

Cost Accounting, Cdn. Ed., 7e (Horngren)
Chapter 19 Inventory Cost Management Strategies

19.1 Evaluate relevant data and decide on the economic order quantity (EOQ).

1) Ordering costs consist of the costs of goods acquired from suppliers including freight and transportation costs.

Answer: FALSE

Explanation: Purchasing costs consist of the acquisition costs of goods acquired from suppliers including freight-in, the transportation costs.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-1

2) Purchasing costs consist of the costs of preparing and issuing a purchase order.

Answer: FALSE

Explanation: Ordering costs consist of the cost to prepare and issue an purchase order.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-1

3) Carrying costs arise when a customer demands a unit of product and that unit is not readily available.

Answer: FALSE

Explanation: Stockout costs occur when a company runs out of an item for which there is customer demand.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-1

4) The economic order quantity decision model aids in the calculation of the optimal quantity of inventory to order.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-1

5) The reorder point is simplest to compute when either demand or lead time is certain.

Answer: FALSE

Explanation: The reorder point is simplest to compute when BOTH demand and lead time are certain.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-1

6) Safety stock is the buffer inventory held as a cushion against unexpected increases in demand or lead time, and unexpected unavailability of stock from suppliers.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-1

7) Inventory management is the planning, organizing, and controlling activities that focus on the flow of materials into, through, and from the organization.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-1

8) Purchasing costs generally include the freight and transportation costs on goods acquired from suppliers.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-1

9) Expediting costs of a stockout include the additional ordering costs, plus any associated transportation costs.

Answer: TRUE

Explanation: Expediting costs include the associated transportation costs.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-1

10) Shrinkage costs result from water damage to clothing and other soft goods.

Answer: FALSE

Explanation: Shrinkage costs result from theft by outsiders, embezzlement by employees, misclassifications, and clerical errors.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-1

11) Shrinkage is measured by comparing the cost of inventory on the books to the cost of inventory physically counted.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-1

12) All inventory costs are available in financial accounting systems.

Answer: FALSE

Explanation: Opportunity costs are rarely recorded in formal accounting systems and they are often a very significant cost component.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-1

13) To determine the Economic Order Quantity, the relevant ordering costs are minimized and the relevant carrying costs are maximized.

Answer: FALSE

Explanation: We minimize both the relevant ordering costs and the relevant carrying costs.

Diff: 2 Type: TF

Skill: Understand

Objective: LO 19-1

14) The Economic Order Quantity increases with demand and ordering costs and decreases with carrying costs.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 19-1

15) The annual relevant total costs are at a minimum where relevant ordering costs and their relevant carrying costs are equal.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 19-1

16) When retailers are uncertain about demand for their products or availability of their products from the suppliers, they often hold a fixed level of safety stock to make sure they will be able to fulfill the customers' needs.

Answer: TRUE

Diff: 1 Type: TF

Skill: Understand

Objective: LO 19-1

17) The annual relevant carrying costs of inventory consist of incremental costs plus the opportunity cost of capital.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-1

18) The opportunity cost of the stockout includes lost contribution margin on the sale NOT made plus any contribution margin lost on future sales due to customer ill will.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 19-1

19) Purchase order lead time is the time between the placement of an order and its delivery.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-1

20) Costs associated with holding inventories and the resulting opportunity cost of the investment tied up in inventory fall into which of the following categories?

A) carrying costs

B) ordering costs

C) quality costs

D) stockout costs

E) stockin costs

Answer: A

Diff: 2 Type: MC

Skill: Remember

Objective: LO 19-1

21) Costs incurred when preparing and issuing purchase orders are included in which of the following categories?

A) carrying costs

B) ordering costs

C) purchasing costs

D) stockout costs

E) stockin costs

Answer: B

Diff: 1 Type: MC

Skill: Remember

Objective: LO 19-1

22) An important component in several of the cost categories which are not typically recorded in accounting systems is

A) labour costs.

B) opportunity costs.

C) ordering costs.

D) quality costs.

E) quantity costs.

Answer: B

Diff: 2 Type: MC

Skill: Understand

Objective: LO 19-1

23) The simplest version of the economic order quantity decision model assumes all of the following EXCEPT

- A) the same fixed quantity is ordered at each reorder point.
- B) demand ordering costs and carrying costs are certain.
- C) purchase order lead time is certain.
- D) no stockouts occur.
- E) purchasing costs per unit depend on the quantity ordered.

Answer: E

Diff: 2 Type: MC

Skill: Remember

Objective: LO 19-1

24) The purchase order lead time is

- A) the difference between the time an order is placed and delivered.
- B) the difference between the products ordered and the products received.
- C) the discrepancies in purchase orders.
- D) the time required to correct errors in the products received.
- E) the discrepancies in inventory sheets.

Answer: A

Diff: 1 Type: MC

Skill: Remember

Objective: LO 19-1

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

Movie Time is a distributor of DVDs. Video Mart is a local retail outlet which sells blank and recorded DVDs. Video Mart purchases DVDs from Movie Time at \$5.00 each; the units are shipped in packages of 25. Movie Time pays all incoming freight, and Video Mart does not inspect the DVDs due to Movie Time's reputation for high quality. Annual demand is 104,000 DVDs at a rate of 2,000 units per week. Video Mart earns 15% on its cash investments. The purchase order lead time is one week. The following cost data are available:

Relevant ordering costs per purchase order	\$94.50
Carrying costs per package per year: Relevant insurance, materials handling, breakage, etc., per year	\$3.50

25) What is the economic order quantity?

- A) 874 packages
- B) 652 packages
- C) 200 packages
- D) 198 packages
- E) 188 packages

Answer: E

Explanation: E) $\$5.00 \times 25 = \125 = package cost

Opportunity cost per package = $\$125 \times 15\% = \18.75

$$EOQ = \sqrt{[2 \times (104,000/25) \times \$94.50] / (\$18.75 + \$3.50)}$$

EOQ = 188 packages

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

26) What are the total relevant inventory costs?

- A) \$6,150.50
- B) \$4,182.56
- C) \$2,560.20
- D) \$1,951.70
- E) \$2,462.41

Answer: B

Explanation: B)

$$TRC = \frac{((104,000/25) \times \$94.50)}{188} + \frac{(188 \times (\$18.75 + \$3.50))}{2} = \$2,091.06 + \$2,091.50 = \$4,182.56 \text{ (slight difference)}$$

due to rounding up of 188 packages)

Diff: 3 Type: MC

Skill: Apply

Objective: LO 19-1

27) How many deliveries will be made during each time period?

- A) 22 deliveries
- B) 26 deliveries
- C) 29 deliveries
- D) 32 deliveries
- E) 30 deliveries

Answer: A

Explanation: A) $(104,000/25)/188 = 22$ deliveries

Diff: 3 Type: MC

Skill: Apply

Objective: LO 19-1

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

Office Supply House purchases 4,160 reams of paper per year, ordered in lots of 80 reams per week at \$150 per ream. The vendor covers all shipping costs. Office Supply House is not required to inspect the shipment upon entry. Office Supply House earns 20% on its cash investments. The purchase order lead time is two weeks. The following cost data are available:

Relevant ordering costs per purchase order	\$53.75
Relevant insurance, materials handling, breakage, and so on, per year	\$4.25

28) What is the economic order quantity?

- A) 324 reams
- B) 235 reams
- C) 114 reams
- D) 100 reams
- E) 110 reams

Answer: C

Explanation: C) $\$150 \times 20\% = \30 opportunity cost per ream

$$EOQ = \sqrt{(2 \times 4,160 \times \$53.75)/(\$30 + \$4.25)}$$

EOQ = 114 reams

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

29) What are the total relevant inventory costs at the economic order quantity?

- A) \$3,913.65
- B) \$3,948.50
- C) \$4,975.86
- D) \$6,238.62
- E) \$4,862.84

Answer: A

Explanation: A) $TRC = \frac{(4,160 \times \$53.75)}{114} + \frac{(114 \times \$34.25)}{2} = \$1,961.40 + \$1,952.25 = \$3,913.65$ (slight

difference between ordering and carrying costs due to rounding of 114 reams as EOQ)

Diff: 3 Type: MC

Skill: Apply

Objective: LO 19-1

30) What are the total relevant costs assuming the quantity ordered equals 80 reams?

- A) \$3,913.65
- B) \$3,948.50
- C) \$4,075.25
- D) \$4,165.00
- E) \$5,326.49

Answer: D

Explanation: D) $TRC = \frac{(4,160 \times \$53.75)}{80} + \frac{(80 \times \$34.25)}{2} = \$2,795 + \$1,370 = \$4,165.00$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 19-1

31) How many deliveries will be required at the economic order quantity level?

- A) 18 deliveries
- B) 37 deliveries
- C) 42 deliveries
- D) 52 deliveries
- E) 20 deliveries

Answer: B

Explanation: B) $4,160/114 = 36.5$ deliveries, rounded up to 37

Diff: 3 Type: MC

Skill: Apply

Objective: LO 19-1

32) The level of inventory which should trigger a new order is called

- A) the customer demand level.
- B) the supply equal demand level.
- C) the stockout level.
- D) the reorder point.
- E) the inventory level.

Answer: D

Diff: 1 Type: MC

Skill: Remember

Objective: LO 19-1

33) Disc Company sells 400 discs per week. Purchase order lead time is 3 weeks and the economic order quantity is 900 units. What is the reorder point?

- A) 950 units
- B) 1,200 units
- C) 3,500 units
- D) 4,500 units
- E) 5,600 units

Answer: B

Explanation: B) $400 \times 3 = 1,200$ units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

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

Owen-King Company sells optical equipment. Lens Company manufactures special glass lens. Owen-King Company orders 5,200 lens per year, 100 per week at \$20 per lens. Lens Company covers all shipping costs. Owen-King Company earns 30% on its cash investments. The purchase order lead time is 2.5 weeks. Owen-King Company sells 125 lens per week. The following data is available:

Relevant ordering costs per purchase order	\$21.25
Relevant insurance, materials handling, breakage, and so on, per year	\$2.50

34) What is the economic order quantity for Owen-King Company?

- A) 325 lens
- B) 297 lens
- C) 210 lens
- D) 161 lens
- E) 92 lens

Answer: D

Explanation: D) $EOQ = \sqrt{(2 \times 5,200 \times \$21.25) / ((\$20 \times 30\%) + \$2.50)}$

$EOQ = 161$ lens

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

35) What is the reorder point for Owen-King Company?

- A) 220 lens
- B) 312 lens
- C) 397 lens
- D) 415 lens
- E) 561 lens

Answer: B

Explanation: B) $125 \text{ lens} \times 2.5 \text{ weeks} = 312.5 \text{ lens}$, round down to 312

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

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

The following information has been gathered for Product A:

Annual demand	760 units
Purchase price per unit	\$300
Orders per year	10
Average daily demand	2.5 units
Lead time in days	10
Cost of placing an order	\$40
Relevant insurance, handling, etc costs	\$8
Required return	10%

36) What is the economic order quantity for Product A?

- A) 9 units
- B) 10 units
- C) 20 units
- D) 40 units
- E) 46 units

Answer: D

Explanation: D) $EOQ = \sqrt{(2 \times 760 \times \$40) / ((\$300 \times 10\%) + \$8)}$

$EOQ = 40$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

37) What are the annual carrying costs for Product A if the company orders at the EOQ amount?

- A) \$80
- B) \$320
- C) \$760
- D) \$160
- E) \$1,520

Answer: C

Explanation: C) $EOQ = \sqrt{(2 \times 760 \times \$40) / ((\$300 \times 10\%) + \$8)}$

$EOQ = 40$

Relevant carrying costs = $(10\% \times \$300) + \$8 = \$38$ per unit

$(40 \text{ units} \times \$38) / 2 = \$760$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

38) What are the annual ordering costs for Product A if the company orders at the EOQ amount?

- A) \$320
- B) \$160
- C) \$1,520
- D) \$80
- E) \$760

Answer: E

Explanation: E) $(760 / 40) \times \$40 = \760

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

39) What is the reorder point for Product A?

- A) 38
- B) 25
- C) 30
- D) 80
- E) 100

Answer: B

Explanation: B) Reorder point = $10 \times 2.5 = 25$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

40) The inventory that is held to offset unexpected increases in demand or lead time and unexpected unavailability of stock from suppliers is primarily known as

- A) inventory stock.
- B) over-supply stock.
- C) safety stock.
- D) surplus stock.
- E) obsolete stock.

Answer: C

Diff: 1 Type: MC

Skill: Remember

Objective: LO 19-1

41) Which of the following statements is TRUE?

- A) The reorder point is the point at which the amount of inventory on hand equals the amount needed to cover sales during the lead time.
- B) The reorder point is the minimum level of inventory allowed during a particular period.
- C) The safety stock is the amount of stock that must be on hand to cover sales during lead time.
- D) The safety stock is the minimum level of inventory that must remain on hand at all times.
- E) The safety stock is the minimum level of inventory that must remain at the customers.

Answer: A

Diff: 2 Type: MC

Skill: Understand

Objective: LO 19-1

42) What are the major relevant costs in maintaining safety stock?

- A) carrying costs and purchasing costs
- B) ordering costs and purchasing costs
- C) ordering costs and stockout costs
- D) stockout costs and carrying costs
- E) stockout costs and purchasing costs

Answer: D

Diff: 2 Type: MC

Skill: Understand

Objective: LO 19-1

43) The total annual relevant cost equation, TRC, includes all of the following inputs EXCEPT

- A) ordering costs per purchase order.
- B) demand in units.
- C) reorder point.
- D) carrying cost per unit.
- E) EOQ.

Answer: C

Diff: 2 Type: MC

Skill: Remember

Objective: LO 19-1

44) The economic order quantity decision model

- A) calculates the amount of inventory that may be purchased with the monetary constraint.
- B) determines the minimum amount of inventory to purchase.
- C) determines the maximum amount of inventory to keep on hand.
- D) determines the optimal amount of inventory to order.
- E) calculates the numbers of employees needed.

Answer: D

Diff: 1 Type: MC

Skill: Remember

Objective: LO 19-1

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

Garry's Golf Supplies is a local retail outlet which sells golf balls. Garry's purchases the golf balls from Green Grass Incorporated at \$0.75 per ball; the golf balls are shipped in cartons of 72, FOB destination. Annual demand is 172,800 golf balls at a rate of 3,322 balls per week. Garry's Golf Supplies earns 12% on its cash investments. The purchase order lead time is one week. The following cost data are available:

Relevant ordering costs per purchase order	\$125.00
Relevant insurance, materials handling, breakage, etc., per year	\$0.77

45) If Garry's Golf Supplies makes an order (1/12 of annual demand) once per month, what are the relevant total costs?

- A) \$1,500.00
- B) \$2,085.67
- C) 2,225.00
- D) \$3,000.00
- E) \$680.00

Answer: C

Explanation: C) Order Quantity = Annual Demand/12 = 172,800/12 = 14,400 balls/month = 14,400/72 = 200 cartons per month

RTC = Ordering Costs + Carrying Costs

Carrying Cost per carton = price \times invest rate + insurance/handling

Carrying Cost per carton = $(\$0.75 \times 72 \times 12\%) + \$0.77 = \$7.25$

RTC = $(12 \times \$125.00) + ((200/2) \times \$7.25) = \$1,500 + \$725 = \$2,225.00$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 19-1

46) What is the economic order quantity for Garry's golf ball purchases?

- A) 200 cartons
- B) 288 cartons
- C) 300 cartons
- D) 883 cartons
- E) 218 cartons

Answer: B

Explanation: B) $\text{Annual Demand}/172,800/72 = 2,400$ cartons

Carrying Cost per carton = $(\$0.75 \times 72 \times 12\%) + \$0.77 = \$7.25$

EOQ = The square root of $[(2 \times (172,800/72) \times \$125.00)/(\$7.25)]$

EOQ = 287.7 cartons - round to 288

Diff: 3 Type: MC

Skill: Apply

Objective: LO 19-1

47) Purchasing at the EOQ recommended level, how many deliveries will be made to Garry's Golf Supplies during each time period?

- A) 2 deliveries
- B) 6 deliveries
- C) 9 deliveries
- D) 12 deliveries
- E) 3 deliveries

Answer: C

Explanation: C) $\text{Annual Demand}/172,800/72 = 2,400$ cartons

Carrying Cost per carton = $(\$0.75 \times 72 \times 12\%) + \$0.77 = \$7.25$

EOQ = The square root of $[(2 \times (172,800/72) \times \$125.00)/(\$7.25)]$

EOQ = 287.7 cartons

Deliveries = $\text{Annual Demand}/\text{EOQ} = 8.3$ rounded up to 9

Diff: 3 Type: MC

Skill: Apply

Objective: LO 19-1

48) Purchasing at the EOQ recommended level, what are the relevant total costs?

- A) \$1,500.00
- B) \$2,085.67
- C) \$2,225.00
- D) \$3,000.00
- E) \$680.00

Answer: B

Explanation: B) Annual Demand/172,800/72 = 2,400 cartons

Carrying Cost per carton = $(\$0.75 \times 72 \times 12\%) + \$0.77 = \$7.25$

EOQ = The square root of $[(2 \times (172,800/72) \times \$125.00)/(\$7.25)]$

EOQ = 287.7 cartons

$$RTC = \frac{[(172,800/72) \times \$125.00]}{287.7} + \frac{[287.7 \times (\$7.25)]}{2} = \$1,042.75 + \$1,042.92 = \$2,085.67$$

(Your solution might be slightly different based on rounding.)

Diff: 3 Type: MC

Skill: Apply

Objective: LO 19-1

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

The Wood Furniture Company produces a specialty wood furniture product, and has the following information available concerning its inventory items:

Relevant ordering costs per purchase order	\$150
Relevant carrying costs per year:	
Required annual return on investment	10%
Required other costs per year	\$1.40

Annual demand is 10,000 packages per year. The purchase price per package is \$16.

49) What is the economic order quantity for Wood Furniture Company?

- A) 150,000 units
- B) 1,000 units
- C) 75,000 units
- D) 5,000 units
- E) 1,464 units

Answer: B

Explanation: B) Unit carrying costs = $(\$16 \times 0.10) + \$1.40 = \$3$

EOQ = The square root of $[(2 \times 10,000 \times \$150)/\$3] = 1,000$ units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

50) What are the Wood Furniture Company annual relevant total costs at the economic order quantity?

- A) \$1,000
- B) \$1,500
- C) \$3,000
- D) \$3,500
- E) \$2,050

Answer: C

Explanation: C) Unit carrying costs = $(\$16 \times 0.10) + \$1.40 = \$3$

EOQ = The square root of $[(2 \times 10,000 \times \$150)/\$3] = 1,000$ units

$$RTC = \left[\frac{(10,000 \times \$150)}{1,000} + \frac{(1,000 \times \$3)}{2} \right] = \$3,000$$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

51) What are the Wood Furniture Company annual total relevant costs, assuming the quantity ordered equals 500 units?

- A) \$3,500
- B) \$500
- C) \$4,000
- D) \$3,750
- E) \$3,350

Answer: D

$$\text{Explanation: D) } RTC = \left[\frac{(10,000 \times \$150)}{500} + \frac{(500 \times \$3)}{2} \right] = \$3,750$$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

52) How many deliveries will Wood Furniture Company require at the economic order quantity?

- A) 1.0 delivery
- B) 5.1 deliveries
- C) 8.2 deliveries
- D) 10.0 deliveries
- E) 6.8 deliveries

Answer: D

Explanation: D) $10,000/1,000 = 10$ deliveries

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

53) Wilson's Deli can predict with virtual certainty the demand for its products. Wilson's sells 20 hams per week. Purchase order lead time is 2 weeks and the economic order quantity is 50 hams. What is the reorder point?

- A) 20 hams
- B) 30 hams
- C) 40 hams
- D) 50 hams
- E) 100 hams

Answer: C

Explanation: C) $20 \times 2 = 40$ hams

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

54) If Ferry Company has a safety stock of 160 units and the average daily demand is 20 units, how many days can be covered if the shipment from the supplier is delayed by 12 days?

- A) 12.0 days
- B) 10.0 days
- C) 8.0 days
- D) 6.7 days
- E) 13.33 days

Answer: C

Explanation: C) $160/20 = 8$ days

Diff: 1 Type: MC

Skill: Apply

Objective: LO 19-1

55) If Jackson Collectibles, Inc. has a safety stock of 35 units and the average weekly demand is 14 units, how many days can be covered if the shipment from the supplier is delayed?

- A) 2.5 days
- B) 17.5 days
- C) 21 days
- D) 35 days
- E) 7.0 days

Answer: B

Explanation: B) $35/2 = 17.5$ days

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

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

Sandrington Ltd. operates a retail bicycle shop. Wheel covers are popular with customers. Sandrington purchases these covers for \$48 per pair, and expects to sell 5,000 pairs per year. Ordering costs are estimated at \$180 per order and relevant insurance handling etc. costs are estimated at \$3.60 per month. The company has established a 14% annual return on investment.

56) The EOQ quantity for Sandrington is:

- A) 418 units
- B) 506 units
- C) 2,449 units
- D) 707 units
- E) 24 units

Answer: A

Explanation: A) Annual relevant insurance etc. costs = $\$0.30 \times 12 = \3.60

Opportunity costs = $14\% \times \$48 = \6.72

Total carrying costs = $\$3.60 + \$6.72 = \$10.32$

$$EOQ = \sqrt{(2 \times 5,000 \times \$180) / \$10.32}$$

$$EOQ = 418$$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

57) At the EOQ quantity, Sandrington's total annual relevant inventory costs would be:

- A) \$2,546
- B) \$3,557
- C) \$735
- D) \$4,310
- E) \$6,467

Answer: D

Explanation: A) Annual relevant insurance etc. costs = $\$0.30 \times 12 = \3.60

Opportunity costs = $14\% \times \$48 = \6.72

Total carrying costs = $\$3.60 + \$6.72 = \$10.32$

$$EOQ = \sqrt{(2 \times 5,000 \times \$180) / \$10.32}$$

$$EOQ = 418$$

Ordering Costs = $5,000 / 418 \times \$180 = \$2,153.11$

Carrying costs = $418 / 2 \times \$10.32 = \$2,156.88$

Total = $\$2,153.11 + \$2,156.88 = \$4,309.99$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

58) Which of the following factor(s) would cause an increase in the EOQ?

- A) long-run purchasing arrangements, fixing price and quality
- B) electronic commerce
- C) increasing use of purchase order cards
- D) labour intensive procurement methods
- E) increase in carrying cost [C]

Answer: D

Diff: 2 Type: MC

Skill: Understand

Objective: LO 19-1

59) The EOQ model is designed to emphasize the tradeoff between which of the following factors?

- A) carrying costs and ordering costs
- B) purchasing costs and carrying costs
- C) stockout costs and carrying costs
- D) purchasing costs and ordering costs
- E) stockout costs and ordering costs

Answer: A

Diff: 2 Type: MC

Skill: Understand

Objective: LO 19-1

Answer the following questions using the information below:

The following information applies to Labs Plus, which supplies microscopes to laboratories throughout the country. Labs Plus purchases the microscopes from a manufacturer which has a reputation for very high quality in its manufacturing operation.

Annual demand (weekly demand= 1/52 of annual demand)	20,800 units
Lead time in weeks	2 weeks
Cost of placing an order	\$100
Carrying cost per unit	\$1.25

60) What is the economic order quantity at Labs Plus?

- A) 789 units
- B) 1,289 units
- C) 23 units
- D) 1,825 units
- E) 1,387 units

Answer: D

Explanation: C) $EOQ = \sqrt{(2 \times 20,800 \times \$100)/\$1.25} = 1,824.28$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

61) What is the reorder point at Labs Plus?

- A) 800 units
- B) 500 units
- C) 400 units
- D) 1,600 units
- E) 200 units

Answer: A

Explanation: A) $(20,800/52) \times 2 = 800$ units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

62) What are the total annual relevant costs at Labs Plus?

- A) \$2,280
- B) \$3,421
- C) \$1,790
- D) \$2,425
- E) \$2,670

Answer: A

Explanation: B) $[(20,800/1,825) \times \$100] + [(1,825/2) \times 1.25]$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-1

63) The annual demand for red, medium polo shirts, for Clothes, Inc. is 25,000 units. The cost of placing an order is \$80, and the cost of carrying one unit in inventory for one year is \$25.

Required:

- Use the economic order quantity model to determine the optimal order size.
- Determine the reorder point assuming a lead time of 10 days, and a work year of 250 days.
- Assuming the maximum lead time is 20 days and the maximum daily demand is 125 units, determine the safety stock required to prevent stockouts.

Answer:

a. $\sqrt{(2 \times 25,000 \times \$80)/\$25} = 400$ units

b. Daily demand = $25,000/250 = 100$ units

Reorder point = 100 units per day \times 10 days = 1,000 units

c. Max. demand per day	125	units
Max. lead time	<u>$\times 20$</u>	days

Max. lead time demand	2,500	units
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Reorder point without safety stocks	<u>1,000</u>	units
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Safety stock	<u>1,500</u>	units
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Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-1

64) An inventory item of XYZ Manufacturing has an average daily demand of 10 units with a maximum daily demand of 12 units. The economic order quantity is 200 units. The reorder point is 50 units. Safety stocks are set at 94 units.

Required:

- Determine the inventory level at the time of reordering.
- Determine the purchase order lead time.
- Determine the maximum purchase order lead time that the company can experience before it has a stockout.

Answer:

a. Reorder point	50 units
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Safety stock	<u>94</u> units
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Inventory at reorder point	<u>144</u> units
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b. 50 units at reorder point/10 units a day = 5 days

c. Reorder point with safety stocks is 144

Maximum demand is 12

Maximum purchase order lead time = $144/12 = 12$ days

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-1

65) Ralph was in the process of completing the quarterly planning for the purchasing department when a major computer malfunction lost most of his data. For direct material XXX he was able to recover the following:

Average inventory level of XXX	???
Orders per year	40
Average daily demand	48
Working days per year	250
Annual ordering costs	\$4,000
Annual carrying costs	\$30/unit

Ralph purchases at the EOQ quantity level.

Required:

Determine the annual demand, the cost of placing an order, the economic order quantity and the annual total costs of inventory.

Answer: Annual demand = $48 \times 250 = 12,000$

Cost of placing an order = $\$4,000/40 = \100 per order

EOQ = The square root of $(2 \times 12,000 \times \$100)/\$30 = 282.8427$ units rounded to 283

Total ordering costs at EOQ = $12,000/283 \times \$100 = \$4,240.28$

Total carrying costs = $283/2 \times \$30 = \$4,245$

Total costs of inventory = $\$4,240.28 + \$4,245 = \$8,485.28$

Note carrying costs do not exactly equal ordering costs due to rounding.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 19-1

66) The IBP Grocery orders most of its items in lot sizes of 10 units. Average annual demand per side of beef is 720 units per year. Ordering costs are \$25 per order with an average purchasing price of \$100. Annual inventory carrying costs are estimated to be 40 percent of the unit cost.

Required:

- Determine the economic order quantity.
- Determine the annual cost savings if the shop changes from an order size of 10 units to the economic order quantity.
- Since the shelf life is limited the IBP Grocery must keep the inventory moving. Assuming a 360-day year, determine the optimal lot size under each of the following: (1) a 20-day shelf life and (2) a 10-day shelf life.

Answer:

a. $\sqrt{(2 \times 720 \times \$25)/\$40} = 30$ units

- b. Current 10 unit order:

Ordering costs ($\$25 \times 720/10$)	\$1,800	
Carrying costs ($\$100 \times 0.40 \times 10/2$)	<u>200</u>	\$2,000

EOQ 30 unit order:

Ordering costs ($\$25 \times 720/30$)	600	
Carrying costs ($\$100 \times 0.40 \times 30/2$)	<u>600</u>	<u>1,200</u>

Annual savings		<u>\$800</u>
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- c. Average daily demand = $720/360 = 2$ per day

Average days' supply in EOQ = $30/2 = 15$ days

- 20-day shelf life allows for up to 40 units (20×2), EOQ is acceptable.
- 10-day shelf life allows for up to 20 units (10×2), EOQ is not acceptable.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 19-1

67) For supply item ABC, Andrews Company has been ordering 125 units based on the recommendation of the salesperson who calls on the company monthly. A new purchasing agent has been hired by the company who wants to start using the economic order quantity method and its supporting decision elements. She has gathered the following information:

Annual demand in units	250
Days used per year	250
Lead time, in days	10
Ordering costs	\$100
Annual unit carrying costs	\$20

Required:

Determine the EOQ, average inventory, orders per year, average daily demand, reorder point, annual ordering costs, and annual carrying costs.

Answer: EOQ = The square root of $[(2 \times 250 \times \$100)/\$20] = 50$

Average inventory = $50/2 = 25$

Orders per year = $250/50 = 5$

Average daily demand = $250/250 = 1$ unit

Reorder point = $10/1 = 10$ units

Annual ordering costs = $5 \times \$100 = \500

Annual carrying costs = $25 \times \$20 = \500

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-1

68) A jeweller orders gems in lot sizes of 1,250 gems. The annual demand for emeralds is 6,250 gems. Ordering costs are \$200 per order and carrying costs are \$10 per unit annually.

Required:

- Determine the economic order quantity.
- Determine the amount of annual cost savings if the company changes from an order size of 1,250 units to the economic order size.
- One supplier offers a discount of \$2 per unit off the purchase price of orders in lots of 625 units or more. What impact would this have on the EOQ and should the order size be changed?

Answer:

a.	$\sqrt{(2 \times 6,250 \times \$200)/\$10} = 500$ units		
b.	Current 1,250 unit order:		
	Ordering costs ($\$200 \times 6,250/1,250$)	\$1,000	
	Carrying costs ($\$10 \times 1,250/2$)	<u>6,250</u>	\$7,250
	EOQ 500 unit order:		
	Ordering costs ($\$200 \times 6,250/500$)	\$2,500	
	Carrying costs ($\$10 \times 500/2$)	<u>2,500</u>	<u>5,000</u>
	Annual savings		<u>\$2,250</u>
c.	EOQ 500 unit order from (b)		
	625 unit orders:		\$5,000
	Ordering costs ($\$200 \times 6,250/625$)	\$2,000	
	Carrying costs ($\$10 \times 625/2$)	<u>3,125</u>	<u>5,125</u>
	Increased costs		\$ 125
	Purchase savings ($6,250 \times \$2$)		<u>12,500</u>
	Advantage of offer		<u>\$12,375</u>

Conclusion:

Accept the offer of 625 units per order.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 19-1

69) The annual demand for a company's product is 3,750 units, and monthly demand varies from 200 to 400 units with the following probability of demand:

200 units have a 25 percent probability

300 units have a 50 percent probability

400 units have a 25 percent probability

The EOQ model provides an optimal order quantity of 250 units. The opportunity costs of being out of stock are \$2 per unit, with a carrying cost of \$13 per unit, and the reorder point is 250 units.

Required:

a. Prepare a table showing stockouts, expected stockout costs, related carrying costs, and total costs, at each level of demand if the selected safety stocks are: 0, 50, 100 and 150.

b. What is the best level of safety stock to carry?

Answer:

a.

Safety Stock	Demand	Relevant Stockouts in Units	Prob	Expected Stockout Costs	Orders	Relevant Stockout Costs	Carrying Costs	Total Costs
0			0.25					
	300	50	0.50	\$100	15	\$750		
	400	150	0.25	300	15	<u>\$1,125</u>		
								<u>\$1,875</u>
50			0.25					
			0.50					
	400	100	0.25	\$200	15	\$750	\$650	<u>\$1,400</u>
100			0.25					
			0.50					
	400	50	0.25	\$100	15	\$375	\$1,300	<u>\$1,675</u>
150			0.25					
			0.50					
			0.25		15	\$1,950		<u>\$1,950</u>

b. The safety stock of 50 units is the best with the lowest total cost.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 19-1

70) Hawthorne Ltd. purchases 1,500,000 units of its product every year. The ordering costs are \$30 per order and the annual carrying cost of one unit is \$1.60. Under its current inventory policy, it purchases the units 150 times during the year, in batches of 10,000 units per order.

Required:

- a. Calculate the EOQ for Hawthorne Ltd.
- b. By ordering at the EOQ, how much in inventory costs will Hawthorne Ltd. save per year?

Answer:

a. $EOQ = \sqrt{2 * 1,500,000 * \$30 / \$1.60} = 7,500$ units

b.

Current Policy:

$$\text{Average inventory} = 10,000 / 2 = 5,000$$

$$(150 \text{ orders} * \$30/\text{order}) + [(10,000/2) * \$1.60]$$

$$\$4,500 + \$8,000 = \$12,500$$

At EOQ:

$$\# \text{ of orders} = 1,500,000 / 7,500 = 200 \text{ orders}$$

$$(200 * \$30) + [(7,500/2) * \$1.60] = \$12,000$$

The company will save \$500 [\$12,500 - 12,000] by using the EOQ.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-1

71) Stanford Ltd. purchases 1,600,000 units of its product every year. The ordering costs are \$50 per order and the annual carrying cost of one unit is \$1.60. Under its current inventory policy, it purchases the units 80 times during the year, in batches of 20,000 units per order.

Required:

- a. Calculate the EOQ for Stanford Ltd.
- b. By ordering at the EOQ, how much in inventory costs will Stanford Ltd. save per year?

Answer:

a. $EOQ = \sqrt{(2 * 1,600,000 * \$50)/\$1.60} = 10,000$ units

b.

Current Policy:

Average inventory = $20,000/2 = 10,000$

Order costs = $80 \text{ orders} * \$50 = \$4,000$

Carrying = $10,000 * \$1.60 = \$16,000$

Total costs = $\$4,000 + \$16,000 = \$20,000$

At EOQ:

of orders = $1,600,000/10,000 = 160$ orders

Average inventory = $5,000$ units

$(160 * \$50) + (5,000 * \$1.60) = \$8,000 + \$8,000 = \$16,000$

The company will save \$4,000 [$\$20,000 - \$16,000$] by using the EOQ.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-1

72) Peckford Ltd. purchases 900,000 units of its product every year. The ordering costs are \$125 per order and the annual carrying cost of one unit is \$1.50. Under its current inventory policy, it purchases the units 60 times during the year, in batches of 15,000 units per order.

Required:

- a. Calculate the EOQ for Peckford Ltd.
- b. By ordering at the EOQ, how much in inventory costs will Peckford Ltd. save per year?

Answer:

a. $EOQ = \sqrt{(2 * 900,000 * \$125) / \$1.50} = 12,247.45$ rounded up to 12,248 units

b.

Current Policy:

Average inventory = $15,000 / 2 = 7,500$

Order costs = $60 \text{ orders} * \$125 = \$7,500$

Carrying = $7,500 * \$1.50 = \$11,250$

Total costs = $\$7,500 + \$11,250 = \$18,750$

At EOQ:

of orders = $900,000 / 12,248 = 73.48$, round up to 74 orders

Average inventory = $12,248 / 2 = 6,124$ units

$(74 * \$125) + (6,124 * \$1.50) = \$9,250 + \$9,186 = \$18,436$

The company will save \$314 [$\$18,750 - \$18,436$] by using the EOQ.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-1

73) Morrisette Ltd. sells 240,000 units a year. Its carrying costs are \$0.10 per unit and its ordering costs are \$187.50 per order.

Required:

- a. Calculate the economic order quantity.
- b. The supplier has offered a \$0.02 discount per unit (on all units) if the order size is 80,000 units. Should Morrisette increase its order size?

Answer:

a. $EOQ = \sqrt{(2 * 240,000 * \$187.50) / \$0.10} = 30,000 \text{ units}$

At the EOQ, the company will place $240,000 / 30,000 = 8$ orders

- b. Total annual cost at EOQ:
 $= (8 \text{ orders} @ \$187.50) + (15,000 * \$0.10) = \$1,500 + \$1,500 = \$3,000$

Total annual cost at 80,000 unit order size:

New Order Size of 80,000 requires $240,000 / 80,000$ or 3 orders

$= (3 \text{ orders} @ \$187.5) + (40,000 * \$0.10) = \$562.50 + \$4,000 = \$4,562.50$

Savings on unit price $= 240,000 * \$0.02 = \$4,800$

$\$4,800 - \$4,562.50 = \$237.50$ savings

Yes Morrisette should increase its order size.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-1

74) Jambalaya Ltd. sells 120,000 units a year. Its carrying costs are \$0.35 per unit and its ordering costs are \$127 per order.

Required:

- a. Calculate the economic order quantity.
- b. The supplier has offered a \$0.05 discount per unit (on all units) if the order size is 20,000 units. Should Morrisette increase its order size?

Answer:

a. $EOQ = \sqrt{(2 * 120,000 * \$127) / \$0.35} = 9,331.97$ round up to 9,332 units

At the EOQ, the company will place $120,000 / 9,332 = 12.86$ orders; round up to 13

- b. Total annual cost at EOQ:
 $= (13 \text{ orders} @ \$127) + (4,666 * \$0.35) = \$1,651.00 + \$1,633.10 = \$3,284.10$

Total annual cost at 20,000 unit order size:

New Order Size of 20,000 requires $120,000 / 20,000$ or 6 orders

$= (6 \text{ orders} @ \$127) + (10,000 * \$0.35) = \$762.00 + \$3,500.00 = \$4,262.00$

Savings on unit price $= 240,000 * \$0.02 = \$4,800$

$\$3,284.10 - \$4,262.00 = \$977.90$ extra cost

Jambalaya should not increase its order size.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-1

75) Acme Industries is currently experiencing problems with its inventory of anvils. Its manager, Willy Coy currently orders the anvils in batches of 10,000. Four orders are placed during the year to meet the estimated sales demand of 40,000 units. Each order costs \$20 and each unit costs \$2 to carry. Mr. Coy maintains a safety stock of 500 anvils.

Required:

- What are Acme's total annual costs (TC) of inventory under its current ordering policy?
- What is the Economic Order Quantity for Acme Industries?
- What is the average inventory if Acme uses the EOQ calculated in part b) and it still maintains its 500 units of safety stock?
- What is Acme's annual savings in inventory costs by using the EOQ and maintaining its safety stock?

Answer:

a. $TC = \text{ordering} + \text{carrying}$

$$TC = [4 * \$20] + [5,000 * \$2] + [500 * \$2]$$

$$TC = \$80 + \$10,000 + \$1,000 = \$11,080 \text{ total costs under current policy}$$

b. $EOQ = \sqrt{(2 * 40,000 * \$20)/\$2} = \sqrt{800,000} = 894.43 \text{ round up to } 895$

c. $(895/2) + 500 = 448 + 500 = 948$

d. # of orders placed = $40,000/895 = 44.69$

$$TC = [44.69 * \$20] + [448 * \$2] + [500 * \$2]$$

$$= \$893.80 + \$896 + \$1,000$$

$$= \$2,789.80 \text{ total costs under EOQ}$$

$$\$11,080 - \$2,789.80 = \$8,290.20 \text{ savings.}$$

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-1

76) Beta Industries is currently experiencing problems with its inventory of hammer heads. Its manager, Laura Engles currently orders the hammer heads in batches of 6,000. Six orders are placed during the year to meet the estimated sales demand of 36,000 units. Each order costs \$75 and each unit costs \$0.50 to carry. Ms. Engles maintains a safety stock of 1,000 hammer heads.

Required:

- What are Beta's total annual costs (TC) of inventory under its current ordering policy?
- What is the Economic Order Quantity for Beta Industries?
- What is the average inventory if Beta uses the EOQ calculated in part b) and it still maintains its 1,000 units of safety stock?
- What is Beta's annual savings in inventory costs by using the EOQ and maintaining its safety stock?

Answer:

- TC = ordering + carrying

$$TC = [6 * \$75] + [3,000 * \$0.50] + [1,000 * \$0.50]$$

$$TC = \$450 + \$1,500 + \$500 = \$2,450 \text{ total costs under current policy}$$

- $EOQ = \sqrt{(2 * 36,000 * \$75) / \$0.50} = 3,286.34$ round up to 3,287

- $(3,287/2) + 1,000 = 2,644$

- # of orders placed = $36,000/3,287 = 10.95$ round to 11

$$TC = [11 * \$75] + [2,644 * \$0.50]$$

$$= \$825 + \$1,322$$

$$= \$2,147 \text{ total costs under EOQ}$$

$$\$2,450 - \$2,147 = \$303 \text{ savings.}$$

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-1

77) The executive vice president of Robotics, Inc., is concerned because the cost of materials has not been in line with the budget for several periods, even after implementing an EOQ model. The company has the normal direct material variance computations of price and efficiency at the end of each month. The price variance of the direct materials used is usually near expectations. The vice president does not understand how the budget differences are always larger than the material price variances.

Required:

What explanation can you give for the evaluation problems presented?

Answer: An EOQ model does not solve all inventory related problems. The first problem is the timing of material price variance computations. They should be at the time of purchase, not at the time of usage. By changing when the variance is computed, the responsibility is placed where it should be, in purchasing, not in production. Also, the timing of when materials are used could explain the difference between the budget variances and the material price variances. Materials may be purchased in one period and not used until another period. Also, material usage may include items purchased during several previous periods.

Diff: 3 Type: ES

Skill: Understand

Objective: LO 19-1

78) You are the new controller at Ralston Industries and you have noticed that the company seems to carry a lot of inventory, both in direct materials and in finished goods. At a recent management meeting, you raised this observation. The managers agreed with your observation but stated that it was company policy to carry large inventories.

Required:

Provide three reasons these managers might offer in support of carrying large inventories?

Answer: Some reasons for carrying large inventories include:

- To reduce ordering costs
- To satisfy customer demand
- To guard against fluctuating customer demand
- To guard against production problems (breakdowns, labour problems) (company will have sufficient stock on hand)
- To hedge against future price increases of raw materials
- To take advantage of discounts for buying in larger quantities
- To guard against late deliveries by suppliers
- To ensure availability of direct materials
- To guard against potential defective direct materials

Diff: 2 Type: ES

Skill: Understand

Objective: LO 19-1

79) Discuss considerations that should be fully taken into account when developing inventory related relevant costs for use in an economic order quantity (EOQ) model.

Answer: It is crucial that the costs be incremental.

Consider incremental carrying costs. If they are costs that will change with the quantity of inventory held, then they are relevant. If there are costs that would be unchanged regardless of how much inventory was in the warehouse (such as a clerical salary or material handler who was working at below full capacity), then those costs are not relevant for decision-making purposes. Relevant carrying costs are likely to be costs like shrinkage, breakage, obsolescence, and costs of hiring extra employees (or having existing employees work overtime) if higher levels of inventory will make those costs increase.

Consider incremental opportunity cost of capital. If there is a decision to carry more inventory, then there will be money spent to purchase the inventory. The opportunity cost of capital is what would the other most beneficial use of the money be if it wasn't needed to purchase the higher level of inventory. It is calculated by multiplying the company's required rate of return by the per unit costs and then by the number of units purchased for the inventory and incurred at the time the units are received.

Stockout costs require an estimate of the lost contribution margin on sales lost because of a stockout. Ordering costs are only those that change with the numbers of orders placed.

Diff: 3 Type: ES

Skill: Evaluate

Objective: LO 19-1

Due to unprecedented growth during the year Denise's Flowers decided to use some of its surplus cash to increase the size of several inventory order quantities that had been previously determined using an EOQ model.

Required:

For each of the following items tell whether the increase in order size caused an increase, a decrease, or no change.

- A) no change
- B) increase
- C) decrease

80) average inventory

Diff: 2 Type: MA

Skill: Understand

Objective: LO 19-1

81) cost of goods sold

Diff: 2 Type: MA

Skill: Understand

Objective: LO 19-1

82) number of orders per year

Diff: 2 Type: MA

Skill: Understand

Objective: LO 19-1

83) total annual carrying costs

Diff: 2 Type: MA

Skill: Understand

Objective: LO 19-1

84) total annual ordering costs

Diff: 2 Type: MA

Skill: Understand

Objective: LO 19-1

Answers: 80) B 81) A 82) C 83) B 84) C

19.2 Resolve conflicts that can arise from the results of EOQ and performance models.

1) Goal-congruence problems may occur when an inconsistency evolves between the decision model used and the model used to evaluate the performance of the person implementing the decision.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-2

2) If annual carrying costs are excluded when evaluating the performance of managers, the managers may favour purchasing in larger order quantities.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-2

3) Companies can achieve significant gains by sharing information and coordinating activities throughout the supply chain.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-2

4) In the EOQ formula the square root increases the sensitivity of the decision to errors in predicting its inputs.

Answer: FALSE

Explanation: In the EOQ formula the square root reduces the sensitivity of the decision to errors in predicting its inputs.

Diff: 1 Type: TF

5) When there is an inconsistency between the decision model and the model used to evaluate the performance of the person implementing the model, _____ arise.

A) evaluation point issues

B) goal-congruence issues

C) labour issues

D) performance issues

E) management issues

Answer: B

Diff: 2 Type: MC

Skill: Remember

Objective: LO 19-2

6) The possibility of a conflict between the order quantity that an EOQ model recommends and the order quantity that the purchasing manager regards as optimal is increased with

A) inventory costs which are computed with the FIFO method.

B) lower priced inventory items.

C) the absence of opportunity costs not being recorded in conventional accounting systems.

D) competitive quotes from suppliers.

E) lower priced costs of goods sold.

Answer: C

Diff: 2 Type: MC

Skill: Remember

Objective: LO 19-2

7) Party Animals orders 10,400 stuffed tigers per year, at \$10 per tiger, FOB destination. Party Animals earns 12% on its cash investments. The purchase order lead time is 3 weeks. The following data are available:

Estimated ordering costs per purchase order	\$10
Estimated insurance, materials handling, breakage, and so on, per year	\$3
Actual ordering costs per order	\$15

What is the cost of the prediction error?

- A) \$19.58
- B) \$23.12
- C) \$1,144.82
- D) \$1,167.85
- E) \$1,237.92

Answer: B

Explanation: B) $EOQ = \sqrt{(2 \times 10,400 \times \$10)/\$4.20)}$

$EOQ = 223$

$EOQ = \sqrt{(2 \times 10,400 \times \$15)/\$4.20)}$

$EOQ = 273$

$\$10 \times 12\% = \1.20

Carrying costs = $\$3 + \$1.20 = \$4.20$

$$TRC = \frac{10,400 \times \$15}{223} + \frac{223 \times \$4.20}{2} = \$699.55 + \$468.30 = \$1,167.85$$

$$TRC = \frac{10,400 \times \$15}{273} + \frac{273 \times \$4.20}{2} = \$571.43 + \$573.30 = \underline{\underline{\$1,144.73}}$$

\$23.12

Diff: 3 Type: MC

Skill: Apply

Objective: LO 19-2

8) Party Animals orders 5,200 stuffed giraffes per year, at \$6 per tiger, FOB destination. Party Animals earns 3% on its cash investments. The purchase order lead time is 4 weeks. The following data are available:

Estimated ordering costs per purchase order	\$35
Estimated insurance, materials handling, breakage, and so on, per year	\$2
Actual ordering costs per order	\$55

Required:

What is the cost of the prediction error?

Answer: $EOQ = \sqrt{(2 \times 5,200 \times \$35)/\$2.18}$

$EOQ = 409$

$EOQ = \sqrt{(2 \times 5,200 \times \$55)/\$2.18}$

$EOQ = 513$

$\$6 \times 3\% = \0.18

Carrying costs = $\$2 + \$0.18 = \$2.18$

$$TRC = \frac{5,200 \times \$55}{409} + \frac{409 \times \$2.18}{2} = \$699.27 + \$445.81 = \$1,145.08$$

$$TRC = \frac{5,200 \times \$55}{513} + \frac{513 \times \$2.18}{2} = \$557.50 + \$559.17 = \$1,116.67$$

\$28.41

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-1

19.3 Analyze the relevant benefits and costs of JIT alternatives.

1) Just-in-Time (JIT) Production is also called "lean production."

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-3

2) Just-in-Time (JIT) Production is a system in which each component on a production line is produced immediately as needed by the next step in the production line.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-3

3) The lack of buffer inventory in a demand-pull system means production staff has extra time to solve problems.

Answer: FALSE

Explanation: A buffer inventory ensures that there is no down time due to lack of inventory.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-3

4) Financial performance measures are the predominant measures of control in a Just-in-Time system.

Answer: FALSE

Explanation: There are many more nonfinancial measures than financial measures.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-3

5) Companies implementing just-in-time production systems manage inventories by minimizing or eliminating them.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-3

6) Just-in-time purchasing is the purchase of goods or materials such that delivery immediately precedes demand or use.

Answer: TRUE

Diff: 1 Type: TF

Skill: Understand

Objective: LO 19-3

7) Just-in-time purchasing requires organizations to place smaller purchase orders with their suppliers.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 19-3

8) Just-in-time purchasing is guided solely by the economic order quantity.

Answer: FALSE

Explanation: Inventory management also includes purchasing costs, stockout costs, and quality costs.

Diff: 2 Type: TF

Skill: Understand

Objective: LO 19-3

9) A financial benefit of a just-in-time system is that inventory carrying costs are reduced.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-3

10) Quality control is more important when a just-in-time inventory systems is in use.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 19-1

11) Which of the following methods is used when production is driven by downstream workstations?

A) an activity-based systems

B) a just-in-time system

C) a product-need system

D) a station-priority system

E) safety system

Answer: B

Diff: 1 Type: MC

Skill: Remember

Objective: LO 19-3

12) All of the following are potential financial benefits of just-in-time EXCEPT

A) lower investments in inventories.

B) higher investments in "efficient" storage space.

C) reducing the risk of rework.

D) reducing the handling costs of inventories.

E) reducing manufacturing lead time.

Answer: B

Diff: 2 Type: MC

Skill: Understand

Objective: LO 19-3

13) Which of the following would NOT be typical when a JIT production system is used?

A) manufacturing cells

B) emphasis on reducing setup time

C) workers who specialize in one function or operation

D) managing safety stock effectively

E) JIT purchasing

Answer: D

Diff: 1 Type: MC

Skill: Remember

Objective: LO 19-3

14) The management accountant must design performance measures to evaluate and control JIT production. One of the dominant sources of information that the management accountant might use for this would be the personal observations of production line workers and team leaders. Another dominant source of information would be

- A) inventory turnover ratio.
- B) nonfinancial measures of time, inventory and quality.
- C) material cost variances.
- D) number of units sent to scrap/total scrap costs.
- E) total setup time for machines/total number of units started and completed.

Answer: B

Diff: 2 Type: MC

Skill: Understand

Objective: LO 19-3

15) When goods and/or materials are purchased in such a manner as to immediately precede demand or use, it is specifically called

- A) inventory purchasing.
- B) just-in-time purchasing.
- C) materials purchasing.
- D) stock purchasing.
- E) safety purchasing.

Answer: B

Diff: 1 Type: MC

Skill: Remember

Objective: LO 19-3

16) Factors that are relevant in a JIT system, but not for the EOQ model, include

- A) quality of materials.
- B) timeliness of deliveries.
- C) stockout costs.
- D) carrying costs.
- E) quality of materials, timeliness of deliveries, and stockout costs.

Answer: E

Diff: 2 Type: MC

Skill: Understand

Objective: LO 19-3

17) Primary components that manufacturers would use to evaluate suppliers under a just-in-time system would include all of the following EXCEPT

- A) on-time delivery.
- B) production lead time.
- C) purchase price.
- D) quality costs.
- E) long-term partnerships.

Answer: B

Diff: 2 Type: MC

Skill: Understand

Objective: LO 19-3

18) The Jarvis Corporation produces bucket loader assemblies for the tractor industry. The product has a long term life expectancy. Jarvis has a traditional manufacturing and inventory system. Jarvis is considering the installation of a just-in-time inventory system to improve its cost structure. In doing a full study using its manufacturing engineering team as well as consulting with industry JIT experts and the main vendors and suppliers of the components Jarvis uses to manufacture the bucket loader assemblies, the following incremental cost-benefit relevant information is available for analysis:

The Jarvis cost of investment capital hurdle rate is 15%.

One time cost to rearrange the shop floor to create the manufacturing cell workstations is \$275,000.

One time cost to retrain the existing workforce for the JIT required skills is \$60,000.

Anticipated defect reduction is 40%. Currently there is a cost of quality defect assessment listed as \$150,000 per year.

The setup time for each of the existing functions will be reduced by 67%. Currently the forecast for setup costs are \$225,000 per year.

Jarvis will expect to save \$200,000 per year in carrying costs as a result of having a lower inventory.

The suppliers will require a 15% premium over the current level of prices in order to position themselves to supply the material on a smaller and more frequent schedule. Currently the materials purchases are \$1,500,000 per year.

Required:

Determine whether it is in the best interest of Jarvis Corporation to install a JIT system.

Answer:

1. Initial Investment = $\$275,000 + 60,000 = \$335,000$
2. Annual Savings:
Defect Cost Reduction = 40% of \$150,000 = \$60,000
Setup Cost Reduction = 67% of \$225,000 = \$150,750
Carrying Cost reduction = \$200,000

Total Savings = $(60,000 + 150,750 + 200,000) = \$410,750$
3. Annual Increased Costs:
Vendor Premium = 15% of \$1,500,000 = \$225,000
4. Net Annual Savings = $(410,750 - 225,000) = \$185,750$
5. Savings/Initial Investment = $(185,750/335,000) = 55 \%$

Since the net savings is returning 55% per year on the initial investment (which is far in excess of the companies hurdle rate of 15%), the JIT project should be implemented.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 19-3

19) The manufacturing manager of New Technology Company is concerned about the company's newest plant. When the plant began operations three years ago it had the best of everything. It had modern equipment, well-trained employees, engineered work and assembly stations and a controlled environment. During the first two years the evaluation results were very good with almost all cost variances being favourable. However, recently things have turned negative.

In recent months everything seems to be operating in a crisis management mode. Although most cost variances remain favourable, the plant's segment contribution is declining and customers are complaining about poor quality and slow delivery. Several customers have suggested that they may take their business elsewhere if things do not improve.

The shop floor is in continual turmoil. In-process inventory is everywhere, production employees have difficulty finding jobs that need to be worked on, and scheduling has requested a larger computer to keep track of work-in-process.

The vice president of sales does not know where to begin with solving the customers' problems. It seems that everyone is working very hard and the plant has the best facilities and trained employees in the industry.

Required:

What is the nature of the plant's problems? What recommendation would you make to help improve the situation?

Answer: The basic problem appears to be too much work-in-process inventory and a lack of control over the flow of this inventory. Since the plant had two good years of production, it may be that increased demands are pushing the plant near its capacity and management has lost control of how to manage a near-capacity situation. Although the employees are well-trained and skilled in what they do, that is not enough to ensure the production process runs smoothly. All activities must be organized to be efficient.

A beginning recommendation is to implement a materials required planning system where each workstation controls what it produces and pushes it to the next workstation. This can be accomplished by tighter controls over the scheduling of production units by workstation. This would be incorporated with a master production schedule, bill of materials, and timely inventory system.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 19-3

20) Sudbury Ore Company mines nickel ore for production into various metal products. During recent years the company has had large fluctuations in its inventories of metal ingots. Much of the volatility of the inventory levels is due to the variability of demand by the company's largest customers, automobile manufacturers. For large orders the company has the technology to quickly shift production from one product to another.

Required:

Explain how the company can improve its inventory control system and give the advantages of whatever you recommend.

Answer: The company can probably benefit from changing to a just-in-time system for inventory control. This would allow the company to be responsive to actual needs rather than stockpiling finished goods inventory. The advantages would be:

1. Lower inventory investments.
2. Reductions in carrying and handling costs of inventories.
3. Reduction in risks of obsolete inventories.
4. Emphasis on reducing manufacturing lead time.

JIT systems mean that there are minimal inventories at each stage of production, therefore, defects arising at one stage can quickly affect subsequent stages of production. It is therefore important in JIT systems, to also have a policy of TQM, solving problems and eliminating defects as soon as possible.

Note: If mining is a routine operation without much variability, you may consider selling extra inventory—a reverse JIT process.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 19-3

21) Kretzinger Company makes extensive use of financial performance reports for each of its departments. Although most departments have been reporting favourable cost variances with the company's current inventory system, management is concerned about the overall performance of the purchasing and production departments. For example, the following information is for the purchasing of materials for a product the company has been manufacturing for several years:

<u>Year</u>	<u>Quantity used</u>	<u>Average inventory</u>	<u>Purchase price variance</u>
1	40,000	8,000	\$1,000 F
2	60,000	15,000	10,000 F
3	60,000	20,000	12,000 F
4	50,000	12,500	20,000 U
5	54,000	18,000	8,000 F
6	58,000	23,200	9,500 F

Required:

- Compute the inventory turnover for each year. Can any conclusions be drawn for a yearly comparison of the purchase price variance and the inventory turnover?
- Identify problems likely to be caused by evaluating purchasing only on the basis of the purchase price variance.
- Management has been relying almost exclusively on variances for performance measurement. What recommendations can you suggest to improve the evaluation process?

Answer:

a.

<u>Year</u>	<u>Quantity used</u>	<u>Average inventory</u>	<u>Turnover</u>
1	40,000	8,000	5.0
2	60,000	15,000	4.0
3	60,000	20,000	3.0
4	50,000	12,500	4.0
5	54,000	18,000	3.0
6	58,000	23,200	2.5

Favourable purchase prices appear to be associated with decreases in inventory turnover and increases in average inventory levels. Decreases in inventory turnover are a possible signal of the build up of excess inventory. Excess inventory will reduce return on investment of the company and the above information indicates a need for a just-in-time inventory system.

- To achieve quantity discounts and favourable materials price variances, purchasing may be ordering excess inventory, thereby increasing subsequent storage, obsolescence, and handling costs. To obtain a low price purchasing may be ordering from a supplier whose goods have inferior quality which may in turn lead to increased inspection, rework, and perhaps dissatisfied customers.

c. It appears that two items may help improve the situation. First, consider the change to a just-in-time inventory system which would greatly improve the inventory turnover and reduce the amount of inventory carried. Second, additional measures should be used in the evaluation of the purchasing department. Either other financial measures should be used or the addition of nonfinancial measures should be implemented. Several measures are mentioned in the text, for example, manufacturing lead time, units produced per hour, days' inventory on hand.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 19-3

22) What are five features of a just-in-time manufacturing system?

Answer: A just-in-time (JIT) system has many positive features. It organizes production in manufacturing cell groups which allow for all equipment used for a given product to be grouped together. This reduces material handling costs and sequences the production process. A second feature of a JIT system is that workers are trained to be multi-skilled. They are trained to operate various machines as well as to do light maintenance and repairs on the machines. A third feature of JIT is that it aggressively works to eliminate defects. Because there is a tight link between the steps, defects are quickly noticed in the next step and addressed before large numbers of units become backlogged. A fourth feature of a JIT system is that it reduces setup time and manufacturing lead time. Reduced setup costs make it more practical to produce smaller batches and react faster to changes in customer demand. A fifth feature of a JIT system is the firm only uses suppliers who are capable of meeting delivery demands in a timely fashion. This also causes an increase in the quality of the goods being received by the firm.

Diff: 2 Type: ES

Skill: Remember

Objective: LO 19-3

19.4 Differentiate a materials requirements planning (MRP) strategy from an enterprise resource planning (ERP) strategy of supply-chain management.

1) The term, supply-chain, describes the flow of goods, services and information from cradle to grave, regardless of whether those activities occur in the same organization or in other organizations.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-4

2) An Enterprise Resource Planning (ERP) System comprises a single database that collects data and feeds it into software applications supporting all of a company's business activities.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-4

3) A "demand-pull" system, often described as a materials requirement planning system, focuses first on the forecasted amount and timing of finished goods and then determines the demand for materials components and subassemblies at each of the prior stages of production.

Answer: FALSE

Explanation: The narrative describes a push-through system.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-4

4) Which of the following would be expected when using a supply-chain approach to inventory management?

A) more stockouts (but at a lower cost overall)

B) less manufacturing of goods not subsequently ordered

C) fewer rush orders for manufacturing

D) more stockouts, less manufacturing of goods not subsequently ordered, and fewer rush orders for manufacturing

E) fewer rush orders for manufacturing, less manufacturing of goods not subsequently ordered, and lower inventory levels

Answer: E

Diff: 2 Type: MC

Skill: Understand

Objective: LO 19-4

5) Which of the following is NOT a component in a materials requirement planning system?

A) lead times of all items to be purchased

B) master production schedule

C) bill of materials filed

D) standard construction times for all components produced externally

E) demand forecasts for finished goods

Answer: D

Diff: 2 Type: MC

Skill: Remember

Objective: LO 19-4

6) The management accountant aids in MRP by

A) doing journal entries as requested.

B) preparing plant appropriation requests.

C) maintaining accurate records of inventory and its costs.

D) contacting vendors to make sure they can deliver the materials in time.

E) calculating EOQ

Answer: C

Diff: 2 Type: MC

Skill: Understand

Objective: LO 19-4

7) A system that comprises a single database that collects data and feeds it into software applications supporting all of a company's business activities is known as a(n)

- A) economic order quantity (EOQ) system.
- B) enterprise requirements planning (ERP) system.
- C) just-in-time (JIT) system.
- D) material requirements planning (MRP) system.
- E) total quality management (TQM).

Answer: B

Diff: 2 Type: MC

Skill: Remember

Objective: LO 19-4

8) What is a supply chain, and what are the benefits of a supply chain analysis? Provide an example of these benefits.

Answer: The supply chain describes the flow of goods, services, and information from the initial sources of materials and services to the delivery of products to customers, regardless of whether these activities occur in the same organization or in other organizations. Utilizing supply chain analysis allows companies to coordinate their activities and reduce inventories throughout the supply chain. An example of the benefits of supply chain analysis might be the emergence of supplier or vendor-managed inventories such as the relationship between Procter & Gamble and Walmart.

Diff: 3 Type: ES

Skill: Understand

Objective: LO 19-4

19.5 Evaluate and decide upon an appropriate backflush costing method.

1) Sequential tracking refers to a method of costing in which the accounting system entries occur at the same order as actual purchases and products.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-5

2) Backflush costing describes a costing system that omits recording some journal entries.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-5

3) Backflush costing is an example of sequential tracking.

Answer: FALSE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-5

4) Backflush costing uses normal or standard costs.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-5

5) A trigger point in backflush costing refers to the inventory level at which a reorder is generated.

Answer: FALSE

Explanation: A trigger point refers to the point at which a journal entry is made.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-5

6) A firm using a backflush costing system will always use actual costs rather than standard costs.

Answer: FALSE

Explanation: A firm using a backflush costing system can use standard costs as well as actual costs.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 19-5

7) The "flush" in backflush refers to the fact that there are no variances in a backflush costing system using standard costs.

Answer: FALSE

Explanation: The "flush" in backflush refers to the fact that costs are "flushed" out of the system after the product has been produced or sold.

Diff: 2 Type: TF

Skill: Understand

Objective: LO 19-5

8) Companies that have fast manufacturing lead times usually find that a version of backflush costing will report cost numbers similar to what a sequential costing approach would report.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 19-5

9) A positive aspect of backflush costing is the presence of a continuous inventory audit trail.

Answer: FALSE

Explanation: In backflush costing, the visible audit trail diminishes.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-5

10) Activity-based costing systems enhance backflush costing accounting because of the relatively more accurate budgeted conversion cost per unit for different products.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-5

11) Lean accounting is a costing method that supports creating value for customers by costing the value streams, as distinguished from individual products or departments, thereby eliminating waste in the accounting process.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 19-5

12) Traditional budgeted and standard costing systems use

A) backflush costing.

B) delayed costing.

C) post-deduct costing.

D) synchronous tracking.

E) variable costing.

Answer: D

Diff: 2 Type: MC

Skill: Remember

Objective: LO 19-5

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

Fun 'N' Games manufactures various board games. For January there were no beginning inventories of direct materials, and no beginning or ending work-in-process. Only one indirect manufacturing cost category is currently in use, "Conversion Costs." Journal entries are recorded when materials are purchased and when conversion costs are allocated under backflush costing.

Actual Conversion costs - January	\$400,000
Direct materials purchased - January	\$1,070,000
Units produced - January	58,800
Units sold - January	41,800

13) Which of the following journal entries properly records the purchase of direct materials at Fun 'N' Games?

A)

Accounts Payable Control	1,070,000
Inventory: Raw and in Process Control	1,070,000

B)

Inventory: Raw and in Process Control	1,070,000
Accounts Payable Control	1,070,000

C)

Inventory: Raw and in Process Control	1,070,000
Conversion Costs	1,070,000

D)

Conversion Costs	1,070,000
Inventory: Raw and in Process Control	1,070,000

E)

Accounts Payable Control	1,070,000
Finished Goods Inventory	1,070,000

Answer: B

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-5

14) Which of the journal entries properly records the incurrence of conversion costs?

A)

Conversion Costs	400,000
Various accounts	400,000

B)

Various accounts	400,000
Conversion Costs	400,000

C)

Conversion Costs	400,000
Inventory: Direct Materials	400,000

D)

Inventory: Direct Materials	400,000
Conversion Costs	400,000

E)

Cost of Goods Sold	400,000
Conversion Costs	400,000

Answer: A

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-5

15) Which of the following entries properly records the cost of goods sold for the month?

A)

Finished Goods Control	1,045,000
Work in Process	1,045,000

B)

Cost of Goods Sold	1,045,000
Finished Goods Control	1,045,000

C)

Finished Goods control	1,045,000
Cost of Goods Sold	1,045,000

D)

Cost of Goods Sold	1,045,000
Work in Process	1,045,000

E)

Cost of Goods Sold	1,470,000
Finished Goods Control	1,470,000

Answer: B

Explanation: B) $\$1,070,000 + \$400,000 = \$1,470,000$

$\$1,470,000 * 41,800/58,800 = \$1,045,000$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-5

Answer the following questions using the information below:

Acme Inc. manufactures air compressors. For July there were no beginning inventories of direct materials, and no beginning or ending work-in-process. Only one indirect manufacturing cost category is currently in use, "Conversion Costs." Journal entries are recorded when materials are purchased and when units are transferred to finished goods inventory. Acme Inc. uses backflush costing. Variances are written off against Cost of Goods Sold when units are transferred to finished goods inventory. The following data pertains to July:

Conversion costs - July	\$350,000
Direct materials purchased - July	\$650,000
Units produced - July	100,000
Units sold - July	90,500
Direct materials variance	\$100,000 Favourable
Conversion cost variance	\$ 50,000 Unfavourable

16) Which of the following journal entries properly reflects Acme's conversion costs allocated including the disposition of the variance?

A)

Work-in-Process Control	350,000
Conversion Costs Control	350,000

B)

Conversion Costs Control	350,000
Conversion Costs Allocated	300,000
Cost of Goods Sold	50,000

C)

Conversion Costs Control	350,000
Conversion Costs Allocated	350,000

D)

Conversion Costs Allocated	300,000
Cost of Goods Sold	50,000
Conversion Costs Control	350,000

E)

Cost of Goods Sold	350,000
Conversion Costs Control	350,000

Answer: D

Explanation: D) Write off requires a debit to conversion costs allocated and a credit to conversion costs control

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-5

17) Which of the following journal entries properly records Acme's direct material costs placed into production for the month of July?

A)

Work-in-Process Control	650,000
Direct Materials Control	650,000

B)

Finished Goods Inventory	688,250
Direct Materials Control	588,250
Cost of Goods Sold	100,000

C)

Finished Goods Inventory	650,000
Direct Materials Control	650,000

D)

Finished Goods Inventory	550,000
Cost of Goods Sold	100,000
Direct Materials Control	650,000

E)

Cost of Goods Sold	650,000
Direct Materials Control	650,000

Answer: B

Explanation: B) Actual direct material costs placed into production: $(\$650,000/100,000) \times 90,500 = \$588,250$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-5

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

Complete Microfilm Products manufactures microfilm cameras. For October there were no beginning inventories of direct materials, and no beginning or ending work-in-process. Only one indirect manufacturing cost category is currently in use, "Conversion Costs." Journal entries are recorded when materials are purchased and when units are sold using backflush costing.

Conversion costs - October	\$ 90,400
Direct materials purchased - October	\$250,400
Units produced - October	80,000 units
Units sold - October	75,000 units
Selling price	\$10.00 each

18) Which of the following journal entries would be recorded for the units that are sold by Complete Microfilm Products in October?

A)

Cost of Goods Sold	319,500	
Inventory Control		319,500

B)

Cost of Goods Sold	319,500	
Inventory Control		234,750
Conversion Costs Allocated		84,750

C)

Inventory Control	234,750	
Conversion Costs Allocated	84,750	
Cost of Goods Sold		319,500

D)

Cost of Goods Sold	319,500	
Inventory Control		229,500
Conversion Costs Allocated		90,000

E)

Cost of Goods Sold	319,500	
Conversion Costs Allocated		319,500

Answer: B

Explanation: B) DM credit = $\$250,400 \times 75,000/80,000 = \$234,750$

C/C allocated = $\$90,400 \times 75,000/80,000$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-5

19) Which of the following entries would occur at Complete Microfilm Products if the only trigger point is the production of finished units?

A)

Cost of Goods Sold	319,500
Inventory: Raw and In-Process Control	229,500
Conversion Costs Allocated	90,000

B)

Inventory: Raw and In-Process Control	319,500
Cost of Goods Sold	319,500

C)

Finished Goods control	340,800
Accounts Payable Control	250,400
Conversion Costs Allocated	90,400

D)

Accounts Payable Control	250,400
Conversion Costs Allocated	90,400
Finished Goods control	340,800

E)

Accounts Payable Control	90,400
Cost of Goods Sold	90,400

Answer: C

Diff: 3 Type: MC

Skill: Apply

Objective: LO 19-5

20) A backflush costing system that journalizes only when raw materials are purchased and when finished goods are sold, will have which of the following results?

- A) It will encourage managers to produce safety stock.
- B) Conversion costs become period costs.
- C) Income is increased if managers produce more output than is sold.
- D) increased inventoriable costs
- E) Produce more safety stock, and conversion costs become period costs.

Answer: B

Diff: 3 Type: MC

Skill: Understand

Objective: LO 19-5

21) Criticism of backflush accounting included all of the following EXCEPT

- A) WIP exists but is not recorded.
- B) GAAP is not followed for external reporting purposes.
- C) there is an absence of audit trails.
- D) the accounting system cannot pinpoint the uses of resources.
- E) managers can keep track of operations by personal observation.

Answer: E

Diff: 2 Type: MC

Skill: Remember

Objective: LO 19-5

22) A trigger point is defined as

A) a stage in the cycle going from the purchase of direct materials to the sale of finished goods at which point journal entries are made in the accounting system.

B) a stage in the cycle going from the purchase of accounting software to the sale of finished goods at which point journal entries are made in the new accounting system.

C) a stage in the cycle going from the sale of finished goods at which point journal entries are made in the accounting system.

D) a stage in the cycle going from the purchase of direct materials at which journal entries are made in the accounting system.

E) a stage in the cycle going from the purchase of direct materials to the sale of finished goods at which no journal entries are made in the accounting system.

Answer: A

Diff: 2 Type: MC

Skill: Remember

Objective: LO 19-5

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

Walton Industries uses backflush costing. For March, there were no beginning inventories of direct materials and no beginning or ending work-in-process. Conversion costs is the only indirect manufacturing cost category currently used. Journal entries are recorded when actual costs are incurred, at completion of finished goods, and at sale of finished goods, under backflush costing.

Conversion costs — March	\$800,000
Direct materials purchased — March	\$2,140,000
Units produced — March	117,600
Units sold — March	83,600

23) Which of the following journal entries properly records the purchase of direct materials at Walton Industries?

A)

Accounts Payable Control	2,140,000	
Inventory: Raw and In-Process Control		2,140,000

B)

Inventory: Raw and In-Process Control	2,140,000	
Accounts Payable Control		2,140,000

C)

Inventory: Raw and In-Process Control	2,140,000	
Conversion Costs Allocated		2,140,000

D)

Conversion Costs Control	2,140,000	
Inventory: Raw and In-Process Control		2,140,000

E)

Conversion Costs Allocated	2,140,000	
Inventory: Raw and In-Process Control		2,140,000

Answer: B

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-5

24) Which of the journal entries properly records conversion costs at Walton Industries?

A)

Conversion Costs Control	800,000
Various Accounts	800,000

B)

Various Accounts	800,000
Conversion Costs	800,000

C)

Conversion Costs Allocated	800,000
Inventory: Raw and In-Process Control	800,000

D)

Inventory: Direct Materials	800,000
Conversion Costs	800,000

E)

Conversion Costs Control	800,000
Inventory: Raw and In-Process Control	800,000

Answer: A

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-5

25) Which of the journal entries properly records the finished goods trigger point at Walton Industries?

A)

Finished Goods Inventory	2,940,000
Work-in-Process Inventory	2,940,000

B)

Work-in-Process Inventory	2,940,000
Finished Goods Inventory	2,940,000

C)

Finished Goods Inventory	2,940,000
Inventory: Raw and In-Process Control	2,140,000
Conversion Costs Allocated	800,000

D)

Finished Goods Inventory	2,090,000
Work-in-Process Inventory	2,090,000

E)

Finished Goods Inventory	2,090,000
Inventory: Raw and In-Process Control	1,521,29
Conversion Costs Allocated	568,7073

Answer: E

Explanation: E) $(\$800,000 + \$2,140,000)/117,600 = \$25.00$; $\$25.00 \times 83,600 = \$2,090,000$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 19-5

26) Tornado Electronics manufactures CD players. All processing is initiated when an order is received. For April there were no beginning inventories. Conversion costs and direct materials are the only manufacturing cost accounts. Direct materials are purchased under a just-in-time system. Journal entries are recorded at three trigger points using backflush costing: purchase of direct materials, completion of finished goods, and sale of product. Variances are offset to cost of goods sold. Additional information is as follows:

Actual direct material costs	\$208,000
Actual conversion costs	\$232,000
Standard materials costs per unit	\$60
Standard conversion cost per unit	\$80
Units produced	3,200
Units sold	2,800

Required:

Record all journal entries for the monthly activities related to the above transactions based on backflush costing.

Answer:

Inventory: Raw and In-Process Control	208,000	
Accounts Payable		208,000

To record direct material purchases.

Conversion Costs Control	232,000	
Various Accounts		232,000

To record actual conversion costs.

Finished Good Inventory Control	448,000	
Inventory: Raw and In-Process Control		192,000
Conversion Costs Allocated		256,000

To record finished goods.

Cost of Goods Sold (2,800 × \$140)	392,000	
Finished Good Inventory Control		392,000

To record sale of product.

Inventory: Raw and In-Process Control	40,000	
Conversion Costs Allocated		24,000
Cost of Goods Sold		16,000

To adjust cost of goods sold to actual cost.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-5

27) Corry Corporation manufactures filters for cars, vans, and trucks. A backflush costing system is used and standard costs for a filter are as follows:

Direct materials	\$2.60
Conversion costs	<u>4.20</u>
Total	<u>\$6.80</u>

Filters are scheduled for production only after orders are received, and are shipped immediately upon completion. This results in product costs being charged directly to cost of goods sold. In December, 3,000 filters were produced and shipped. Materials were purchased at a cost of \$8,450 and actual conversion costs of \$13,650 were recorded. Variances are written off to Cost of Goods Sold.

Required:

Prepare journal entries to record December's cost transactions for the production and sale of the filters.

Answer:

Inventory: Raw and In-Process Control	8,450	
Accounts Payable		8,450
Conversion Costs Control	13,650	
Various Accounts		13,650
Cost of Goods Sold	20,400	
Inventory: Raw and In-Process Control		7,800
Conversion Costs Allocated		12,600
Cost of Goods Sold	1,700	
Inventory: Raw and In-Process Control		650
Conversion Costs Allocated		1,050

Note if price variances are recognized at purchase, then the original entry to record the materials would be a debit to Materials in Process of only \$7,800 and a debit to Materials Price Variance of \$650. Then the price variance would be adjusted to Cost of Goods Sold.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-5

28) Dutch Oven is a bakery company. All processing is in batches of 6 dozen. For March, there were no beginning inventories. Conversion costs and direct materials are the only baking cost accounts. Direct materials are purchased under a just-in-time system. The company uses backflush costing with three trigger points: at purchase of raw materials, completion of finished goods, and sale of finished goods. Additional information for the month is as follows:

Actual direct materials	\$82,000
Actual conversion costs	\$65,000
Standard materials cost per batch	\$10.00
Standard conversion cost per batch	\$8.00
Batches produced	8,000
Batches sold	7,500

Required:

Record all journal entries for the monthly activities related to the above transactions assuming that backflush costing is used. The company uses a standard costing system for recording the purchase and use of direct materials; and, the recording of conversion costs. Material price variances are recorded at the time of purchase then closed to cost of goods sold; all other variances are recorded at the completion of finished goods trigger point as a direct charge, or credit to Cost of Goods Sold.

Answer: Direct Materials and In Process Inventory		
$(8,000 \times \$10.00)$	80,000	
Direct Materials Price Variance	2,000	
Accounts Payable Control		82,000

To record purchase of direct materials at standard.

Conversion Costs Control $(8,000 \times \$8.00)$	64,000	
Cost of Goods Sold	1,000	
Accounts Payable Control		65,000

To record actual conversion costs at standard with variance to Cost of Goods Sold.

Finished Goods $(8,000 \times \$18)$	144,000	
Direct Materials and In Process Inventory		
$(8,000 \times \$10.00)$		80,000
Conversion Costs Allocated $(8,000 \times \$8.00)$		64,000

To record completion of 8,000 batches of finished goods.

Cost of Goods Sold	135,000	
Finished Goods $(7,500 \times (\$10.00 + \$8.00))$		135,000

To record sale of 7,500 batches.

Cost of Goods Sold	2,000	
Direct Materials Price Variance		2,000

To close the materials price variance account.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 19-5

29) Key Smith Company manufactures all types of locks for exterior doors. All processing is in batches of 100 and is initiated when an order is received. For August there were no beginning inventories. Each type of knob uses the same direct materials although the processing steps are slightly different. Conversion costs and direct materials are the only manufacturing cost accounts. Direct materials are purchased under a just-in-time system. Standard costs and actual costs were the same for the month. Backflush costing is used with purchase and sale trigger points. Additional information for the month is as follows:

Standard materials cost per batch	\$50
Standard conversion cost per batch	\$40
Batches produced	7,000
Batches sold	6,000

Required:

Record all journal entries for the monthly activities related to the above transactions based on backflush costing.

Answer: Raw and In Process Inventory (7,000 × \$50) 350,000
 Accounts Payable Control 350,000

To record purchase of direct materials.

Conversion Costs Control (7,000 × \$40) 280,000
 Accounts Payable (Various accounts) 280,000

To record actual conversion costs.

Cost of Goods Sold (6,000 × \$90) 540,000
 Raw and In Process Inventory (6,000 × \$50) 300,000
 Conversion Cost Allocated (6,000 × \$40) 240,000

To record sale of 6,000 batches.

Conversion Cost Allocated 240,000
 Cost of Goods Sold 40,000
 Conversion Costs Control 280,000

To close conversion cost accounts to Cost of Goods Sold assuming this was the end of the fiscal period.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-5

30) Cyclone Electronics manufactures automobile radios. All processing is initiated when an order is received. For March there were no beginning inventories. Conversion costs and direct materials are the only manufacturing cost accounts. Direct materials are purchased under a just-in-time system and there was no variance. Backflush costing is used with trigger points at completion of finished goods and sale of product. Additional information for the month is as follows:

Actual conversion costs	\$116,000
Standard materials cost per unit	\$30
Standard conversion cost per unit	\$70
Units produced	1,600
Units sold	1,400

Required:

Record all journal entries for the monthly activities related to the above transactions based on backflush costing.

Answer: Conversion Costs Control	116,000	
Various Accounts		116,000

To record actual conversion costs.

Finished Goods Inventory (1,600 × \$100)	160,000	
Accounts Payable Control (1,600 × \$30)		48,000
Conversion Costs Allocated (1,600 × \$70)		112,000

To record finished goods.

Cost of Goods Sold (1,400 × \$100)	144,000	
Finished Goods Inventory		140,000
Conversion Costs Allocated		4,000

To record sale of 1,400 units.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-5

31) Vision Enterprises manufactures converter boxes for high definition TVs. All processing is initiated when an order is received. For March there were no beginning inventories. Conversion costs and direct materials are the only manufacturing cost accounts. Direct materials are purchased under a just-in-time system and there was no variance. Backflush costing is used with trigger points at completion of finished goods and sale of product. Additional information for the month is as follows:

Actual conversion costs	\$435,000
Standard materials costs per unit	\$115
Standard conversion cost per unit	\$85
Units produced	7,900
Units sold	7,600

Required:

Record all journal entries for the monthly activities related to the above transactions based on backflush costing.

Answer: *To record actual conversion costs:*

Conversion Costs	435,000	
Various Accounts		435,000

To record finished goods:

Finished Goods Inventory (7,900 × \$200)	1,580,000	
Inventory - Materials and In Process Control (7,900 × 115)		908,500
Conversion Costs Allocated (7,900 × 85)		671,500

To record sale of 7,600 units:

Cost of Goods Sold	1,343,500	
Conversion Costs Allocated	236,500	
Finished Goods Inventory		1,580,000

Diff: 2 Type: ES
Skill: Apply
Objective: LO 19-5

32) Dolls "R" Us manufactures children's plastic dolls. For January there were no beginning inventories of direct materials, and no beginning or ending work-in-process. Conversion costs and direct materials are the only manufacturing cost accounts. Journal entries are recorded at three trigger points using backflush costing: purchase of direct materials, completion of finished goods, and sale of product. Since February is the first month of the fiscal year, all actual costs are as budgeted. Additional information for the month is as follows:

February

Standard materials cost per unit	\$6.00
Standard conversion cost per unit	\$4.00
Units produced	200,000
Units sold	190,000

Required:

Record all journal entries for the monthly activities related to the above transactions based on backflush costing.

Answer:

a. Direct Materials and In Process Inventory	1,200,000	
Accounts Payable Control		1,200,000
b. Conversion Costs Control	800,000	
Accounts Payable Control		800,000
c. Finished Goods Inventory	2,000,000	
Direct Materials and In Process Inventory		1,200,000
Conversion Costs Allocated		800,000
d. Cost of Goods Sold	1,900,000	
Finished Goods		1,900,000
e. Cost of Goods Sold	100,000	
Direct Materials and In Process Inventory		60,000
Conversion Costs Allocated		40,000

Diff: 2 Type: ES

Skill: Apply

Objective: LO 19-5

33) Falcon Industries manufactures customized industrial compounds. All processing is initiated when an order is received. For April there were no beginning inventories. Conversion costs and direct materials are the only manufacturing cost accounts. Direct materials are purchased under a just-in-time system. Journal entries are recorded at three trigger points using backflush costing: purchase of direct materials, completion of finished goods, and sale of product. Additional information is as follows:

Actual direct material costs	\$190,000
Actual conversion costs	\$478,000
Standard materials costs per unit	\$30
Standard conversion cost per unit	\$78
Units produced	6,200
Units sold	5,800

Required:

Record all journal entries for the monthly activities related to the above transactions assuming that backflush costing is used. The company uses a standard costing system for recording the purchase and use of direct materials; and, the recording of conversion costs. Material price variances are recorded at the time of purchase then closed to cost of goods sold; all other variances are recorded at the completion of finished goods trigger point as a direct charge, or credit to Cost of Goods Sold.

Answer: Direct Materials and In Process Inventory

(6,200 × \$30.00)	186,000	
Direct Materials Price Variance	4,000	
Accounts Payable Control		190,000

To record purchase of direct materials at standard.

Conversion Costs Control (6,200 × \$78.00)	483,600	
Cost of Goods Sold		5,600
Accounts Payable Control		478,000

To record actual conversion costs at standard with variance to Cost of Goods Sold.

Finished Goods (6,200 × \$108)	669,600	
Direct Materials and In Process Inventory		
(6,200 × \$30.00)		186,000
Conversion Costs Allocated (6,200 × \$78.00)		483,600

To record completion of 6,200 units of finished goods.

Cost of Goods Sold (5,800 × \$108)	626,400	
Finished Goods Inventory		626,400

To record sale of 7,500 batches.

Cost of Goods Sold	4,000	
Direct Materials Price Variance		4,000

To close the materials price variance account.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 19-5

34) Arrow Manufacturing Ltd. distributes golf clubs. Its annual demand for next year is forecasted at 14,000 sets at an average cost of \$425 per set. In reviewing its historical ordering costs for the past 3 years it noted that costs were \$12,900, \$16,400 and \$20,100 at order volumes of 20, 50 and 80 respectively. Arrow is forecasting an increase of 10% in its fixed ordering costs and a 15% increase in its variable ordering costs. The fixed ordering costs relate to allocations of supervisory time, computer time, and warehouse space. In addition to the order processing, the company must receive and inspect the units. Receiving and inspecting activities require 5 hours per order at a direct labour rate of \$12 per hour. Variable overhead related to receiving and inspecting activities is applied at a rate of 40% of direct labour dollars.

In reviewing its other activities, Arrow came up with the following estimates for next year:

Annual storage costs	\$12.50 per set
Estimated annual damage/loss	\$0.80 per set
Annual inventory insurance costs	\$1.50 per set
Annual building insurance costs	\$1.20 per set (allocated based on square metres)
Opportunity cost	12%

The company is closed for two weeks in the summer and again for 2 weeks over Christmas. This results in 48 work weeks in the year and the company operates 5 days per week.

Required:

- Determine the Economic Order Quantity (EOQ) for Arrow for next year. What are the total annual inventory costs at the EOQ?
- Determine the reorder point in units assuming that the lead time is 7 days.
- Now assume the company has found a new supplier that is willing to supply on a just-in-time basis. Inspection and receiving time would be lowered to 1.5 hours per order and the annual estimated damage would be cut by 75%. Storage and inventory insurance would drop to \$4.50 and \$0.60 respectively. The variable ordering cost would drop to \$65 due to integrated ordering systems. However, the annual cost to purchase the golf sets will increase to \$428. Determine the new EOQ. Should the company go with the new supplier or maintain its current arrangements?

Answer:

- To determine the total ordering costs we need to identify all the component costs of ordering. These include the ordering itself and the receiving activities associated with the orders.

To determine the variable vs. fixed costs of the order processing, the high low method may be used.

$$[\$20,100 - \$12,900]/[80 - 20] = \$7,200/60 = \$120 \text{ variable costs of ordering}$$

$$\text{Using the high point fixed costs would be } \$20,100 - [\$120 * 80] = \$20,100 - \$9,600 = \$10,500$$

Forecasted fixed ordering costs are irrelevant since they represent allocations.

$$\$120 * 1.15 = \$138 \text{ variable}$$

$$\text{Total ordering costs} = \$138 + (5 * \$12) + (5 * \$12 * 40\%) = \$138 + \$60 + \$24 = \$222$$

$$\text{Total carrying costs} = \$12.50 + \$0.80 + \$1.50 + (12\% * \$425) = \$65.80 \text{ (the building insurance is not relevant)}$$

$$\text{The EOQ} = \text{Square root of } [(2 * 14,000 * \$222)/\$65.80] = 307 \text{ sets}$$

The total inventory costs would be:

$$\# \text{ of orders} = 14,000/307 = 45.6, \text{ average inventory} = 307/2 = 153.5$$

$$\text{Total costs} = (45.6 * \$222) + (153.5 * \$65.8) = \$10,123.20 + \$10,100.30 = \$20,223.50$$

- The daily demand = $14,000/[48 * 5] = 14,000/240 = 58.33 \text{ sets}$

$$\text{Reorder point} = 58.33 * 7 = 409 \text{ units}$$

c. Total ordering costs = $\$65 + (1.5 * \$12) + (1.5 * \$12 * 40\%) = \$65 + \$18 + \$7.20 = \$90.20$
Total carrying costs = $\$4.50 + (\$0.80 * 25\%) + \$0.60 + (12\% * \$428) = \$4.50 + \$0.20 + \$0.60 + \$51.36 = \$56.66$
The EOQ = Square root of $[(2 * 14,000 * \$90.20)/\$56.66] = 211$ sets
of orders = $14,000/211 = 66.35$ orders, average inventory = 105.5
Total costs = $(66.35 * \$90.20) + (105.5 * \$56.66) = \$5,984.77 + \$5,977.63 = \$11,962.40$

The company will save $\$20,223.50 - \$11,962.40 = \$8,261.10$ in its inventory costs.
It will pay an additional $14,000 * (\$428 - \$425) = \$42,000$. No it should not accept the new suppliers offer.
(on quantitative considerations). Students can discuss the apparent improvement in quality as having additional benefits.

Diff: 3 Type: ES

Skill: Analyze

Objective: Cumulative

35) Garden Equipment Manufacturing Ltd. (GEM) has introduced a just-in-time production process and is considering the adoption of lean accounting principles to support its new production philosophy. The company has two product lines: lawnmowers and weed whackers. Two individual products are made in each line. The company's traditional cost accounting system allocates all plant-level overhead costs to individual products. Product-line overhead costs are traced directly to product lines, and then allocated to the two individual products in each line. Equipment costs are directly traced to products. The latest accounting report using traditional cost accounting methods included the following information (in thousands of dollars).

	<u>Lawnmowers</u>		<u>Weed Whackers</u>	
	<u>Product A</u>	<u>Product B</u>	<u>Product C</u>	<u>Product D</u>
Sales	\$400	\$500	\$200	\$250
Direct materials	125	135	55	60
Direct labour	75	75	65	65
Equipment costs	25	30	25	30
Allocated product-line overhead	20	25	20	25
Allocated plant-level overhead	<u>65</u>	<u>45</u>	<u>30</u>	<u>35</u>
Operating income	<u>\$ 90</u>	<u>\$190</u>	<u>\$ 5</u>	<u>\$ 35</u>

GEM has determined that each of the two product lines represents a distinct value stream. It has also determined that \$90,000 of the allocated plant-level overhead costs represents plant occupancy costs associated with the products. Of this Product A occupies 30% of the plant's square footage, Product B occupies 30%, Product C occupies 20%, and Product D occupies 20%. The remaining square footage is occupied by plant administrative functions or is not being used. Finally GEM has determined that direct materials should be expensed in the period in which they are purchased, rather than when the material is used. According to purchasing records, direct material purchase costs during the year were:

	<u>Lawnmowers</u>		<u>Weed Whackers</u>	
	<u>Product A</u>	<u>Product B</u>	<u>Product C</u>	<u>Product D</u>
Direct material purchases		\$155	\$100 \$50	\$60

Required:

- What are the cost objects in GEM's lean accounting system? Which of GEM's costs would be excluded when computing operating income for these cost objects?
- Compute the operating income for the cost objects identified in requirement b. using lean accounting principles. Why does operating income differ from the operating income computed using traditional accounting methods?
- Which competitive strategy is best served by lean accounting principles?

Answer:

a. The cost objects are the two product lines. Cost that do not add value to a product line are excluded. GEM would not include plant-level overhead associated with administration and unused capacity.

b.

	<u>Lawnmowers</u>	<u>Weed Whackers</u>
Sales	\$900	\$450
Direct material purchases	255	110
Direct labour	150	130
Equipment costs	55	55
Allocated product-line overhead	45	45
Allocated plant-level overhead	<u>54</u>	<u>36</u>
Operating income	<u>\$341</u>	<u>\$ 74</u>

With lean accounting only value added costs are included. This often will lead to certain overhead not being allocated as was done in this example with unused capacity. Direct material costs are expensed rather than inventoried to draw attention to this cost in an effort to motivate managers to become more efficient.

c. The management of costs along the value chain is important for all competitive strategies; however, lean accounting principles best serve companies employing a cost leadership strategy. Lean accounting principles draw managements attention to costs that are not creating value. The activities that drive these costs will be identified more readily so that management can take action.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 19-5 & 13-1

36) Backflush costing does not strictly adhere to generally accepted accounting principles. Explain why. Also, describe the types of businesses that might use backflush costing.

Answer: The principal reason why backflush costing does not strictly adhere to GAAP is that the work-in-process accounts are not recognized in the accounting records. Work-in-process consists of unfinished goods. Substantial business resources were dedicated to their production, and should be recognized in the accounts as an asset. This approach to costing is usually used by companies that adopt JIT production methods. While not totally devoid of inventories, such companies seek to minimize inventories thus minimizing the problems associated with no work-in-process accounts.

The type of business which would use backflush costing would be firms that use JIT production, have fast manufacturing lead times, or have very stable inventory levels from period to period. For these companies, backflush costing will report cost numbers similar to what a sequential costing approach would report.

Diff: 3 Type: ES

Skill: Understand

Objective: LO 19-5

37) What are the principles of lean accounting? Are there any limitations? Discuss.

Answer: Lean accounting is a costing method that supports creating value for the customer by costing the entire value stream, not individual products or departments, thereby eliminating waste in the accounting process. If there are multiple, related products made in a single value stream, then product costs for the individual products are not even computed.

It is a simpler means by which to calculate values and costs consistent with the emphasis of JIT and remaining focused on the supply chain concept.

Regarding limitations of the lean accounting: (1) it does not compute costs for individual products—this may restrict its value for certain types of decisions; (2) it excludes many of the support costs and unused capacity costs; (3) it does not account for inventories under generally accepted accounting principles.

Proponents of lean accounting argue that by focusing on the specific value stream and allocating all other costs that do not directly contribute to the value stream, those other costs will be highlighted in a way that will cause managers to reduce those costs and/or find other alternative uses for the excess capacity that may contribute to them.

Diff: 3 Type: ES

Skill: Understand

Objective: LO 19-5