-process.

33) What is the per unit variable cost?

- A) \$22.00
- B) \$18.00
- C) \$14.00
- D) \$12.00
- E) \$11.00

Answer: D

Explanation: D) Standard variable manufacturing costs \$8.00

Standard variable Mkt./Admin. costs 4.00

Total = \$12.00

Diff: 1 Type: MC

Skill: Apply

Objective: LO 9-3

34) What is the per unit manufacturing cost using absorption costing?

- A) \$23.00
- B) \$18.00
- C) \$27.00
- D) \$12.00
- E) \$10.00

Answer: B

Explanation: B) Standard variable manufacturing costs \$8.00

Standard fixed manufacturing 10.00 *

Total = \$18.00

*(40,000/4,000) = \$10.00

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

35) What would Beauty Supply Company's operating income (loss) be for January and February, respectively, using the variable costing approach?

- A) \$18,000 and \$24,200
- B) \$(45,000) and \$(35,500)
- C) \$(44,000) and \$(33,809)
- D) \$(42,000) and \$(35,800)
- E) \$(22,000) and \$(15,800)

Answer: D

Explanation: D)	<u>January</u>	<u>February</u>
Sales	\$45,000	\$60,500
Variable costs:		
Beginning Inventory	\$0	\$2,000
Variable cost of goods manufactured	20,000	24,000
Cost of goods available for sale	\$20,000	\$26,000
Ending inventory	2,000	1,800
Cost of goods sold	\$18,000	\$24,200
Variable mkt/admin. costs	9,000	12,100
Total variable costs	<u>\$27,000</u>	<u>\$36,300</u>
Contribution margin	<u>\$18,000</u>	<u>\$24,200</u>
Fixed costs		
Fixed manufacturing overhead	\$40,000	\$40,000
Fixed mkt/admin. costs	<u>20,000</u>	<u>20,000</u>
	<u>\$60,000</u>	<u>\$60,000</u>
Operating Income	<u>\$(42,000)</u>	<u>\$(35,800)</u>

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

36) What would Beauty Supply Company's operating income (loss) be for January and February, respectively, using the absorption costing approach?

- A) \$(22,000) and \$(15,800)
- B) \$(24,750) and \$(33,275)
- C) \$(15,750) and \$(21,175)
- D) \$(24,500) and \$(26,050)
- E) \$18,000 and \$24,200

Answer: D

Explanation: D)	<u>January</u>	<u>February</u>
Sales	\$45,000	\$60,500
Cost of goods sold $(2,250; 3,025) \times \$18$	<u>40,500</u>	<u>54,450</u>
Gross margin	\$ 4,500	\$ 6,050
Administrative costs:		
Variable $(2,250; 3,025) \times \$4$	\$9,000	\$12,100
Fixed	<u>20,000</u>	<u>20,000</u>
Operating Income	<u>\$(24,500)</u>	<u>\$(26,050)</u>

Diff: 3 Type: MC

Skill: Apply

Objective: LO 9-3

37) Advanced Lighting's total variable costs are \$102 and total manufacturing costs are \$98. Standard variable marketing/administrative costs constitute 20 percent of the total variable costs. Respectively, what are Advanced Lighting's standard variable manufacturing costs and standard fixed manufacturing costs?

- A) \$77.60 and \$81.60
- B) \$78.40 and \$98.00
- C) \$81.60 and \$16.40
- D) \$81.60 and \$77.60
- E) \$78.40 and \$16.40

Answer: C

Explanation: C) $\$102.00 \times 0.20 = \20.40 marketing and administrative

$\$102.00 - \$20.40 = \$81.60$ standard variable manufacturing costs

$\$98.00 - \$81.60 = \$16.40$ standard fixed manufacturing costs

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

38) When the distinction between variable and fixed costs is one of the important elements in the preparation of the income statement, the method used should be the

- A) capitalization method.
- B) contribution margin method.
- C) gross margin method.
- D) inventorable method.
- E) absorption method.

Answer: B

Diff: 1 Type: MC

Skill: Understand

Objective: LO 9-3

39) Which of the following is correct concerning variable vs absorption costing?

- A) Absorption costing income statement classifies fixed costs as period costs.
- B) The absorption costing income statement combines costs by cost behaviour.
- C) Absorption costing income statements need to differentiate between variable and fixed costs.
- D) The difference in operating income between the two approaches is captured by the difference between fixed manufacturing costs in ending inventory minus fixed manufacturing costs in opening inventory.
- E) The difference in operating income between the two approaches is captured by the difference between fixed manufacturing costs in ending inventory minus variable manufacturing costs in ending inventory.

Answer: D

Diff: 2 Type: MC

Skill: Understand

Objective: LO 9-3

40) Which of the following variances exists only under absorption costing?

- A) spending variance
- B) efficiency variances
- C) sales-volume variance
- D) variable overhead flexible budget variance
- E) production-volume variance

Answer: E

Diff: 2 Type: MC

Skill: Remember

Objective: LO 9-3

Use the information below to answer the following question(s).

Car Tunes produces car radios. Actual fixed manufacturing overhead is the same as the budgeted amount, \$330,000. Production in September increased by 10% over the previous month's production. August production was 5,000 radios. The production level is the same as the budgeted denominator level. At the end of September, 1,000 radios remained in stock. In August, all of the radios were sold by the end of the month and there was no remaining work in process inventory.

41) What are Car Tune's appropriate period costs for September if variable costing is used?

- A) \$330,000
- B) \$363,000
- C) \$550,000
- D) \$583,000
- E) \$0

Answer: A

Explanation: A) \$330,000 fixed cost is expensed

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

42) What is the Car Tune's September cost of goods sold amount if absorption costing is used?

- A) \$300,000
- B) \$266,000
- C) \$270,000
- D) \$258,600
- E) \$297,000

Answer: C

Explanation: C) $5,500 - 1,000 = 4,500$; $4,500 \times \$60 = \$270,000$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

Use the information below to answer the following question(s).

Western Technologies Inc. produces dashboard displays. Actual fixed manufacturing overhead is the same as the budgeted amount, \$687,500. Production in September increased by 10% over the previous month's production. August production was 25,000 displays. The production level is the same as the budgeted denominator level. At the end of September, 2,000 displays remained in stock. In August, all of the displays were sold by the end of the month and there was no remaining work in process inventory.

43) What are Western Technologies' appropriate period costs for September if variable costing is used?

- A) \$668,380
- B) \$726,500
- C) \$632,500
- D) \$687,500
- E) \$637,500

Answer: D

Explanation: A)

D) \$687,500 fixed cost is expensed

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

44) What is the Western Technologies' September cost of goods sold amount if absorption costing is used?

- A) \$668,380
- B) \$726,500
- C) \$632,500
- D) \$687,500
- E) \$637,500

Answer: E

Explanation: A)

E) $((25,000 \times 1.1) - 2,000) \times (\$687,500 / (25,000 \times 1.1)) = \$637,500$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

45) When large differences exist between practical capacity and master-budget capacity utilization, companies can classify part of the large difference as

- A) production-volume variance.
- B) sales volume variance.
- C) normal capacity utilization.
- D) theoretical capacity utilization.
- E) planned unused capacity.

Answer: E

Diff: 1 Type: MC

Skill: Understand

Objective: LO 9-3

46) For Consumer Lumber what would be the total difference between operating incomes under absorption costing and variable costing?

Beginning fixed manufacturing overhead in inventory	\$47,500
Fixed manufacturing overhead in production	\$37,500
Ending fixed manufacturing overhead in inventory	\$12,500
Beginning variable manufacturing overhead in inventory	\$5,000
Variable manufacturing overhead in production	\$25,000
Ending variable manufacturing overhead in inventory	\$7,500

A) \$35,000

B) \$25,000

C) \$20,000

D) \$2,500

E) \$1,500

Answer: A

Explanation: A) $\$12,500 - \$47,500 = (\$35,000)$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

47) One possible means of determining the difference between absorption and variable costing based operating incomes is

A) to add fixed manufacturing cost to the variable costing operating income.

B) by subtracting the variable overhead rate from the fixed overhead rate and then multiplying the difference by the number of units in inventory.

C) by subtracting fixed manufacturing overhead in beginning inventory from fixed manufacturing overhead in ending inventory.

D) by multiplying the number of units produced by the budgeted fixed manufacturing overhead rate.

E) by adding fixed manufacturing overhead in beginning inventory to income.

Answer: C

Diff: 2 Type: MC

Skill: Understand

Objective: LO 9-3

48) The following information pertains to ABC Corporation:

Beginning fixed manufacturing overhead in inventory	\$40,000
Ending fixed manufacturing overhead in inventory	\$30,000
Beginning variable manufacturing overhead in inventory	\$20,000
Ending variable manufacturing overhead in inventory	\$9,500
Selling price per unit	\$41
Standard fixed manufacturing costs per unit	\$20
Variable selling and administrative cost per unit	\$4
Fixed selling and administrative costs	\$16,000
Units produced	10,000
Units sold	9,600

What is the difference between absorption costing operating income and variable costing operating income?

- A) \$11,500
- B) \$5,000
- C) \$10,000
- D) \$10,500
- E) \$21,500

Answer: C

Explanation: C) $\$40,000 - \$30,000 = \$10,000$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 9-3

49) The following information pertains to XYZ Corporation:

Beginning fixed manufacturing overhead in inventory	\$50,000
Ending fixed manufacturing overhead in inventory	\$30,000
Beginning variable manufacturing overhead in inventory	\$20,000
Ending variable manufacturing overhead in inventory	\$9,500
Selling price per unit	\$41
Standard fixed manufacturing costs per unit	\$20
Variable selling and administrative cost per unit	\$4
Fixed selling and administrative costs	\$16,000
Units produced	10,000
Units sold	9,600

What is the difference between absorption costing operating income and variable costing operating income?

- A) \$11,500
- B) \$20,000
- C) \$10,000
- D) \$10,500
- E) \$9,500

Answer: B

Explanation: B) $\$50,000 - \$30,000 = \$20,000$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 9-3

50) The costing method that has been labelled as a "black hole" because fixed costs are inventoried is commonly known as

- A) absorption costing.
- B) direct costing.
- C) break-even point costing.
- D) variable costing.
- E) standard costing.

Answer: A

Diff: 2 Type: MC

Objective: LO 9-3

51) Which of the following concepts is most compatible with absorption costing in a manufacturing environment?

- A) "the whole world is the market and the whole world is the competitor"
- B) niche marketing
- C) flexible manufacturing
- D) continuous improvement
- E) matching revenue to expense for financial reporting

Answer: E

Diff: 2 Type: MC

Skill: Understand

Objective: LO 9-3

52) When comparing the operating incomes between absorption costing and variable costing, and beginning finished inventory exceeds ending finished inventory, it may be assumed that

- A) sales increased during the period.
- B) variable cost per unit is less than fixed cost per unit.
- C) absorption costing income exceeds variable costing income.
- D) variable costing income exceeds absorption costing income.
- E) variable costing income equals absorption costing income.

Answer: D

Diff: 2 Type: MC

Skill: Understand

Objective: LO 9-3

53) Which of the following is TRUE concerning operating income calculated under variable costing as compared to absorption costing?

- A) Operating income is lower under variable costing when production exceeds sales.
- B) Operating income is higher under variable costing when production exceeds sales.
- C) Operating income is lower under variable costing when sales exceeds production only if there is a production-volume variance.
- D) operating income is higher under variable costing when production exceeds sales only if there is a production-volume variance.
- E) The relationship between production and sales has no bearing on the differences in operating income between the two methods.

Answer: A

Diff: 2 Type: MC

Skill: Understand

Objective: LO 9-3

54) A possible criticism of _____ costing is that fixed manufacturing overhead is treated as a/an _____.

- A) variable; asset
- B) absorption; period cost
- C) absorption; asset
- D) variable; liability
- E) absorption; variable cost in the long run

Answer: C

Diff: 2 Type: MC

Skill: Understand

Objective: LO 9-3

Use the information below to answer the following question(s).

Balloon Arrangements produces balloon bouquets. The following information has been provided by management:

Budgeted production	100,000 bouquets
Direct manufacturing costs	\$2.50/bouquet
Fixed manufacturing overhead	\$1.00/bouquet
Variable manufacturing overhead	\$0.75/bouquet
Variable administrative costs	\$1.25/bouquet

55) What is the total cost per bouquet if absorption costing is used?

- A) \$5.50
- B) \$4.75
- C) \$3.75
- D) \$2.50
- E) \$1.98

Answer: A

Explanation: A) $\$2.50 + \$1.00 + \$0.75 + \$1.25 = \$5.50$

Diff: 1 Type: MC

Skill: Apply

Objective: LO 9-3

56) Which of the following criteria should be used to evaluate management according to critics of absorption costing?

- A) the extent to which inventory production matches demand
- B) the extent to which financial performance measures are used
- C) the extent to which operating income is increased in the short run
- D) the extent to which production quotas are exceeded
- E) We should rely only on financial criteria to measure performance.

Answer: A

Diff: 2 Type: MC

Skill: Understand

Objective: LO 9-3

Answer the following question(s) using the information below.

Marie's Decorating produces and sells a mantel clock for \$100 per unit. In 2012, 100,000 clocks were produced and 80,000 were sold. Other information for the year includes:

Direct materials	\$30.00 per unit
Direct manufacturing labour	\$2.00 per unit
Variable manufacturing costs	\$3.00 per unit
Sales commissions	\$5.00 per part
Fixed manufacturing costs	\$25.00 per unit
Administrative expenses, all fixed	\$15.00 per unit

57) What is the inventoriable cost per unit using variable costing?

- A) \$32
- B) \$35
- C) \$40
- D) \$60
- E) \$75

Answer: B

Explanation: B) $\$30.00 + \$2.00 + \$3.00 = \35.00

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

58) What is the inventoriable cost per unit using absorption costing?

- A) \$32
- B) \$35
- C) \$40
- D) \$60
- E) \$75

Answer: D

Explanation: C)

D) $\$30 + \$2 + \$3 + \$25 = \$60$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

Answer the following question(s) using the information below.

Gabe's Auto produces and sells an auto part for \$30.00 per unit. In 2012, 100,000 parts were produced and 75,000 units were sold. Other information for the year includes:

Direct materials	\$12.00 per unit
Direct manufacturing labour	\$2.25 per unit
Variable manufacturing costs	\$0.75 per unit
Sales commissions	\$3.00 per part
Fixed manufacturing costs	\$375,000 per year
Administrative expenses, all fixed	\$135,000 per year

59) What is the inventoriable cost per unit using variable costing?

- A) \$14.25
- B) \$15.00
- C) \$18.75
- D) \$20.10
- E) \$20.00

Answer: B

Explanation: B) $\$12.00 + \$2.25 + \$0.75 = \15.00

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

60) What is the inventoriable cost per unit using absorption costing?

- A) \$14.25
- B) \$15.00
- C) \$18.75
- D) \$20.10
- E) \$20.00

Answer: C

Explanation: C) $\$12.00 + \$2.25 + \$0.75 + (\$375,000/100,000) = \$18.75$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

Answer the following question(s) using the information below.

Peggy's Pillows produces and sells a decorative pillow for \$75.00 per unit. In the first month of operation, 2,000 units were produced and 1,750 units were sold. Actual fixed costs are the same as the amount budgeted for the month. Other information for the month includes:

Variable manufacturing costs	\$20.00 per unit
Variable marketing costs	\$3.00 per unit
Fixed manufacturing costs	\$7.00 per unit
Administrative expenses, all fixed	\$15.00 per unit
Ending inventories:	
Direct materials	-0-
WIP	-0-
Finished goods	250 units

61) What is cost of goods sold per unit using variable costing?

- A) \$45
- B) \$30
- C) \$27
- D) \$23
- E) \$20

Answer: E

Explanation: E) \$20, only variable manufacturing costs are included when using variable costing.

Diff: 1 Type: MC

Skill: Apply

Objective: LO 9-3

62) What is cost of goods sold using variable costing?

- A) \$35,000
- B) \$40,250
- C) \$47,250
- D) \$52,500
- E) \$78,750

Answer: A

Explanation: A) $\$20 \times 1,750 \text{ units} = \$35,000$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

63) What is contribution margin using variable costing?

- A) \$96,250
- B) \$91,000
- C) \$84,000
- D) \$78,750
- E) \$52,500

Answer: B

Explanation: B) $(\$75 \times 1,750) - [(\$20 + \$3) \times 1,750 \text{ units}] = \$91,000$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

64) What is operating income using variable costing?

- A) \$52,500
- B) \$78,750
- C) \$65,750
- D) \$47,000
- E) \$40,000

Answer: D

Explanation: D) Contribution margin of \$91,000 - $[(\$7 + \$15) \times 2,000 \text{ units}] = \$47,000$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

65) Helton Company has the following information for the current year:

Beginning fixed manufacturing overhead in inventory	\$95,000
Fixed manufacturing overhead in production	375,000
Ending fixed manufacturing overhead in inventory	25,000
Beginning variable manufacturing overhead in inventory	\$10,000
Variable manufacturing overhead in production	50,000
Ending variable manufacturing overhead in inventory	15,000

What is the difference between operating incomes under absorption costing and variable costing?

- A) \$65,000
- B) \$50,000
- C) \$40,000
- D) \$5,000
- E) \$70,000

Answer: E

Explanation: E) $\$95,000 - \$25,000 = \$70,000$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 9-3

66) The following information pertains to Brian Stone Corporation:

Beginning fixed manufacturing overhead in inventory	\$60,000
Ending fixed manufacturing overhead in inventory	45,000
Beginning variable manufacturing overhead in inventory	\$30,000
Ending variable manufacturing overhead in inventory	14,250
Fixed selling and administrative costs	\$724,000
Units produced	5,000 units
Units sold	4,800 units

What is the difference between operating incomes under absorption costing and variable costing?

- A) \$750
- B) \$7,500
- C) \$15,000
- D) \$15,750
- E) \$30,750

Answer: C

Explanation: C) $\$60,000 - \$45,000 = \$15,000$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 9-3

Answer the following question(s) using the information below.

Heinrich Corporation budgeted fixed manufacturing costs of \$6,000 during 2012. Other information for 2012 includes:

The budgeted denominator level is 1,000 units.

Units produced total 750 units.

Units sold total 600 units.

Beginning inventory was zero.

The company uses absorption costing and the fixed manufacturing cost rate is based on the budgeted denominator level. Manufacturing variances are closed to cost of goods sold.

67) Fixed manufacturing costs expensed on the income statement (excluding adjustments for variances) total

- A) \$3,600.
- B) \$4,800.
- C) \$6,000.
- D) \$0.
- E) \$7,200.

Answer: A

Explanation: A) $\$6,000 / 1,000 \text{ units} = \$6 \times 600 = \$3,600$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

68) Fixed manufacturing costs included in ending inventory total

- A) \$1,200.
- B) \$1,500.
- C) \$0.
- D) \$900.
- E) \$2,400.

Answer: D

Explanation: D) $\$6,000/1,000 \text{ units} = \$6 \times 150 = \$900$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-3

69) The production-volume variance is

- A) \$2,000.
- B) \$900.
- C) \$2,400.
- D) \$0.
- E) \$1,500.

Answer: E

Explanation: E) $\$6,000/1,000 \text{ units} = \$6 \times 250 = \$1,500$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 9-3

70) Operating income using absorption costing will be _____ than operating income if using variable costing.

- A) \$1,500 higher
- B) \$1,200 lower
- C) \$900 higher
- D) \$2,400 lower
- E) no different

Answer: C

Explanation: C) Different operating incomes are reported because the unit level of inventory increased during the accounting period by 150 units \times \$6 denominator rate = \$900. Therefore, operating income is \$900 higher under absorption costing because \$900 of fixed manufacturing costs remains in inventory.

Diff: 3 Type: MC

Skill: Apply

Objective: LO 9-3

- 71) Which of the following is an example of a drawback of using absorption costing?
- A) It allows management the ability to manipulate operating income via production schedules.
 - B) An inventoried cost will eventually become part of cost of goods sold.
 - C) The company's sales level drives the production schedules.
 - D) A manager may increase maintenance activities above the budgeted level for the current period.
 - E) Expensing fixed costs as period costs reducing operating income.

Answer: A

Diff: 2 Type: MC

Skill: Remember

Objective: LO 9-3

- 72) Which of the following is a weakness particular to the absorption costing method?
- A) A production manager cannot manipulate operating income.
 - B) A manager is always encouraged to match the production schedule to estimated demand.
 - C) A manager may be encouraged to switch production to difficult to manufacture products.
 - D) A downward demand spiral can be created.
 - E) A manager may be encouraged to defer maintenance.

Answer: D

Diff: 2 Type: MC

Skill: Remember

Objective: LO 9-3

73) Amalgamated Glass and Mirror Inc. had sales of 37,500 units and production of 50,000 units. Other information for the year included:

Direct manufacturing labour	\$375,000
Variable manufacturing overhead	200,000
Direct materials	300,000
Variable selling expenses	200,000
Fixed administrative expenses	200,000
Fixed manufacturing overhead	400,000

There was no beginning inventory.

Required:

- Compute the ending finished goods inventory under both absorption and variable costing.
- Compute the cost of goods sold under both absorption and variable costing.

Answer:

a.

	<u>Absorption</u>	<u>Variable</u>
Direct materials	\$300,000	\$300,000
Direct manufacturing labour	375,000	375,000
Variable manufacturing overhead	200,000	200,000
Fixed manufacturing overhead	<u>400,000</u>	<u>0</u>
Total	<u>\$1,275,000</u>	<u>\$875,000</u>

Unit costs:

\$1,275,000/50,000 units	\$25.50	
\$875,000/50,000 units		\$17.50

Ending inventory:

12,500 units × \$25.50	\$318,750	
12,500 units × \$17.50		\$218,750

b.

Cost of goods sold:

37,500 × \$25.50	\$956,250	
37,500 × \$17.50		\$656,250

Diff: 2 Type: ES

Skill: Apply

Objective: LO 9-3

74) For the current year, Nichols Inc., had sales of 75,000 units and production of 100,000 units. Other information for the year included:

Direct manufacturing labour	\$187,500
Variable manufacturing overhead	100,000
Direct materials	150,000
Variable selling expenses	100,000
Fixed administrative expenses	100,000
Fixed manufacturing overhead	200,000
There was no beginning inventory.	

Required:

- Compute the ending finished goods inventory under both absorption and variable costing.
- Compute the cost of goods sold under both absorption and variable costing.

Answer:

a.

	<u>Absorption</u>	<u>Variable</u>
Direct materials	\$150,000	\$150,000
Direct manufacturing labour	187,500	187,500
Variable manufacturing overhead	100,000	100,000
Fixed manufacturing overhead	<u>200,000</u>	<u>0</u>
Total	<u>\$637,500</u>	<u>\$437,500</u>

Unit costs:

\$637,500/100,000 units	\$6.375	
\$437,500/100,000 units		\$4.375

Ending inventory:

25,000 units × \$6.375	\$159,375	
25,000 units × \$4.375		\$109,375

b.

Cost of goods sold:

75,000 × \$6.375	\$478,125	
75,000 × \$4.375		\$328,125

Diff: 2 Type: ES

Skill: Apply

Objective: LO 9-3

75) For the current year, Bonnet Inc., had sales of 42,000 units and production of 50,000 units. Other information for the year included:

Direct manufacturing labour	\$169,900
Variable manufacturing overhead	73,500
Direct materials	62,300
Variable selling expenses	21,000
Fixed administrative expenses	224,000
Fixed manufacturing overhead	125,500
There was no beginning inventory.	

Required:

- Compute the ending finished goods inventory under both absorption and variable costing.
- Compute the cost of goods sold under both absorption and variable costing.

Answer:

a.

	<u>Absorption</u>	<u>Variable</u>
Direct materials	\$62,300	\$62,300
Direct manufacturing labour	169,900	169,900
Variable manufacturing overhead	73,500	73,500
Fixed manufacturing overhead	<u>125,500</u>	<u>0</u>
Total	<u>\$431,200</u>	<u>\$305,700</u>

Unit costs:

\$431,200/50,000 units	\$8.624	
\$305,700/50,000 units		\$6.114

Ending inventory:

8,000 units × \$8.624	\$68,992	
8,000 units × \$6.114		\$48,912

b.

Cost of goods sold:

42,000 × \$8.624	\$362,208	
42,000 × \$6.114		\$256,788

Diff: 2 Type: ES

Skill: Apply

Objective: LO 9-3

76) Ace Products sells its products for \$22 each. Unit manufacturing costs are: direct materials, \$4.00; direct manufacturing labour, \$6.00; and variable manufacturing overhead, \$3.00. Total fixed manufacturing overhead costs are \$60,000 and marketing expenses are \$2.00 per unit plus \$20,000 per year. The current production level is 25,000 units although only 20,000 units are anticipated to be sold.

Required:

- Prepare an income statement using absorption costing in the gross margin format.
- Prepare an income statement using variable costing in the contribution margin format.

Answer:

a.

Absorption costing income statement:

Sales (20,000 × \$22)		\$440,000
Cost of goods sold (20,000 × \$15.40*)		<u>308,000</u>
Gross margin		\$132,000
Marketing:		
Variable (20,000 × \$2)	\$40,000	
Fixed	<u>20,000</u>	<u>60,000</u>
Operating income		<u>\$72,000</u>

* $\$4.00 + \$6.00 + \$3.00 + (\$60,000/25,000) = \$15.40$

b.

Variable costing income statement:

Sales (20,000 × \$22)		\$440,000
Variable costs:		
Cost of goods sold (20,000 × \$13*)	\$260,000	
Marketing (20,000 × \$2)	<u>40,000</u>	<u>300,000</u>
Contribution margin		\$140,000
Fixed costs:		
Manufacturing	\$60,000	
Marketing	<u>20,000</u>	<u>80,000</u>
Operating income		<u>\$60,000</u>

* $\$4.00 + \$6.00 + \$3.00 = \13

Diff: 3 Type: ES

Skill: Apply

Objective: LO 9-3

77) Bruster Company sells its products for \$66 each. The current production level is 25,000 units, although only 20,000 units are anticipated to be sold.

Unit manufacturing costs are:

Direct materials	\$12.00
Direct manufacturing labour	\$18.00
Variable manufacturing costs	\$9.00
Total fixed manufacturing costs	\$180,000
Marketing expenses \$6.00 per unit, plus	\$60,000 per year

Required:

- Prepare an income statement using absorption costing in the gross margin format.
- Prepare an income statement using variable costing in the contribution margin format.

Answer:

a.

Absorption-costing income statement:

Sales (20,000 × \$66)		\$1,320,000
Cost of goods sold (20,000 × \$46.20*)		<u>924,000</u>
Gross margin		396,000
Marketing:		
Variable (20,000 × \$6)	\$120,000	
Fixed	<u>60,000</u>	<u>180,000</u>
Operating income		<u>\$216,000</u>

* \$12.00 + \$18.00 + \$9.00 + (\$180,000/25,000) = \$46.20

b.

Variable-costing income statement:

Sales (20,000 × \$66)		\$1,320,000
Variable costs:		
Cost of goods sold (20,000 × \$39*)	\$780,000	
Marketing (20,000 × \$6)	<u>120,000</u>	<u>900,000</u>
Contribution margin		420,000
Fixed costs:		
Manufacturing	\$180,000	
Marketing	<u>60,000</u>	<u>240,000</u>
Operating income		<u>\$180,000</u>

* \$12.00 + \$18.00 + \$9.00 = \$39

Diff: 3 Type: ES

Skill: Apply

Objective: LO 9-3

78) Ewing Company planned to be in operation for three years. During the first year, it had no sales but incurred \$120,000 in variable manufacturing expenses and \$40,000 in fixed manufacturing expenses. In the next year, it sold half of the finished goods inventory from the previous year for \$100,000 but it had no manufacturing costs. In the third year, it sold the remainder of the inventory for \$120,000, had no manufacturing expenses and went out of business. Marketing and administrative expenses were fixed and totalled \$20,000 each year.

Required:

- Prepare an income statement for each year using absorption costing in the gross margin format.
- Prepare an income statement for each year using variable costing contribution margin format.

Answer:

a.

Absorption costing income statements:

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
Sales	\$0	\$100,000	\$120,000
Cost of goods sold	<u>0</u>	<u>80,000</u>	<u>80,000</u>
Gross margin	\$0	\$20,000	\$40,000
Marketing and administrative	<u>20,000</u>	<u>20,000</u>	<u>20,000</u>
Operating income	<u><u>\$(20,000)</u></u>	<u><u>\$0</u></u>	<u><u>\$20,000</u></u>

b.

Variable costing income statements:

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>
Sales	\$0	\$100,000	\$120,000
Variable expenses	<u>0</u>	<u>60,000</u>	<u>60,000</u>
Contribution margin	\$0	\$40,000	\$60,000
Fixed expenses:			
Manufacturing	\$40,000	\$0	\$0
Marketing and adm.	<u>20,000</u>	<u>20,000</u>	<u>20,000</u>
Total fixed	<u>\$60,000</u>	<u>\$20,000</u>	<u>\$20,000</u>
Operating income	<u><u>\$(60,000)</u></u>	<u><u>\$20,000</u></u>	<u><u>\$40,000</u></u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 9-3

79) Longview Golf Company sells a special putter for \$20 each. In March it sold 28,000 putters while manufacturing 30,000. There was no beginning inventory on March 1. Production information for March was:

Direct manufacturing labour per unit	15 minutes
Fixed selling and administrative costs	\$40,000
Fixed manufacturing overhead	\$132,000
Direct materials cost per unit	\$2
Direct manufacturing labour per hour	\$24
Variable manufacturing overhead per unit	\$4
Variable selling expenses per unit	\$2

Required:

- Compute the cost per unit under both absorption and variable costing.
- Compute the ending inventories under both absorption and variable costing.
- Compute operating income under both absorption and variable costing.

Answer:

a.

	<u>Absorption</u>	<u>Variable</u>
Direct manufacturing labour (\$24/4)	\$6.00	\$6.00
Direct materials	2.00	2.00
Variable manufacturing overhead	4.00	4.00
Fixed manuf ovh (\$132,000/30,000)	<u>4.40</u>	<u>0</u>
Total cost per unit	<u>\$16.40</u>	<u>\$12.00</u>

b.

	<u>Absorption</u>	<u>Variable</u>
Beginning inventory	\$0	\$0
Cost of good manufactured:		
30,000 × \$16.40	492,000	
30,000 × \$12.0		<u>360,000</u>
Cost of goods available for sale	\$492,000	\$360,000
Cost of goods sold:		
28,000 × \$16.40	459,200	
28,000 × \$12.00		<u>336,000</u>
Ending inventory	<u>\$32,800</u>	<u>\$24,000</u>

c.

Absorption-costing income statement:

Sales (28,000 × \$20)		\$560,000
Cost of goods sold (28,000 × \$16.40)		<u>459,200</u>
Gross margin		\$100,800
Less:		
Variable selling and administrative	\$56,000	
Fixed selling and administrative	<u>40,000</u>	<u>96,000</u>
Operating income		<u>\$4,800</u>

Variable-costing income statement:

Sales (28,000 × \$20)		\$560,000
Variable COGS (28,000 × \$12)	\$336,000	
Variable selling expenses (28,000 × \$2)	<u>56,000</u>	<u>392,000</u>
Contribution margin		\$168,000
Fixed costs:		
Manufacturing	\$132,000	
Selling and administrative	<u>40,000</u>	<u>172,000</u>
Operating income		<u>\$(4,000)</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 9-3

80) Alliance Realty bought a 2,000 acre island for \$10,000,000 and divided it into 200 equal size lots. As the lots are sold they are cleared at an average cost of \$5,000. Storm drains and driveways are installed at an average cost of \$8,000 per site. Sales commissions are 10 percent of selling price. Administrative costs are \$850,000 per year. The average selling price was \$160,000 per lot during the year when 50 lots were sold.

During the subsequent year, the company bought another 2,000 acre island and developed it exactly the same way. Lot sales in the second year totalled 300 with an average selling price of \$160,000. All costs were the same as in the first year.

Required:

Prepare income statements for both years using both absorption and variable costing methods. Use the gross margin format for the absorption method and the contribution margin format for the variable costing method.

Answer: Cost per site:	<u>Absorption</u>	<u>Variable</u>
Land cost \$10,000,000/200 sites	\$50,000	\$0
Clearing costs	5,000	5,000
Improvements	<u>8,000</u>	<u>8,000</u>
Total	<u>\$63,000</u>	<u>\$13,000</u>

Absorption Costing Income Statements:

	<u>Year 1</u>	<u>Year 2</u>
Sales	\$8,000,000	\$48,000,000
Cost of goods sold:		
50 × \$63,000	3,150,000	
300 × \$63,000		<u>18,900,000</u>
Gross margin	\$4,850,000	\$29,100,000
Variable marketing	- 800,000	- 4,800,000
Fixed administrative	<u>- 850,000</u>	<u>- 850,000</u>
Operating income	<u>\$3,200,000</u>	<u>\$23,450,000</u>

Variable Costing Income Statements:

	<u>Year 1</u>	<u>Year 2</u>
Sales	\$8,000,000	\$48,000,000
Variable expenses:		
Cost of operations:		
50 × \$13,000	- 650,000	
300 × \$13,000		- 3,900,000
Variable marketing	<u>- 800,000</u>	<u>- 4,800,000</u>
Contribution margin	\$6,550,000	\$39,300,000
Fixed expenses:		
Land	-10,000,000	-10,000,000
Administrative	<u>- 850,000</u>	<u>- 850,000</u>
Operating income	<u>\$(4,300,000)</u>	<u>\$28,450,000</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 9-3

81) Johnson and Sons Company was concerned that increased sales did not result in increased profits for 2016. Both variable unit and total fixed manufacturing costs for 2015 and 2016 remained constant at \$20 and \$2,000,000, respectively.

In 2015 the company produced 100,000 units and sold 80,000 units at a price of \$50 per unit. There was no beginning inventory in 2011. In 2016 the company made 70,000 units and sold 90,000 units at a price of \$50. Selling and administrative expenses were all fixed at \$100,000 each year.

Required:

- Prepare income statements for each year using absorption costing in the gross margin format.
- Prepare income statements for each year using variable costing in the contribution margin format.
- Explain why the income was different each year using the two methods. Show computations.

Answer:

- Absorption Costing Income Statements:

	<u>2015</u>	<u>2016</u>
Sales	<u>\$4,000,000</u>	<u>\$4,500,000</u>
Cost of goods sold:		
Begin. inventory	\$0	\$800,000
Variable	2,000,000	1,400,000
Fixed	<u>2,000,000</u>	<u>2,000,000</u>
Total Available	\$4,000,000	\$4,200,000
Ending inventory	<u>00,000</u>	<u>0</u>
COGS	<u>\$3,200,000</u>	<u>\$4,200,000</u>
Gross margin	\$800,000	\$300,000
Selling and adm.	<u>100,000</u>	<u>100,000</u>
Operating income	<u>\$700,000</u>	<u>\$200,000</u>

- Variable Costing Income Statements:

	<u>2015</u>	<u>2016</u>
Sales	\$4,000,000	\$4,500,000
Variable expenses	<u>1,600,000</u>	<u>1,800,000</u>
Contribution margin	\$2,400,000	\$2,700,000
Fixed expenses:		
Manufacturing	\$2,000,000	\$2,000,000
Selling and adm.	<u>100,000</u>	<u>100,000</u>
Operating income	<u>\$300,000</u>	<u>\$600,000</u>

- Budgeted fixed mfg. overhead rate for 2015 = $\$2,000,000 / 100,000 = \20

2015 difference of \$400,000 = $(100,000 - 80,000) \times \$20 = \$400,000$

2016 difference of \$400,000 = $(70,000 - 90,000) \times \$20 = \$400,000$

Diff: 3 Type: ES

Skill: Apply

Objective: LO 9-3

82) The following data are available for Ruggles Company for the year ended September 30, 2016.

Sales: 24,000 units at \$50 each	\$ 1,200,000
Expected and actual production:	30,000 units
Manufacturing costs incurred:	
Variable:	\$525,000
Fixed:	\$372,000
Nonmanufacturing costs incurred:	
Variable:	\$144,800
Fixed:	\$77,400
Beginning inventories:	none

Required:

- Determine operating income using the variable costing approach.
- Determine operating income using the absorption costing approach.
- Explain why the income was different each year using the two methods. Show computations.

Answer:

a.

$24,000 \times \$50 = \$1,200,000$ sales
 $(\$525,000/30,000) \times 24,000 = \$420,000$ variable manufacturing cost
 $\$1,200,000 - \$420,000 - \$144,800 = \$635,200$ contribution margin
 $\$635,200 - \$372,000 - \$77,400 = \$185,800$ operating income

b.

$24,000 \times \$50 = \$1,200,000$ sales
 $(\$372,000/30,000) \times 24,000 = \$297,600$ manufacturing fixed cost
 $(\$525,000/30,000) \times 24,000 = \$420,000$ variable manufacturing cost
 $\$1,200,000 - \$420,000 - \$297,600 = \$482,400$ gross margin
 $\$482,400 - \$144,800 - \$77,400 = \$260,200$ operating income

c.

$\$260,200 - \$185,800 = \$74,400$ or 6,000 units in ending inventory \times \$12.40 per unit of fixed manufacturing cost.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 9-3

83) Stamp Bottling Works manufactures glass bottles. January began with 15,000 units carried at \$108,750. An additional 35,000 units were produced that month. February had production of 40,000 units. Fixed manufacturing costs totalled \$119,000 in January and \$132,000 in February. Sales for both months totalled 45,000 units with variable manufacturing costs of \$4 per unit. Selling and administrative costs were \$0.40 per unit variable and \$60,000 fixed. The selling price was \$10 per unit. Inventory moves on a first-in, first-out basis.

Required:

Compute the operating income for both months using absorption costing.

Answer: January manufacturing cost per unit:

Beginning inventory $[(\$108,750 - (15,000 \times \$4)) / 15,000] + \$4$	\$ 7.25
Production $(\$119,000 / 35,000) + \4	\$ 7.40

February manufacturing cost per unit:

Beginning inventory	\$ 7.40
Production $(\$132,000 / 40,000) + \4	\$ 7.30

Income Statement

January

Sales $(45,000 \times \$10)$		\$450,000
Cost of goods sold $(15,000 \times \$7.25) + (30,000 \times \$7.40)$		<u>330,750</u>
Gross margin		\$119,250
Other costs:		
Variable selling and administrative	\$18,000	
Fixed selling and administrative	<u>60,000</u>	<u>78,000</u>
Operating income		<u>\$41,250</u>

Income Statement

February

Sales $(45,000 \times \$10)$		\$450,000
Cost of goods sold $(5,000 \times \$7.40) + (40,000 \times \$7.30)$		<u>329,000</u>
Gross margin		\$121,000
Other costs:		
Variable selling and administrative	\$18,000	
Fixed selling and administrative	<u>60,000</u>	<u>78,000</u>
Operating income		<u>\$43,000</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 9-3

84) Fresco Bottling Works manufactures glass bottles. January began with 10,000 units carried at \$71,500. An additional 55,000 units were produced that month. February had production of 50,000 units. Fixed manufacturing costs totalled \$192,500 in January and \$180,000 in February. Sales for both months totalled 45,000 units with variable manufacturing costs of \$4 per unit. Selling and administrative costs were \$0.35 per unit variable and \$70,000 fixed. The selling price was \$11 per unit. Inventory moves on a first-in, first-out basis.

Required:

Compute the operating income for both months using absorption costing.

Answer: January manufacturing cost per unit:

Beginning inventory $[(\$71,500 - (10,000 \times \$4)) / 10,000] + \$4$	\$ 7.15
Production $(\$192,500 / 55,000) + \4	\$ 7.50

February manufacturing cost per unit:

Beginning inventory	\$ 7.50
Production $(\$180,000 / 50,000) + \4	\$ 7.60

Income Statement

January

Sales $(45,000 \times \$11)$		\$495,000
Cost of goods sold $(10,000 \times \$7.15) + (35,000 \times \$7.50)$		<u>334,000</u>
Gross margin		\$161,000
Other costs:		
Variable selling and administrative	\$15,750	
Fixed selling and administrative	<u>70,000</u>	<u>85,750</u>
Operating income		<u>\$75,250</u>

Income Statement

February

Sales $(45,000 \times \$11)$		\$495,000
Cost of goods sold $(20,000 \times \$7.50) + (25,000 \times \$7.60)$		<u>340,000</u>
Gross margin		\$155,000
Other costs:		
Variable selling and administrative	\$15,750	
Fixed selling and administrative	<u>70,000</u>	<u>85,750</u>
Operating income		<u>\$69,250</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 9-3

85) Megredy Company prepared the following absorption costing income statement for the year ended May 31, 2016.

Sales (16,000 units)	\$320,000
Cost of goods sold	<u>216,000</u>
Gross margin	\$104,000
Selling and administrative expenses	<u>46,000</u>
Operating income	<u>\$58,000</u>

Additional information follows:

Selling and administrative expenses include \$1.50 of variable cost per unit sold. There was no beginning inventory, and 17,500 units were produced. Variable manufacturing costs were \$11 per unit. Actual fixed costs were equal to budgeted fixed costs.

Required:

Prepare a variable-costing income statement for the same period.

Answer:

Sales		\$320,000
Variable expenses:		
Manufacturing cost of goods sold ¹	\$176,000	
Selling and administrative ²	<u>24,000</u>	<u>200,000</u>
Contribution margin		\$120,000
Fixed expenses:		
Fixed factory overhead ³	\$43,750	
Fixed selling and administrative ⁴	<u>22,000</u>	<u>65,750</u>
Operating income		<u>\$54,250</u>

1. 16,000 units × \$11 = \$176,000
2. 16,000 units × \$1.50 = \$24,000
3. [(\$216,000/16,000 units) - \$11] × 17,500 units = \$43,750
4. \$46,000 - \$24,000 = \$22,000

Diff: 2 Type: ES

Skill: Apply

Objective: LO 9-3

86) Normandeau Corporation manufactures and sells laptop computers and uses standard costing. For the month of September there was no beginning inventory, there were 1,500 units produced and 1,250 units sold. The manufacturing variable cost per unit is \$770 and the operating cost per unit was \$625. The fixed manufacturing cost is \$450,000 and the fixed operating cost is \$75,000. The selling price per unit is \$1,850.

Required:

Prepare the income statement for Normandeau Corporation for September under variable costing.

Answer: Revenues ($1,250 \times \$1,850$)		\$2,312,500
Variable costs		
Variable cost of goods sold ($1,250 \times \$770$)	\$962,500	
Variable operating costs ($1,250 \times \$625$)	<u>781,250</u>	
Total variable costs		<u>1,743,750</u>
Contribution margin		\$568,750
Fixed costs		
Fixed manufacturing costs	\$450,000	
Fixed operating costs	<u>75,000</u>	
Total fixed costs		<u>525,000</u>
Operating income		\$43,750

Diff: 2 Type: ES

Skill: Apply

Objective: LO 9-3

87) Finch-Hutton Machine Works Ltd. uses standard costing based on a practical capacity of 1,050 tractor bearings per month. The actual production for the month of January was 980. The standard variable cost per unit is \$11 and budgeted monthly fixed manufacturing overhead is \$78,750. Actual costs for January were \$11,760 and \$78,400 for variable and fixed respectively. There was no work-in-process inventory at the beginning or end of January. The finished goods inventory had no balance at the beginning of January; January sales were 900 units at \$135 per unit. Non-manufacturing costs totalled \$38,000. Variances are pro-rated to inventory and cost of goods sold based on the balances in the accounts before proration.

Required:

1. Prepare an income statement in gross margin format using absorption costing.
2. Determine the balance of the January ending finished goods inventory.
3. Determine the variances in as much detail as possible then prepare the journal entries to clear the variance accounts.

Answer:

1. Income statement in gross margin format

Finch-Hutton Machine Works Ltd.
Income Statement
For the month ending January 31

Sales (900 × \$135)	\$ 121,500
Cost of goods sold (900/980) × (\$11,760 + \$78,400)	<u>82,800</u>
Gross margin	\$ 38,700
Operating expenses	<u>38,000</u>
Operating income	<u>\$ 700</u>

2. Ending inventory balance (80/980) × (\$11,760 + \$78,400)	\$ 7,360
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3. Journal entries

Variable cost variance = $(\$11 \times 980) - \$11,760 =$	\$ 980 U
FMO budget variance = $\$78,750 - \$78,400 =$	350 F
FMO prod-vol variance = $\$78,750 - (980 \times (\$78,750/1,050))$	5,250 U
Cost of Goods Sold $(900/980) \times \$980$	900
Inventory $(80/980) \times \$980$	80
Variable Cost Variance	980
Cost of Goods Sold $(900/980) \times (\$5,250 - \$350)$	4,500
Inventory $(80/980) \times (\$5,250 - \$350)$	400
FMO Budget Variance	350
FMO Production-Volume Variance	5,250
Cost of goods sold reconciliation:	
Variable standard cost $(900 \times \$11)$	\$ 9,900
FMO standard cost $(900 \times (\$78,750/1,050))$	67,500
Variable cost variance	900
Fixed cost variances	<u>4,500</u>
	<u>\$ 82,800</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 8-1 & 9-3

88) You are the management accountant for the West coast division of a musical instrument manufacturing company. There are three manufacturing plants in your division. Each plant manager was given decision making authority in terms of production, as long as income for their plant kept on pace. The manager at Plant A has consistently been the leader in profit for the division, but the other two managers are complaining that Plant A doesn't seem to be selling any more product than they are. The division manager has noticed higher inventory levels at Plant A, which the plant manager justifies by saying the higher levels are needed to ensure adequate sales. The division manager suspects that there could be other reasons, and she has asked you to provide three proposals for revising performance evaluation.

Answer: Any three of the following:

1. Change the accounting system to variable or throughput costing.
2. Increase diligence in budgeting and inventory planning.
3. Incorporate a carrying charge for inventory.
4. Extend the time period used to evaluate performance.
5. Include non-financial measures in the evaluation of performance.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 9-3

89) The manager of the manufacturing division of Winnipeg Windows does not understand why gross margin went down in February when sales went up. Some of the information she has selected for evaluation include:

	<u>January</u>	<u>February</u>
Units produced	40,000	30,000
Units sold	30,000	40,000
Sales	\$600,000	\$800,000
Beginning inventory	0	\$150,000
Cost of production	\$600,000	\$550,000
Ending inventory	\$150,000	0
Gross margin	\$150,000	\$100,000

The division operated at normal capacity during January. Variable manufacturing cost per unit was \$5, and the fixed manufacturing costs were \$400,000. Selling and administrative expenses were all fixed.

Required:

Explain why the gross margin in February was lower than January even though February sales were higher. How would variable costing income statements help the manager understand the division's operating income?

Answer: The difference is caused by the 10,000 units in inventory being assigned fixed manufacturing costs. The fixed manufacturing cost assigned to the inventory is carried into the next month. The fixed cost per unit were \$10 per unit ($\$400,000/40,000$), therefore \$100,000 ($10,000 \times \10) were carried into February. This caused the reported gross margin in February to be \$100,000 lower than would have been the case if all the 40,000 units sold in February were produced in February.

Variable costing helps avoid confusion by relating variations in expenses to sales rather than to inventory fluctuations. Under variable costing the total fixed amount (\$400,000) would be expensed in January and none carried forward into February. Therefore, January's income would be \$100,000 less than reported and February's \$100,000 more than reported.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 9-3

90)

a. Explain the difference between the variable and absorption costing methods.

b. Which method(s) are required for external reporting? For internal reporting?

Answer:

a. Absorption costing includes both fixed and variable manufacturing costs as inventoriable costs, whereas variable costing only includes variable manufacturing costs as inventoriable costs.

b. Absorption costing is required for external reporting to shareholders and for income tax reporting. A company may use whichever method it chooses for internal reporting purposes.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 9-3

91) SamTech Company has two identical divisions, East and West. Their sales, production volume, and fixed manufacturing costs have been the same for the last five years. The amounts for each division were as follows:

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
Units produced	50,000	55,000	55,000	44,000	44,000
Units sold	45,000	45,000	50,000	50,000	50,000
Fixed mfg. costs	\$55,000	\$55,000	\$55,000	\$55,00	\$55,000

East Division uses absorption costing and West Division uses variable costing. Both use FIFO inventory methods. Variable manufacturing costs are \$5 per unit. Selling and administrative expenses were identical for each division. There were no inventories at the beginning of Year 1.

Required:

Which division reports the highest income each year? Explain.

Answer: East Division had the higher income during the first three years because production exceeded sales; this stored some of the fixed manufacturing costs each year in the ending inventory balances. West had the higher income during the last two years because sales exceeded production. During these years East incurred all of the year's fixed manufacturing costs plus those costs that were in inventory from the prior years.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 9-3

92) Plate Company just hired its fourth production manager in three years. All three previous managers had quit because they could not get the company above the break-even point, even though sales had increased somewhat each year. The company was operating at about 60 percent of plant capacity. The flatware industry was growing, so increased sales were not out of the question.

I. R. Dumm took the job as manager of the production division with a very attractive salary package. After interviewing for the position, he proposed a salary and bonus package that would give him a very small salary but a large bonus if he took the operating income (using absorption costing) above the break-even point during his very first year.

Required:

What do you think Mr. Dumm had in mind for increasing the company's operating income?

Answer: Mr. Dumm realized that he could probably increase both production and sales during the coming year. If he substantially overproduced he knew that the extra costs would be hidden in unsold inventory. If the new production level could be sold by the sales force in the growing market, the profits would increase anyway and everybody would be happy. Also, he could combine increased production with reduced fixed manufacturing costs such as maintenance. In the short-run, several combinations could be undertaken by Dumm to ensure that the profit picture would improve.

Diff: 3 Type: ES

Skill: Understand

Objective: LO 9-3

93) Briefly discuss two methods of reducing the undesirable incentives associated with the use of absorption costing to evaluate the performance of a plant manager.

Answer: There are several ways to reduce the undesirable incentives associated with the use of absorption costing to evaluate the performance of a plant manager. Any two of the following would be sufficient to answer this question:

- 1) Change the accounting system.
- 2) Careful budgeting and inventory planning.
- 3) Incorporate a carrying charge for inventory.
- 4) Change the time period to evaluate performance.
- 5) Include non-financial as well as financial measures in the manager's performance evaluation.

Diff: 2 Type: ES

Skill: Remember

Objective: LO 9-3

94) Explain the difference between the gross margin format and the contribution margin format for the income statement. What information is highlighted with each?

Answer: The gross margin format divides costs into product and period costs while the contribution format divides costs into variable and fixed costs. The gross margin format highlights cost function while the contribution format highlights cost behavior.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 9-3

95) Explain three methods under absorption costing that managers can use to improve operating income.

Answer: 1) A plant manager may switch to manufacturing products that absorb the highest amount of fixed manufacturing costs, regardless of the demand for the product.

2) A plant manager may accept a particular order to increase production, even though another plant in the same company may be better suited to handle the order.

3) To increase production, a manager may defer maintenance beyond the current period.

Diff: 3 Type: ES

Skill: Understand

Objective: LO 9-3

9.4 Distinguish throughput costing from variable costing and absorption costing, and explain differences in operating income under each costing policy.

1) Throughput costing treats all costs as period costs.

Answer: FALSE

Explanation: Direct material costs are inventoried.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-4

2) Throughput costing provides more incentive to produce inventory than does absorption costing.

Answer: FALSE

Explanation: Throughput costing provides less incentive to produce inventory than does absorption costing.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-4

3) Throughput costing is also referred to as super-variable costing.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-4

4) Throughput costing considers only direct materials and direct manufacturing labour to be truly variable costs.

Answer: FALSE

Explanation: Throughput costing considers *only direct materials* to be truly variable costs.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 9-4

5) Throughput costing results in a higher amount of manufacturing costs being placed in inventory than either variable or absorption costing.

Answer: FALSE

Explanation: Throughput costing results in a lower amount of manufacturing costs being placed in inventory than either variable or absorption costing.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-4

Answer the following question(s) using the information below.

Reusser Company produces wood statues. Management has provided the following information:

Actual sales	80,000 statues
Budgeted production	100,000 statues
Selling price	\$20.00 per statue
Direct material costs	\$5.00 per statue
Variable manufacturing costs	\$1.50 per statue
Variable administrative costs	\$2.50 per statue
Fixed manufacturing overhead	\$2.00 per statue

6) What is the cost per statue if throughput costing is used?

- A) \$11.00
- B) \$9.50
- C) \$7.50
- D) \$5.00
- E) \$6.50

Answer: D

Explanation: D) Equal to direct materials = \$5.00

Diff: 1 Type: MC

Skill: Apply

Objective: LO 9-4

7) What is the total throughput contribution?

- A) \$720,000
- B) \$840,000
- C) \$1,000,000
- D) \$1,080,000
- E) \$1,200,000

Answer: E

Explanation: E) $80,000 \times (\$20.00 - \$5.00) = \$1,200,000$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-4

8) If 400 units are produced and 600 units are sold, _____ results in the greatest amount of operating income.

- A) throughput costing
- B) variable costing
- C) absorption costing
- D) period costing
- E) direct costing

Answer: A

Diff: 3 Type: MC

Skill: Understand

Objective: LO 9-4

- 9) Which of the following is TRUE concerning throughput costing?
- A) Throughput contribution is the sum of revenues and direct costs.
 - B) Throughput contribution is the difference between revenues and direct costs.
 - C) Throughput contribution is the difference between revenues and variable direct labour.
 - D) Throughput contribution is the difference between revenues and (variable direct labour + variable direct materials).
 - E) Throughput contribution is the difference between revenues and variable direct materials costs.

Answer: E

Diff: 1 Type: MC

Skill: Remember

Objective: LO 9-4

- 10) Which of the following is TRUE concerning throughput costing?
- A) It is also called super-absorption costing.
 - B) It treats all costs except those related to direct labour as period costs.
 - C) It provides more incentive to build-up inventories than does absorption costing.
 - D) It provides more incentive to build-up inventories than does variable costing.
 - E) Other things being equal, is more conservative than absorption costing.

Answer: E

Diff: 2 Type: MC

Skill: Remember

Objective: LO 9-4

- 11) "Super-variable costing" assumes that
- A) all costs are variable in the long run.
 - B) all costs are variable in the short run.
 - C) only direct materials are variable in the short run.
 - D) fixed costs are period costs in the long run.
 - E) all cost are fixed in the long run.

Answer: C

Diff: 1 Type: MC

Skill: Remember

Objective: LO 9-4

- 12) One of the biggest reasons variable costing is controversial involves
- A) external reporting.
 - B) corporate goals and mission statements.
 - C) internal management control reports.
 - D) internal management reports.
 - E) foreign subsidiaries.

Answer: A

Diff: 1 Type: MC

Skill: Remember

Objective: LO 9-4

13) Which of the following combination of costing systems assigns the same direct labour cost to inventory?

- A) variable-throughput
- B) variable-absorption
- C) throughput-absorption
- D) normal-standard
- E) actual-standard

Answer: B

Diff: 2 Type: MC

Skill: Remember

Objective: LO 9-4

14) Which of the following inventory costing methods results in the LEAST amount of costs being inventoried?

- A) absorption costing
- B) variable costing
- C) throughput costing
- D) direct costing
- E) standard costing

Answer: C

Diff: 2 Type: MC

Skill: Understand

Objective: LO 9-4

Use the information below to answer the following question(s).

Balloon Arrangements produces balloon bouquets. The following information has been provided by management:

Budgeted production	100,000 bouquets
Direct manufacturing costs	\$2.50/bouquet
Fixed manufacturing overhead	\$1.00/bouquet
Variable manufacturing overhead	\$0.75/bouquet
Variable administrative costs	\$1.25/bouquet

15) What is the cost per bouquet if throughput costing is used?

- A) \$5.50
- B) \$4.75
- C) \$3.75
- D) \$2.50
- E) \$1.98

Answer: D

Explanation: D) Equal to Direct Materials = \$2.50

Diff: 1 Type: MC

Skill: Apply

Objective: LO 9-4

Answer the following question(s) using the information below.

Stober Company produces a specialty item. Management has provided the following information:

Actual sales	60,000 units
Budgeted production	50,000 units
Selling price	\$40.00 per unit
Direct material costs	\$10.00 per unit
Variable manufacturing overhead	\$3.00 per unit
Variable administrative costs	\$5.00 per unit
Fixed manufacturing overhead	\$4.00 per unit

16) What is the cost per statue if throughput costing is used?

- A) \$22.00
- B) \$19.00
- C) \$15.00
- D) \$10.00
- E) \$13.00

Answer: D

Explanation: D) Direct material cost of \$10

Diff: 1 Type: MC

Skill: Apply

Objective: LO 9-4

17) What is the total throughput contribution?

- A) \$1,080,000
- B) \$1,260,000
- C) \$1,500,000
- D) \$1,620,000
- E) \$1,800,000

Answer: E

Explanation: E) $60,000 \times (\$40.00 - \$10.00) = \$1,800,000$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-4

18) The new plant manager has lots of ideas for change. His bonus is tied directly to plant profit, and last month he had the accounting department change from absorption costing to variable costing, as he heard at a meeting that contribution margin was usually higher than gross margin. This month, he wants to change to throughput costing, in hopes that throughput contribution will be greater than contribution margin. The relevant data are: Sales \$150,000; opening inventory \$2,500; variable cost of goods manufactured \$24,000; ending inventory using variable costing \$8,000; variable marketing cost \$15,200; and, there are no variable cost variances. The above numbers are the same for throughput costing except as follows: direct materials in goods manufactured \$13,200; and, ending inventory \$4,400.

Required:

- Calculate the contribution margin and throughput margin.
- Does this appear to be a sensible strategy by the plant manager?

Answer:

a.	<u>Var. Costing</u>	<u>Throughput</u>
Sales	<u>\$150,000</u>	<u>\$150,000</u>
Opening inventory	\$2,500	\$2,500
Var costs of goods manuf.	<u>24,000</u>	
Direct materials in manuf goods		<u>13,200</u>
Cost of Goods available	\$26,500	\$15,700
Ending inventory	<u>8,000</u>	<u>4,400</u>
Direct materials cost		\$11,300
Var manuf COGS	\$18,500	
Var. marketing costs	<u>15,200</u>	
Total variable costs	<u>\$33,700</u>	
Contribution margin	<u>\$116,300</u>	
Throughput contribution		<u>\$138,700</u>

b. This is probably not a wise strategy. There is no cost saving, only a shifting around of costs. While this may affect one year's income in the short run, over time all of the same costs will be expensed. Furthermore, a larger throughput contribution does not mean that operating income will be larger under than calculated under variable costing.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 9-3, 4

19) Calvin Enterprises produces a specialty statue item. The following information has been provided by management:

Actual sales	150,000 units
Budgeted production	160,000 units
Selling price	\$34 per unit

Direct manufacturing costs	\$9 per unit
Fixed manufacturing costs	\$5 per unit
Variable manufacturing costs	\$4 per unit
Variable administrative costs	\$2 per unit

Required:

- What is the cost per statue if absorption costing is used?
- What is the cost per statue if throughput costing is used?
- What is the total throughput contribution?

Answer:

- $\$9 + \$5 + \$4 = \18
- Equal to direct materials = \$9
- $150,000 \times (\$34 - \$9) = \$3,750,000$

Diff: 2 Type: ES

Skill: Apply

Objective: LO 9-3, 4

20) Klein Enterprises produces a specialty statue item. The following information has been provided by management:

Actual sales	300,000 units
Budgeted production	320,000 units
Selling price	\$34 per unit

Direct manufacturing costs	\$9 per unit
Fixed manufacturing costs	\$5 per unit
Variable manufacturing costs	\$4 per unit
Variable administrative costs	\$2 per unit

Required:

- What is the cost per statue if absorption costing is used?
- What is the cost per statue if throughput costing is used?
- What is the total throughput contribution?

Answer:

a. $\$9 + \$5 + \$4 = \18

b. Equal to direct materials = \$9

c. $300,000 \times (\$34 - \$9) = \$7,500,000$

Diff: 2 Type: ES

Skill: Apply

Objective: LO 9-3, 4

21) What is throughput costing? What advantages is it purported to have over variable and absorption costing?

Answer: Throughput costing treats all costs except direct materials as costs of the period in which they are incurred. Throughput costing results in a lower amount of manufacturing cost put into inventory than either variable or absorption costing. Supporters of throughput costing claim that it provides less incentive to produce for inventory than absorption costing or even variable costing.

Diff: 2 Type: ES

Skill: Remember

Objective: LO 9-4

9.5 Explain breakeven under each of the two costing policies.

1) The break-even points are the same under both variable costing and absorption costing.

Answer: FALSE

Explanation: The break-even points are generally different under both variable costing and absorption costing.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-5

2) The break-even point under absorption costing depends on the: fixed costs, contribution margin per unit, unit level sales, unit level of production, and overhead cost rate.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 9-5

3) Holding fixed cost and unit contribution margin constant, operating income rises as the level of sales rises.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 9-5

Answer the following question(s) using the information below.

Ms. Andrea Chadwick, the company president, has heard that there are multiple break-even points for every product. She does not believe this and has asked you to provide the evidence of such a possibility. Some information about the company for current year is as follows:

Total fixed manufacturing overhead	\$180,000
Total other fixed expenses	\$200,000
Total variable manufacturing expenses	\$120,000
Total other variable expenses	\$120,000
Units produced	30,000 units
Budgeted production	30,000 units
Units sold	25,000 units
Selling price	\$40

4) What are break-even sales in units using variable costing?

A) 5,625 units

B) 6,250 units

C) 11,875 units

D) 12,180 units

E) 10,556 units

Answer: C

Explanation: C) Break-even units = $(\$180,000 + \$200,000) / (\$40 - \$4 - \$4) = 11,875$ units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-5

5) What are break-even sales in units using absorption costing?

- A) 5,625 units
- B) 6,667 units
- C) 769 units
- D) 8,000 units
- E) 7,693 units

Answer: E

Explanation: E) Break -even units $N = \frac{[\$380,000 + ((\$180,000/30,000) \times (N - 30,000))]}{(\$40 - \$4 - \$4)}$

$$N = (\$380,000 + \$6N - \$180,000)/\$32$$

$$\$32N = \$200,000 + \$6N$$

$$\$26N = \$200,000$$

$$N = 7,693 \text{ units}$$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-5

6) What are break-even sales in units using absorption costing if the production units are actually 25,000?

- A) 5,625 units
- B) 6,667 units
- C) 7,667 units
- D) 8,847 units
- E) 1,154 units

Answer: D

Explanation: D) Break-even units $N = \frac{[\$380,000 + ((\$180,000/30,000 \times (N - 25,000))]}{(\$40 - \$4 - \$4)}$

$$N = (\$380,000 + \$6N - \$150,000)/\$32$$

$$\$32N = \$230,000 + \$6N$$

$$\$26N = \$230,000$$

$$N = 8,847 \text{ units}$$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-5

Answer the following question(s) using the information below.

The following information pertains to the Bean Company:

Selling price per unit	\$123
Standard fixed manufacturing costs per unit	\$60
Variable selling and administrative costs per unit	\$12
Standard variable manufacturing costs per unit	\$3
Fixed selling and administrative costs	\$48,000
Units produced at budgeted volume	10,000 units
Units sold	9,600 units

7) What is the variable costing break-even point in units?

- A) 1,000 units
- B) 5,556 units
- C) 4,445 units
- D) 6,000 units
- E) 445 units

Answer: D

Explanation: D) Break - even units = $[\$48,000 + (10,000 \times \$60)] / (\$123 - \$3 - \$12) = 6,000$ units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-5

8) What is the absorption costing break-even point in units?

- A) 917 units
- B) 1,000 units
- C) 5,838 units
- D) 6,000 units
- E) 4,445 units

Answer: B

Explanation: B) Break - even units $N = (\$648,000 + (\$50 \times (N - 12,000))) / (\$123 - \$3 - \$12) = 1,000$ units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-5

9) What is the absorption costing break-even point in units if production is increased to 12,000 units?

- A) 917 units
- B) 1,014 units
- C) 700 units
- D) 1,102 units
- E) 828 units

Answer: E

Explanation: E) $N = (\$648,000 + (\$50 \times (N - 12,000)))/(\$123 - \$3 - \$12)$

$N = (\$648,000 + \$50N - 600,000)/\$108$

$\$108N - \$50N = \$48,000$

$N = 828$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-5

Answer the following question(s) using the information below.

Greene Manufacturing incurred the following expenses during the current year:

Fixed manufacturing costs	\$45,000
Fixed nonmanufacturing costs	\$35,000
Unit selling price	\$100
Total unit cost	\$40
Variable manufacturing cost rate	\$20
Units produced	1,340 units

10) What will be the break-even point if variable costing is used?

- A) 1,334 units
- B) 1,000 units
- C) 1,125 units
- D) 563 units
- E) 438 units

Answer: B

Explanation: B) Break - even units = $(\$45,000 + \$35,000)/(\$100 - \$20) = 1,000$ units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-5

11) What will be the break-even point in units if absorption costing is used?

- A) 1,330 units
- B) 1,000 units
- C) 887 units
- D) 563 units
- E) 2,660 units

Answer: C

Explanation: C) Break-even units $N = \frac{[(\$45,000 + \$35,000) + (\$20 \times (N - 1,340))]}{(\$100 - \$20)}$

$$N = (\$80,000 + \$20N - \$26,800)/\$80$$

$$\$80N = \$53,200 + \$20N$$

$$N = 887 \text{ units}$$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-5

12) What is the break-even point in units using absorption costing if the units produced are actually 2,250?

- A) 1,330 units
- B) 1,000 units
- C) 887 units
- D) 584 units
- E) 875 units

Answer: D

Explanation: D) Break-even units $N = \frac{[(\$45,000 + \$35,000) + (\$20 \times (N - 2,250))]}{(\$100 - \$20)}$

$$N = (\$80,000 + \$20N - \$45,000)/\$80$$

$$\$80N = \$35,000 + \$20N$$

$$N = 584 \text{ units}$$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 9-5

13) Sutton Hot Dog Stands sells hot dogs at ballparks across Canada for \$1.35. Variable costs are \$1.05 per unit with fixed production costs of \$90,000 per month at a level of 400,000 units. Fixed administrative costs total \$30,000. Sales average 400,000 units per month, with planned production of 400,000 hot dogs.

Required:

- What are break-even unit sales under variable costing?
- What are break-even unit sales under absorption costing if she sells everything she prepares?
- What are break-even unit sales under absorption costing if average sales are 498,000 and planned production is changed to 500,000?

Answer:

a. Break-even units = $(\$90,000 + \$30,000) / (\$1.35 - \$1.05) = 400,000$

b. Break -even units (N) =
$$\frac{[(\$90,000 + \$30,000) + (\$0.225 (N - 400,000))]}{\$1.35 - \$1.05}$$

$$N = (\$120,000 + \$0.225N - \$90,000) / \$0.30$$

$$\$0.30N = \$30,000 + \$0.225N$$

$$\$0.075N = \$30,000$$

$$N = 400,000 \text{ units}$$

c. Break-even units (N) =
$$\frac{[(\$90,000 + \$30,000) + (\$0.18 (N - 500,000))]}{\$1.35 - \$1.05}$$

$$N = (\$120,000 + \$0.18N - \$90,000) / \$0.30$$

$$\$0.3N = \$30,000 + \$0.18N$$

$$\$0.12N = \$30,000$$

$$N = 250,000 \text{ units}$$

Diff: 2 Type: ES

Skill: Apply

Objective: LO 9-5

14) Jamie's Hot Dog Stands sells hot dogs at ballparks across Canada for \$1.55. Variable costs are \$1.15 per unit with fixed production costs of \$80,000 per month at a level of 320,000 units. Fixed administrative costs total \$25,000. Sales average 320,000 units per month, with planned production of 320,000 hot dogs.

Required:

- What are break-even unit sales under variable costing?
- What are break-even unit sales under absorption costing if she sells everything she prepares?
- What are break-even unit sales under absorption costing if average sales are 399,000 and planned production is changed to 400,000?

Answer:

a. Break-even units = $(\$80,000 + \$25,000) / (\$1.55 - \$1.15) = 262,500$

b. Break -even units (N) = $\frac{[(\$80,000 + \$25,000) + (\$0.25 (N - 320,000))]}{\$1.55 - \$1.15}$

$$N = (\$105,000 + \$0.25N - \$80,000) / \$0.40$$

$$\$0.40N = \$25,000 + \$0.25N$$

$$\$0.15N = \$25,000$$

$$N = 166,167 \text{ units}$$

Break -even units (N) = $\frac{[(\$80,000 + \$25,000) + (\$0.20 (N - 400,000))]}{\$1.55 - \$1.15}$

$$N = (\$105,000 + \$0.20N - \$80,000) / \$0.40$$

$$\$0.40N = \$25,000 + \$0.20N$$

$$\$0.20N = \$25,000$$

$$N = 125,000 \text{ units}$$

Diff: 2 Type: ES

Skill: Apply

Objective: LO 9-5

15) Evaluate the statement, "The breakeven points are generally different under both variable costing and absorption costing." Include in your discussion the factors that can cause the breakeven in absorption costing to vary.

Answer: The breakeven points are generally different under both variable costing and absorption costing. If variable costing is used, the breakeven point (that's where operating income is \$0) is computed in the usual manner. If absorption costing is used, the required number of units to be sold to earn a specific target operating income is not unique because of the number of variables involved. The breakeven point under absorption costing depends on (1) fixed manufacturing costs, (2) fixed operating (marketing) costs, (3) contribution margin per unit, (4) unit level of production, and (5) the capacity level chosen as the denominator to set the fixed manufacturing cost rate.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 9-5