

Cost Accounting, Cdn. Ed., 7e (Horngren)
Chapter 18 Spoilage, Rework, and Scrap

18.1 Distinguish among spoilage, rework, and scrap, and apply the appropriate methods to account for normal and abnormal spoilage.

1) Scrap products may be reprocessed and subsequently sold as a finished good.

Answer: FALSE

Explanation: Scrap has no subsequent use in the current production process.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-1

2) The costs of abnormal spoilage are written off as a loss; however, the costs of normal spoilage are treated as part of cost of goods manufactured.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-1

3) Normal spoilage is avoidable and controllable.

Answer: FALSE

Explanation: Normal spoilage is part of the production process.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-1

4) Spoilage issues arise in accounting for process costing but not in accounting for job costing.

Answer: FALSE

Explanation: Spoilage can occur in both types of processing.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 18-1

5) An item classified as spoilage has no value.

Answer: FALSE

Explanation: Although the item does not meet the specifications, it may be sold as a "second" or for its scrap value. It is not necessarily thrown out.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-1

6) Reworked goods are unacceptable units of production usually not capable of being repaired or converted into a salable product.

Answer: FALSE

Explanation: Reworked goods are unacceptable units of production that can be repaired into a salable product.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-1

7) When calculating normal spoilage rates, the base should be the actual units started in production.

Answer: FALSE

Explanation: The base should be good units completed.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-1

8) Abnormal spoilage is spoilage that should arise under efficient operating conditions.

Answer: FALSE

Explanation: Abnormal spoilage should not arise under efficient operating conditions.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-1

9) A company whose goal is zero defects would usually treat all spoilage as abnormal.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 18-1

10) Under efficient operating conditions, all spoilage is considered to be abnormal spoilage.

Answer: FALSE

Explanation: Normal spoilage is spoilage that is considered to be inherent in a production process. It arises even when the process is operated in an efficient manner.

Diff: 1 Type: TF

Skill: Remember

Objective: LO 18-1

11) IFRS/ASPE permits normal spoilage costs to be part of cost of goods sold.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

12) Deducting the disposal value from the costs of the spoiled goods accumulated to the point of inspection equals

- A) the net cost of discarded goods.
- B) the net cost of reworked goods.
- C) the net cost of spoilage.
- D) the net cost of scrap.
- E) the net cost of disposals.

Answer: C

Diff: 1 Type: MC

Skill: Remember

Objective: LO 18-1

13) If the inspection point occurs at 33% into the production cycle, which of the following units would be allocated costs of spoilage detected at inspection?

- A) all units in the system
- B) units that are under 33% complete
- C) units detected to be spoiled units
- D) units that are more than 33% complete
- E) units that are under 33% complete, and units detected to be spoiled units

Answer: B

Diff: 2 Type: MC

Skill: Understand

Objective: LO 18-1

14) Units of production that can be reprocessed and then be sold as finished goods are best known as

- A) reworked units.
- B) scrap.
- C) normal spoilage.
- D) work-in-process.
- E) abnormal spoilage.

Answer: A

Diff: 1 Type: MC

Skill: Remember

Objective: LO 18-1

15) Items with minimal sales value are known as

- A) reworked units.
- B) scrap.
- C) spoilage.
- D) ending work-in-process units.
- E) abnormal spoilage.

Answer: B

Diff: 1 Type: MC

Skill: Remember

Objective: LO 18-1

- 16) The costs from abnormal spoilage should appear
- A) on the balance sheet as part of finished goods inventory.
 - B) as a separate inventory item.
 - C) as a detailed item on the income statement.
 - D) as part of cost of goods manufactured.
 - E) either on the balance sheet as part of finished goods inventory, or as a separate inventory item.

Answer: C

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-1

- 17) Companies that attempt to achieve zero defects in the manufacturing process treat all spoilage as which of the following?

- A) scrap
- B) reworked units
- C) normal spoilage
- D) abnormal spoilage
- E) production costs added to inventory

Answer: D

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-1

- 18) Normal spoilage rates for a manufacturing process should be computed on the basis of

- A) total good units.
- B) total actual units.
- C) total reworked units.
- D) total production units.
- E) total actual units minus total reworked units.

Answer: A

Diff: 1 Type: MC

Skill: Remember

Objective: LO 18-1

- 19) Spoilage that should not arise under efficient operating conditions is referred to as

- A) ordinary spoilage.
- B) normal spoilage.
- C) abnormal spoilage.
- D) uncontrollable
- E) standard spoilage

Answer: C

Diff: 1 Type: MC

Skill: Remember

Objective: LO 18-1

- 20) Costs of normal spoilage are usually accounted for as
- A) part of the cost of goods sold.
 - B) part of the cost of goods manufactured.
 - C) a separate line item in the income statement.
 - D) an asset in the balance sheet.
 - E) a liability in the balance sheet

Answer: B

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-1

- 21) Material left over when making a product is referred to as
- A) reworked units.
 - B) spoilage.
 - C) scrap.
 - D) defective units.
 - E) indirect material.

Answer: C

Diff: 1 Type: MC

Skill: Remember

Objective: LO 18-1

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

Waldorf Computer Systems, Inc. manufactures computer memory cards, and uses process-costing. All direct materials are added at the inception of the production process. The accounting department noted that there was no beginning inventory for January. Direct Materials purchases totalled \$150,000 during the month. Work-in-process records revealed that 7,500 cards were started in January, 4,500 cards were complete, and 1,500 units were spoiled as expected. Ending work-in-process units are complete in respect to direct materials costs. Inspection occurs at the end of the process.

22) What are the Waldorf Computer Systems Inc. respective direct material costs per equivalent unit assuming spoiled units are counted when computing output in equivalent units, and when not counting spoiled units in the equivalent unit total?

- A) \$15.00; \$20.00
- B) \$20.00; \$25.00
- C) \$25.00; \$30.00
- D) \$30.00; \$35.00
- E) \$35.00; \$40.00

Answer: B

Explanation: B)	<u>Recognized</u>	<u>Ignored</u>
Cost to account for:	\$150,000	\$150,000
Equivalent units:	<u>7,500</u>	<u>6,000</u>
Cost per equivalent unit	\$20.00	\$25.00

Assigned to:

Good units completed:		
(4,500 × \$20; \$25)	\$90,000	\$112,500
+ normal spoilage		
(1,500 × \$20)	<u>30,000</u>	<u>0</u>
Costs trans. out	\$120,000	\$112,500
WIP EI (1,500 × \$20; \$25)	<u>30,000</u>	<u>37,500</u>
Cost Accounted for:	<u>\$150,000</u>	<u>\$150,000</u>

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-1

23) What is the Waldorf Computer Systems Inc. direct material cost assigned to good units completed when spoilage units are recognized in the total equivalent units?

- A) \$150,000
- B) \$120,000
- C) \$112,500
- D) \$90,000
- E) \$77,000

Answer: B

Explanation: B)	<u>Recognized</u>	<u>Ignored</u>
Cost to account for:	\$150,000	\$150,000
Equivalent units:	<u>7,500</u>	<u>6,000</u>
Cost per equivalent unit	\$20.00	\$25.00

Assigned to:

Good units completed:		
(4,500 × \$20; \$25)	\$90,000	\$112,500
+ normal spoilage		
(1,500 × \$20)	<u>30,000</u>	<u>0</u>
Costs trans. out	\$120,000	\$112,500
WIP EI (1,500 × \$20; \$25)	<u>30,000</u>	<u>37,500</u>
Cost Accounted for:	<u>\$150,000</u>	<u>\$150,000</u>

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-1

24) What is the Waldorf Computer Systems Inc. cost transferred out assuming spoilage units are not included in the equivalent unit calculation?

- A) \$120,000
- B) \$112,500
- C) \$90,000
- D) \$82,500
- E) \$37,500

Answer: B

Explanation: B)	<u>Recognized</u>	<u>Ignored</u>
Cost to account for:	\$150,000	\$150,000
Equivalent units:	<u>7,500</u>	<u>6,000</u>
Cost per equivalent unit	\$20.00	\$25.00

Assigned to:

Good units completed:		
(4,500 × \$20; \$25)	\$90,000	\$112,500
+ normal spoilage		
(1,500 × \$20)	<u>30,000</u>	<u>0</u>
Costs trans. out	\$120,000	\$112,500
WIP EI (1,500 × \$20; \$25)	<u>30,000</u>	<u>37,500</u>
Cost Accounted for:	<u>\$150,000</u>	<u>\$150,000</u>

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-1

25) At Waldorf Computer Systems Inc. what amounts are allocated to ending work-in-process inventory assuming spoilage units are recognized in the equivalent unit calculation, and that they are ignored, respectively?

- A) \$27,500; \$30,000
- B) \$30,000; \$34,250
- C) \$30,000; \$37,500
- D) \$37,500; \$40,000
- E) \$30,000; \$40,000

Answer: C

Explanation: C)	<u>Recognized</u>	<u>Ignored</u>
Cost to account for:	\$150,000	\$150,000
Equivalent units:	<u>7,500</u>	<u>6,000</u>
Cost per equivalent unit	\$20.00	\$25.00

Assigned to:

Good units completed:		
(4,500 × \$20; \$25)	\$90,000	\$112,500
+ normal spoilage		
(1,500 × \$20)	<u>30,000</u>	<u>0</u>
Costs trans. out	\$120,000	\$112,500
WIP EI (1,500 × \$20; \$25)	<u>30,000</u>	<u>37,500</u>
Cost Accounted for:	<u>\$150,000</u>	<u>\$150,000</u>

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-1

26) At Waldorf Computer Systems Inc. spoilage costs allocated to completed units are larger *by which method and by how much?*

- A) when spoiled units are recognized by \$2,500
- B) when spoiled units are recognized by \$4,250
- C) when spoiled units are ignored by \$4,250
- D) when spoiled units are ignored by \$7,500
- E) when spoiled units are recognized by \$7,500

Answer: E

Explanation: E) \$120,000 - \$112,500 = \$7,500 or \$5.00 × 1,500 units = \$7,500

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-1

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

Craft Concept manufactures small tables in its Processing Department. Direct materials are added at the initiation of the production cycle and must be bundled in single kits for each unit. Conversion costs are incurred evenly throughout the production cycle. Before inspection, some units are spoiled due to non-detectable materials defects. Inspection occurs at the end of the process. Spoiled units generally constitute 5 percent of the good units. Data for December are as follows:

WIP, Beginning inventory Dec 1	10,000 units
Direct materials: 100% complete	
Conversion costs: 75% complete	
Started during December	40,000 units
Completed and transferred out during month	38,400 units
WIP, ending inventory December 31	8,000 units
Direct materials: 100% complete	
Conversion costs: 65% complete	
Costs:	
WIP, beginning inventory:	
Direct materials	\$50,000
Conversion costs	30,000
Direct materials added during December	100,000
Conversion costs added during December	140,000

27) What is the number of total spoiled units?

- A) 1,600 units
- B) 2,000 units
- C) 2,700 units
- D) 3,600 units
- E) 4,500 units

Answer: D

Explanation: D) Spoiled units = (10,000 units + 40,000) - (38,400 units + 8,000) = 3,600 units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-1

28) Normal spoilage totalled

- A) 1,600 units.
- B) 2,000 units.
- C) 2,700 units.
- D) 1,920 units.
- E) 1,700 units.

Answer: D

Explanation: D) Normal spoilage = $5\% \times 38,400$ units = 1,920 spoiled units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-1

29) Abnormal spoilage totalled

- A) 1,600 units.
- B) 2,000 units.
- C) 1,680 units.
- D) 1,920 units.
- E) 1,700 units.

Answer: C

Explanation: C) Abnormal spoilage = 3,600 units - 1,920 units = 1,680 units

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-1

30) The costs of abnormal spoilage are

- A) locked-in in the product design stage.
- B) part of the inventoriable costs when units are reworked.
- C) included in the cost of goods manufactured.
- D) highlighted on the cash flow statement to draw the readers attention.
- E) written off as losses.

Answer: E

Diff: 3 Type: MC

31) Marble Shop manufactures marble products. All direct materials are included at the inception of the production process. For April there was no beginning inventory in the processing plant. Direct materials totalled \$420,000 for the month. Work-in-process records revealed that 7,500 tonnes were started in April and that 5,500 tonnes were finished; 500 tonnes were spoiled as expected. Ending work-in-process units are complete in respect to direct materials costs. Spoilage is not detected until the process is complete.

Required:

- What are the costs assigned to completed units when spoilage units are recognized and when they are not recognized in the cost per equivalent unit?
- What are the costs transferred out if spoilage units are recognized and if they are ignored?
- What are the amounts allocated to the work-in-process ending inventory when spoilage units are recognized and when spoilage units are ignored?

Answer:

	<u>Recognized</u>	<u>Ignored</u>
a. Cost to account for:	\$420,000	\$420,000
Equivalent units:	7,500	7,000
Cost per equivalent unit	<u>\$56</u>	<u>\$60</u>
Assigned to good units completed:		
(5,500 × \$56)	\$308,000	
(5,500 × \$60)		\$330,000
b. Transferred out:		
Finished	\$308,000	\$330,000
Normal spoilage:		
(500 × \$56)	28,000	0
Total	<u>\$336,000</u>	<u>\$330,000</u>
c. Ending work-in-process inventory:		
(1,500 × \$56)	\$84,000	
(1,500 × \$60)		\$90,000

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-1

32) The Clay Shop manufactures pottery products. All direct materials are included at the inception of the production process. For April, there was no beginning inventory in the processing plant. Direct materials totaled \$310,000 for the month. Work-in-process records revealed that 5,000 kilograms were started in April and that 3,000 kilograms were finished; 1,000 kilograms were spoiled as expected. Ending work-in-process units are complete in respect to direct materials costs. Spoilage is not detected until the process is complete.

Required:

- What are the costs assigned to completed units when spoilage units are recognized and when they are not recognized in the cost per equivalent unit?
- What are the costs transferred out if spoilage units are recognized and if they are ignored?
- What are the amounts allocated to the work-in-process ending inventory when spoilage units are recognized and when spoilage units are ignored?

Answer:

a.	Cost to account for	\$310,000	\$310,000
	Divided by equivalent units	<u>5,000</u>	<u>4,000</u>
	Cost per equivalent unit	<u>\$62</u>	<u>\$77.50</u>
	Assigned to good units completed:		
	(3,000 × \$62)	\$186,000	
	(3,000 × \$77.50)		\$232,500
b.	Transferred out – Finished	\$186,000	\$232,500
	Normal spoilage (1,000 × \$62)	<u>62,000</u>	<u>0</u>
	Total	<u>\$248,000</u>	<u>\$232,500</u>
c.	Ending work-in-process inventory:		
	(1,000 × \$62)	\$62,000	
	(1,000 × \$77.50)		\$77,500

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-1

33) The Joe's Pottery manufactures pottery products. All direct materials are included at the inception of the production process. For April, there was no beginning inventory in the processing plant. Direct materials totaled \$155,000 for the month. Work-in-process records revealed that 2,500 tons were started in April and that 1,500 tons were finished; 500 tons were spoiled as expected. Ending work-in-process units are complete in respect to direct materials costs. Spoilage is not detected until the process is complete.

Required:

- What are the costs assigned to completed units when spoilage units are recognized and when they are not recognized in the cost per equivalent unit?
- What are the costs transferred out if spoilage units are recognized and if they are ignored?
- What are the amounts allocated to the work-in-process ending inventory when spoilage units are recognized and when spoilage units are ignored?

Answer:

a.	<u>Recognized</u>	<u>Ignored</u>
Cost to account for	\$155,000	\$155,000
Divided by equivalent units	<u>2,500</u>	<u>2,000</u>
Cost per equivalent unit	<u>\$ 62</u>	<u>\$ 77.50</u>
Assigned to good units completed:		
(1,500 × \$62)	\$93,000	
(1,500 × \$77.50)		\$116,250
b. Transferred out — Finished	\$93,000	\$116,250
Normal spoilage (500 × \$62)	<u>31,000</u>	<u>0</u>
Total	<u>\$124,000</u>	<u>\$116,250</u>
c. Ending work-in-process inventory:		
(500 × \$62)	\$ 31,000	
(500 × \$77.50)		\$38,750

Diff: 2 Type: ES

34) Redwing Shoes manufactures shoes. All direct materials are included at the inception of the production process. For March there were 2,000 units in beginning inventory with a direct material cost of \$1,000. Direct materials totalled \$20,000 for the month. Work-in-process records revealed that 40,000 shoes were started in March and that 36,000 were finished. Normal spoilage of 5 percent of units finished was incurred. Ending work-in-process units are complete in respect to direct materials costs. Spoilage is not detected until the process is complete. Redwing uses the weighted-average method.

Required:

- What are the costs assigned to completed units when spoilage units are recognized and when they are not recognized in the cost per equivalent unit?
- What are the costs transferred out if spoilage units are recognized and if they are ignored?
- What are the amounts allocated to the work-in-process ending inventory when spoilage units are recognized and when spoilage units are ignored?

Answer:

a. Equivalent units (spoilage recognized) = 2,000 + 40,000 = 42,000

Equivalent units (spoilage ignored) = 2,000 + 40,000 - (36,000 × 0.05) = 40,200

	<u>Recognized</u>	<u>Ignored</u>
Cost to account for:		
Beginning work-in-process	\$1,000	\$1,000
Current period	<u>20,000</u>	<u>20,000</u>
Total costs to account for:	\$21,000	\$21,000
Equivalent units:	<u>42,000</u>	<u>40,200</u>
Cost per equivalent unit	\$0.50	\$0.52
Assigned to good units completed:		
(34,200 × \$0.50)	\$17,100	
(34,200 × \$0.52)		\$17,784
b. Transferred out — Finished	\$17,100	\$17,784
Normal spoilage (1,800 × \$0.50)	<u>900</u>	<u>0</u>
Total	<u>\$18,000</u>	<u>\$17,784</u>
c. Ending work-in-process:		
(6,000 × \$0.50)	\$3,000	
(6,000 × \$0.52)		\$3,120

Diff: 3 Type: ES
Skill: Apply
Objective: LO 18-1

35) Endicott Shoes manufactures shoes. All direct materials are included at the inception of the production process. For March, there were 1,400 units in beginning inventory with a direct material cost of \$700. Direct materials totaled \$15,000 for the month. Work-in-process records revealed that 35,000 units were started in March and that 30,000 were finished. Normal spoilage of 2% of units finished was incurred. Ending work-in-process units are complete in respect to direct materials costs. Spoilage is not detected until the process is complete. Endicott uses the weighted-average method.

Required:

- What are the costs assigned to completed units when spoilage units are recognized and when they are not recognized in the cost per equivalent unit?
- What are the costs transferred out if spoilage units are recognized and if they are ignored?
- What are the amounts allocated to the work-in-process ending inventory when spoilage units are recognized and when spoilage units are ignored?

Answer:

a. Equivalent units (spoilage recognized) = 1,400 + 35,000 = 36,400

Equivalent units (spoilage ignored) = 1,400 + 35,000 - (30,000 × 0.02) = 35,800

	<u>Recognized</u>	<u>Ignored</u>
Cost to account for:		
Beginning work in process	\$ 700	\$ 700
Current period	<u>15,000</u>	<u>15,000</u>
Total costs to account for	\$15,700	\$15,700
Divided by equivalent units	<u>36,400</u>	<u>35,800</u>
Cost per equivalent unit	<u>\$ 0.431</u>	<u>\$ 0.439</u>
Assigned to good units completed:		
(29,400 × \$0.431)	\$12,671	
(29,400 × \$0.439)		\$12,907
b. Transferred out — Finished	\$12,671	\$12,907
Normal spoilage (600 × \$0.431)	<u>259</u>	<u>0</u>
Total	<u>\$12,930</u>	<u>\$12,907</u>
c. Ending work in process:		
(6,400 × \$0.431)	\$ 2,758	
(6,400 × \$0.439)		\$ 2,810

Diff: 3 Type: ES

Skill: Apply

Objective: LO 18-1

36) Busy Hands Craft Company is a small manufacturing company that specialized in arts and crafts items. It recently bought an old textile mill that it has refurbished to manufacture and dye special cloth to be sold in its craft shops. However, it discovered something new for its accounting system. The company had never before had finished goods that did not meet standard, leftover materials from processing runs, or unacceptable outputs.

Required:

As the business consultant for the company, explain how it can handle the items mentioned. Include any potential problems with the accounting procedures.

Answer: First, an explanation of each item is needed.

1. Rework units are those units that are defective but can be reworked and sold as acceptable finished goods.
2. Scrap is the leftover materials that may have a minimal sales value. Scrap may be either sold, disposed of, or reused in another job or processing run.
3. Spoilage is the production outputs that cannot be reworked. These units are discarded or sold for minimal value.

The potential problem with these areas is that they may be treated differently by the accounting system. The company should establish an acceptable and consistent method of handling each area. A consistent policy also aids the managers who are being evaluated by their department's efforts.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-1

37) Explain the meaning of the terms spoilage, scrap, and rework. Provide an example of each. Is it possible for a single firm to have all three from a single productive process?

Answer: Spoilage is units of production that do not meet the specifications required by customers for good units, and are discarded or sold for reduced prices. An example of spoilage would be a damaged pair of Levi's Jeans sold as a "second."

Rework is unacceptable units that are subsequently repaired and sold as acceptable finished goods. An example of rework would be a pair of Jeans that might require some additional trimming before they become acceptable.

Scrap is residual material that results from manufacturing a product; it has low retail sales value compared with the total sales value of the product. An example of scrap would be any leftover material from a cutting process that is too small to use in any other clothing.

As the above examples indicate, a single productive process might generate, spoilage, scrap, and rework simultaneously.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-1

38) You are the chief financial officer of a lumber mill, and you are becoming quite concerned about the spoilage, scrap, and reworked items associated with your production processes. Your firm produces mainly products for the building industry.

Required:

Discuss the problems associated with these items and the methods your company can use to reduce spoilage, scrap, and reworked items.

Answer: The problems associated with these items include:

1. Your company pays for the total raw material, not just the portion converted into a salable product;
2. The cost of disposing these unsalable or unused items, both the disposal costs and the costs and problems associated with finding a landfill site or other disposal site;
3. These disposed or unused items can create an eyesore, and attract the wrath of the environmentalists; and
4. Developing high-value added products that can be produced from these various items.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-1

39) Harriette has been reviewing the accounting system for her company and is very concerned about the accounting for spoilage. It appears that spoilage is accounted for only at the end of the processing cycle. While this concept is acceptable in general, Harriette believes that a better method can be found to properly account for the spoilage when it occurs. She believes that there must be something better than the weighted-average method of accounting for spoilage. She would like the company to use a method that provides closer tracking of the spoilage with the accounting for the spoilage.

Required:

Discuss the problems Harriette is having with the accounting system.

Answer: The main problem Harriette has is that she does not understand the accounting system. The use of weighted-average or FIFO is not for addressing the problems of spoilage tracking. While the methods do differ slightly in the tracking of costs, FIFO keeps beginning inventories separate; the point of accounting for spoilage is not affected by the accounting method. If the company can account for spoilage at different stages of completion, these stages can be converted into percentage of completion points, and the spoilage can be accounted for as the process completes each stage.

Diff: 3 Type: ES

Skill: Apply

Objective: LO 18-1

40) Distinguish among spoilage, reworked units, and scrap. Give an example of each.

Answer: *Spoilage* refers to unacceptable units of production that are discarded or are sold for reduced prices. Both partially completed or fully completed units of output can be spoiled. Examples are defective clothes sold as seconds.

Reworked units are unacceptable units of production that are subsequently repaired and sold as acceptable finished goods. Defective units of product (such as pagers, computer disk drives, computers, and telephones) detected during production or immediately after production but before units are shipped to customers, can sometimes be reworked and sold as good products.

Scrap is material left over when making a product. It has low sales value compared with the sales value of the product. Examples are shavings and short lengths from woodworking operations and edges left over from plastic molding operations.

Diff: 1 Type: ES

Skill: Apply

Objective: LO 18-1

41) What are the objectives in accounting for spoilage?

Answer: The key objectives in accounting for spoilage are determining the magnitude of the costs of the spoilage and distinguishing between the costs of normal and abnormal spoilage. To effectively manage a company (or a division of a business), a manager needs information concerning how his business is performing. Spoilage is a cost which should be controlled and minimized. The dimensions of the cost must be known (the dollar amount of the spoilage). The accounting system must be capable of determining the dollar amount of the spoilage costs while distinguishing between normal and abnormal spoilage. This information must be reported and available to management on a timely basis.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-1

42) Spoilage can be a significant cost for many organizations. Discuss when spoilage might happen and how the costs of normal spoilage get allocated.

Answer: Spoilage may occur at various stages of the production process. In general, the cost of spoiled units is equal to the all costs incurred in producing the spoiled units up to the point of inspection.

The costs of normal spoilage are allocated to units in ending work-in-process inventory. The most common approach is to presume that normal spoilage occurs at the inspection point in the production cycle and to allocate its cost over all units that have passed that point during the accounting period. One cost-benefit decision to be made is when to do inspections. Naturally, the earlier the spoilage is caught, the less costly it will be as the conversion costs will be lower in the early stages of production. The costs of performing inspections can be compared to the expected savings from reducing the spoilage costs as part of the determination of when in the process the inspections should happen.

Diff: 3 Type: ES

Skill: Understand

Objective: LO 18-2

43) For each of the following items identify whether it is spoilage, reworked units, or scrap.

- _____ a. Defective jeans sold as seconds
- _____ b. Shavings
- _____ c. Edges from plastic moldings
- _____ d. Carpets sold as seconds
- _____ e. Precision tools that are not built successfully to the necessary tolerance, but which can be successfully converted to a saleable product
- _____ f. Rock extracted as a result of mining processing
- _____ g. Complex defective products such as semiconductors

Answer:

- a. spoilage
- b. scrap
- c. scrap
- d. spoilage
- e. spoilage and rework
- f. scrap
- g. spoilage (usually too complex to rework)

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-1

For each of the following items identify whether it is spoilage, reworked units, or scrap.

- A) scrap
- B) spoilage
- C) spoilage and rework

44) Defective jeans sold as seconds

Diff: 1 Type: MA

Skill: Remember

Objective: LO 18-1

45) Shavings

Diff: 1 Type: MA

Skill: Remember

Objective: LO 18-1

46) Edges from plastic moldings

Diff: 1 Type: MA

Skill: Remember

Objective: LO 18-1

47) Carpets sold as seconds

Diff: 1 Type: MA

Skill: Remember

Objective: LO 18-1

48) Precision tools that are not built successfully to the necessary tolerance, but which can be successfully converted to a saleable product

Diff: 1 Type: MA

Skill: Remember

Objective: LO 18-1

49) Rock extracted as a result of mining processing

Diff: 1 Type: MA

Skill: Remember

Objective: LO 18-1

50) Complex defective products such as semiconductors

Diff: 1 Type: MA

Skill: Remember

Objective: LO 18-1

Answers: 44) B 45) A 46) A 47) B 48) C 49) A 50) B

18.2 Apply process-costing methods to account for spoilage using weighted-average and first-in, first-out (FIFO) methods.

1) Costs in beginning inventory are pooled with costs in the current period when determining the costs of good units under the weighted-average method of process costing.

Answer: TRUE

Diff: 1 Type: TF

Skill: Apply

Objective: LO 18-2

2) All spoilage costs are related to the units completed during the period using the unit costs of the current period under FIFO.

Answer: TRUE

Diff: 1 Type: TF

Skill: Apply

Objective: LO 18-2

3) Under the weighted-average method, the costs of normal spoilage are added to the costs of their related good units. Hence, the cost per good unit completed and transferred out equals the total costs transferred out divided by the number of good units produced.

Answer: TRUE

Diff: 3 Type: TF

Skill: Apply

Objective: LO 18-2

4) The unit costs of abnormal and normal spoilage are equal, when the two are detected simultaneously.

Answer: TRUE

Diff: 2 Type: TF

Skill: Apply

Objective: LO 18-2

5) The last step in the five-step procedure for process costing with spoilage is to summarize total costs to account for.

Answer: FALSE

Explanation: The last step in the five-step procedure for process costing with spoilage is to assign total costs to units completed, to spoiled units, and to units in ending work-in-process.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-2

6) Counting spoiled units as part of output units in a process-costing system usually results in a higher cost per unit.

Answer: FALSE

Explanation: Counting spoiled units usually results in a lower cost per unit.

Diff: 1 Type: TF

Skill: Understand

Objective: LO 18-2

- 7) If normal spoilage is presumed to occur prior to a specific inspection point, and abnormal spoilage is detected at other inspection points
- A) unit costs of abnormal spoilage will differ from the unit cost of normal spoilage.
 - B) all spoilage will be recognized proportionately across the various inspection points.
 - C) abnormal spoilage will generally be less than normal spoilage.
 - D) normal spoilage costs may be allocated prior to inspection of the products and abnormal spoilage will be allocated after the inspection of the products.
 - E) unit cost of abnormal spoilage will be the same as unit costs of normal spoilage.

Answer: A

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-2

- 8) Normal spoilage is usually computed on the basis of
- A) the number of good units that pass inspection during the current period.
 - B) the number of units that pass the inspection point during the current period.
 - C) the number of units that are 100% complete as to materials.
 - D) the number of spoiled units that pass inspection during the current period.
 - E) the percentage of good units that passed inspection in the previous period.

Answer: A

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-2

- 9) Which of the following statements is FALSE?
- A) The cost of spoiled units is the costs incurred prior to detection.
 - B) The unit costs of abnormal and normal spoilage are the same if detected simultaneously.
 - C) The timing of inspection affects the amount of abnormal spoilage.
 - D) Spoilage may occur at points other than the inspection point.
 - E) Spoilage units cannot be sold.

Answer: E

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-2

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

Craft Concept manufactures small tables in its Processing Department. Direct materials are added at the initiation of the production cycle and must be bundled in single kits for each unit. Conversion costs are incurred evenly throughout the production cycle. Before inspection, some units are spoiled due to non-detectable materials defects. Inspection occurs at the end of the process. Spoiled units generally constitute 5 percent of the good units. Data for December are as follows:

WIP, Beginning inventory Dec 1	10,000 units
Direct materials: 100% complete	
Conversion costs: 75% complete	
Started during December	40,000 units
Completed and transferred out during month	38,400 units
WIP, ending inventory December 31	8,000 units
Direct materials: 100% complete	
Conversion costs: 65% complete	
Costs:	
WIP, beginning inventory:	
Direct materials	\$50,000
Conversion costs	30,000
Direct materials added during December	100,000
Conversion costs added during December	140,000

10) What is the total cost per equivalent unit using the weighted-average method of process costing?

- A) \$3.00
- B) \$3.60
- C) \$4.60
- D) \$6.60
- E) \$6.90

Answer: D

Explanation: D)	<u>Direct Materials</u>	<u>Conversion Costs</u>
WIP, Beginning inventory	\$50,000	\$30,000
Costs added during period	<u>100,000</u>	<u>140,000</u>
Total cost to account for	\$150,000	\$170,000
Divide by equivalent units	50,000	47,200
Equivalent unit costs	<u>\$3.00</u>	<u>\$3.60</u>

Total cost per equivalent unit = \$3.00 + \$3.60 = \$6.60

Spoiled units = 3,600 = 1,920 Normal + 1,680 Abnormal

EU calculation = 38,400 + 3,600 + 5,200 = 47,200

Completed & Transferred Out

Normal Spoilage 38,400 * 5 % = 1,920

Abnormal Spoilage

Ending WIP 8,000 * .65 = 5,200

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

11) What cost is allocated to abnormal spoilage using the weighted-average process costing method?

- A) \$0
- B) \$7,360
- C) \$11,088
- D) \$16,400
- E) \$18,100

Answer: C

Explanation: C) 1,680 units × \$6.60 = \$11,088

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-2

12) What are the amounts of direct materials and conversion costs assigned to ending work-in-process using the weighted-average process costing method?

- A) \$18,720; \$24,000
- B) \$22,900; \$19,820
- C) \$24,000; \$18,720
- D) \$28,560; \$14,160
- E) \$33,650; \$14,140

Answer: C

Explanation: C) Direct materials = 8,000 units × \$3.00 = \$24,000

Conversion costs = 5,200 units × \$3.60 = \$18,720

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-2

13) Total cost per equivalent unit using the weighted-average method equals

- A) the cost per equivalent unit of direct materials plus cost per spoiled unit.
- B) the cost per equivalent unit of conversion costs plus cost per unit of spoiled materials.
- C) the total costs divided by total equivalent units.
- D) the cost per equivalent unit of direct materials plus the cost per equivalent unit of conversion costs.
- E) the cost per equivalent unit of indirect materials plus cost per spoiled unit.

Answer: D

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-2

14) The goal of separately identifying abnormal spoilage is to

- A) properly cost units in the system.
- B) assist in performance measurement.
- C) ensure that such units do not reach finished goods inventory.
- D) reduce abnormal spoilage to an acceptable level.
- E) reduce abnormal spoilage to nil.

Answer: B

Diff: 1 Type: MC

Skill: Understand

Objective: LO 18-2

15) Under the FIFO method, all spoilage costs are assumed to be

- A) related to the units in beginning inventory, plus the units completed during the period.
- B) related to the units completed during the period.
- C) related to the units in ending inventory.
- D) related to the units in both beginning and ending inventory plus the units completed during the period.
- E) related to the units completed in both beginning and ending inventory.

Answer: B

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-2

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

Cartwright Custom Carpentry manufactures chairs in its Processing Department, and uses the FIFO cost flow assumption. Direct Materials are included at the inception of the production cycle and must be bundled in single kits for each unit. Conversion costs are incurred evenly throughout the production cycle. Inspection takes place at the end of the process, and spoiled units generally constitute 3 percent of the good output. Information provided for March is as follows:

WIP, Beginning inventory March 1	30,000 units
Direct materials: 100% complete	
Conversion costs: 89.5% complete	
Started during March	80,000 units
Completed & Transferred Out	86,000 units
WIP, Ending inventory March 31	20,000 units
Direct materials: 100% complete	
Conversion costs: 75% complete	
Costs:	
WIP, Beginning inventory:	
Direct materials	\$70,000
Conversion costs	40,000
Direct materials added	160,000
Conversion costs added	120,000

16) What are the normal and abnormal spoilage units, respectively, for March?

- A) 2,580 units; 1,420 units
- B) 1,950 units; 1,390 units
- C) 1,690 units; 1,050 units
- D) 1,420 units; 2,580 units
- E) 1,140 units; 1,140 units

Answer: A

Explanation: A) Spoiled units = 30,000 + 80,000 - 20,000 - 86,000 = 4,000

Normal spoilage = 3% × 86,000 units = 2,580 spoiled units

Abnormal spoilage = 4,000 units - 2,580 = 1,420 units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-2

17) What are the costs per equivalent unit for direct materials and conversion respectively?

- A) \$2.00; \$1.54
- B) \$1.45; \$1.54
- C) \$2.11; \$1.62
- D) \$2.11; \$1.18
- E) \$2.00; \$1.18

Answer: A

Explanation: A)	Total	Direct Materials	Conversion
From Beg	30,000	0	3,150
Started & Completed	56,000	56,000	56,000
Normal Spoilage	2,580	2,580	2,580
Abnormal Spoilage	1,420	1,420	1,420
Ending WIP	20,000	<u>20,000</u>	<u>15,000</u>
Total		80,000	78,150
Current Period \$		\$160,000	\$120,000
Cost per EU		\$2.00	\$1.5355

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

18) What costs are allocated to the ending work-in-process inventory for direct materials and conversion costs, respectively?

- A) \$28,250; \$24,850
- B) \$30,000; \$23,100
- C) \$30,000; \$21,590
- D) \$39,500; \$13,600
- E) \$40,000; \$23,100

Answer: E

Explanation: E) Direct materials: 20,000 units \times \$2.00 = \$40,000

Conversion costs: 15,000 units \times \$1.54 = \$23,100

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-2

19) What costs would be associated with normal and abnormal spoilage, respectively, using the FIFO method of process costing?

- A) \$5,890.64; \$9,133.20
- B) \$5,890.64; \$5,826.00
- C) \$6,469.64; \$7,690.36
- D) \$7,690.36; \$5,026.80
- E) \$9,133.20; \$5,026.80

Answer: E

Explanation: E)	<u>Direct Materials</u>	<u>Conversion Costs</u>
WIP, Beginning inventory		
Total cost to account for	\$160,000	\$120,000
Divide by equivalent units	80,000	78,150
Equivalent unit costs	<u>\$2.00</u>	<u>\$1.54</u>

$(56,000 + 2,580 + 1,420 + 20,000) = 80,000$ units

$(3,150 + 56,000 + 2,580 + 1,420 + 15,000) = 78,150$ units

Normal Spoilage = 2,580 units \times \$3.54 = \$9,133.20

Abnormal Spoilage = 1,420 units \times \$3.54 = \$5,026.80

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

20) Which of the following journal entries correctly represents the transfer of completed goods for the current period using the FIFO method of process costing?

A)

Finished Goods	\$10,560.28
Loss from Spoilage	\$10,560.28

B)

Loss from Spoilage	\$5,026.80
Finished Goods	\$5,026.80

C)

Finished Goods	\$311,500.00
Work-in-Process	\$311,500.00

D)

Finished Goods	\$401,700.00
Work-in-Process	\$401,700.00

E)

Finished Goods	\$322,224.20
Work-in-Process	\$322,224.20

Answer: E

Explanation: E) Abnormal spoilage	\$5,026.80
BWIP	110,000.00
Costs added 3,150 * \$1.54	4,851.00
Started & completed 56,000 * \$3.54	198,240.00
Normal spoilage 2,580 * \$3.54	<u>9,133.20</u>
Total cost transferred out	<u>\$322,224.20</u>

Abnormal spoilage is not attached to the inventory

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

21) Boss Cycle generally has spoiled goods during each job. Costs are assigned to normal spoilage at \$10.00 per unit and abnormal spoilage at \$20.00 per unit. Disposal fees typically run \$5.00 per item. Boss Cycle has a policy never to rework spoiled units. Management believes that once a unit is damaged it cannot be reworked into a quality product. The losses are charged back to the specific job.

What is the appropriate journal entry if 300 units are considered abnormal spoilage and are not disposed of in a process costing system?

A)

Loss from Abnormal Spoilage	\$6,000
Work-in-Process Control	\$6,000

B)

Work-in-Process Control	\$1,500
Loss from Abnormal Spoilage	\$1,500

C)

Loss from Abnormal Spoilage	\$6,000
Inventory	\$6,000

D)

Loss from Abnormal Spoilage	\$1,500
Work-in-Process	\$1,500

E)

Loss from Abnormal Spoilage	\$1,500
Work-in-Process Control	\$1,500

Answer: A

Explanation: A) 300 units × \$20.00 = \$6,000

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-2

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

Samantha's Office Supplies manufactures desk organizers in its Processing Department. Direct materials are added at the beginning of the process and conversion costs are incurred evenly throughout the production cycle. Inspection takes place at the end of the process and spoiled units generally constitute 4% of the good units. Data provided for February are as follows:

WIP, beginning inventory February 1	25,000 units
Direct materials (100% complete)	
Conversion costs (50% complete)	
Started during February	82,000 units
Completed and transferred out	81,000 units
WIP, ending inventory February 28	15,000 units
Direct materials (100% complete)	
Conversion costs (25% complete)	
Costs:	
WIP, beginning inventory:	
Direct materials	\$150,000
Conversion costs	44,000
Direct materials added	209,916
Conversion costs added	109,893

22) What are the normal and abnormal spoilage units, respectively, for February when using FIFO?

- A) 1,400 units; 1,480 units
- B) 3,280 units; 1,640 units
- C) 3,240 units; 7,760 units
- D) 3,240 units; 11,000 units
- E) 7,760 units; 1,640 units

Answer: C

Explanation: C) Spoiled units = 25,000 + 82,000 - 81,000 - 15,000 = 11,000

Normal spoilage = 4% × 81,000 units = 3,240 spoiled units

Abnormal spoilage = 11,000 - 3,240 = 7,760 units

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

23) What costs would be associated with normal and abnormal spoilage, respectively, using the FIFO method of process costing?

- A) \$12,571; \$30,108
- B) \$30,108; \$12,571
- C) \$1,257; \$3,010
- D) \$8,000; \$4,000
- E) \$10,627; \$25,453

Answer: A

Explanation: A)

	<u>Direct Materials</u>	<u>Conversion Costs</u>
WIP, beginning inventory		
Costs added during period	<u>\$209,916</u>	<u>\$109,893</u>
Total cost to account for	209,916	109,893
Divided by equivalent units	<u>82,000</u> *	<u>83,250</u> **
Equivalent-unit costs	<u>\$2.56</u>	<u>\$1.32</u>

Total Cost per equivalent unit = \$2.56 + \$1.32 = \$3.88

Normal spoilage = 4% × 81,000 units = 3,240 spoiled units

Abnormal spoilage = (25,000 units + 82,000) - (81,000 units + 15,000) - 3,240 = 7,760 units

* (56,000 + 3,240 + 7,760 + 15,000) = 82,000 units

** (.5 × 25,000 + 56,000 + 3,240 + 7,760 + .25 × 15,000) = 83,250 units

Normal Spoilage = 3,240 units × \$3.88 = \$12,571

Abnormal Spoilage = 7,760 units × \$3.88 = \$30,108

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

24) What costs are allocated to the ending work-in-process inventory for direct materials and conversion costs, respectively, using the FIFO method of process costing?

- A) \$38,250; \$4,850
- B) \$40,000; \$23,100
- C) \$38,400; \$4,950
- D) \$49,500; \$38,400
- E) \$38,400; \$19,800

Answer: C

Explanation: C)	<u>Direct Materials</u>	<u>Conversion Costs</u>
WIP, beginning inventory		
Costs added during period	<u>\$209,916</u>	<u>\$109,893</u>
Total cost to account for	209,916	109,893
Divided by equivalent units	<u>82,000</u> *	<u>83,250</u> **
Equivalent-unit costs	<u>\$2.56</u>	<u>\$1.32</u>

Total Cost per equivalent unit = \$2.56 + \$1.32 = \$3.88

Direct materials: 15,000 units × \$2.56 = \$38,400

Conversion costs: 15,000 units × .25 × \$1.32 = \$4,950

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

25) Using the FIFO method of process costing, what are the total costs of all the units that were initially in the beginning work-in-process inventory and were subsequently shipped?

- A) \$194,000
- B) \$16,500
- C) \$210,500
- D) \$97,000
- E) \$274,500

Answer: C

Explanation: C)	<u>Direct Materials</u>	<u>Conversion Costs</u>
WIP, beginning inventory		
Costs added during period	<u>\$209,916</u>	<u>\$109,893</u>
Total cost to account for	209,916	109,893
Divided by equivalent units	<u>82,000*</u>	<u>83,250**</u>
Equivalent-unit costs	<u>\$2.56</u>	<u>\$1.32</u>

Total Cost per equivalent unit = \$2.56 + \$1.32 = \$3.88

* (56,000 + 3,240 + 7,760 + 15,000) = 82,000 units

** (.5 × 25,000 + 56,000 + 3,240 + 7,760 + .25 × 15,000) = 83,250 units

Costs related to Beginning WIP:

Costs Carried Forward from Previous period = \$150,000 + \$44,000 = \$194,000

Additional Conversion Cost = 25,000 units × 50% \$1.32 = \$16,500

Total = \$210,500

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

26) What are the direct materials and conversion costs of all the units that were started and completed during February?

- A) \$314,280
- B) \$217,280
- C) \$318,160
- D) \$153,500
- E) \$143,360

Answer: B

Explanation: B)	<u>Direct Materials</u>	<u>Conversion Costs</u>
WIP, beginning inventory		
Costs added during period	<u>\$209,916</u>	<u>\$109,893</u>
Total cost to account for	209,916	109,893
Divided by equivalent units	<u>82,000</u> *	<u>83,250</u> **
Equivalent-unit costs	<u>\$2.56</u>	<u>\$1.32</u>

Total Cost per equivalent unit = \$2.56 + \$1.32 = \$3.88

* (56,000 + 3,240 + 7,760 + 15,000) = 82,000 units

** (.5 × 25,000 + 56,000 + 3,240 + 7,760 + .25 × 15,000) = 83,250 units

Costs related to units that were started and completed in the period:

Started and Completed = Shipped Units less beginning Inventory
 = 81,000 - 25,000 = 56,000 units

Cost = 56,000 units × \$3.88 = \$217,280

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

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

Hawk Ltd. uses process costing in its Fabricating Department. At the beginning of October, it had 12,000 units in beginning work-in-process that were 40% complete with respect to conversion. During October it put 87,000 units into production and completed 89,000 good units. At October 31, there were 3,000 units in ending work-in-process that were 70% complete with respect to conversion. Direct materials are added at the beginning of the process. Inspection occurs at the end of the process and normal spoilage is 6% of good output.

Costs related to the beginning inventory were \$36,800 for direct materials and \$28,600 for conversion costs. During the month, the company issued \$280,000 of direct materials and incurred \$599,400 of conversion costs.

27) What are the normal and abnormal spoilage units, respectively, for October assuming Hawk uses the weighted average method of process costing?

- A) 5,340 units; 1,660 units
- B) 7,000 units; 1,660 units
- C) 5,220 units; 1,780 units
- D) 5,340 units; 1,780 units
- E) 5,940 units; 1,060 units

Answer: A

Explanation: A) Spoilage = $[12,000 + 87,000] - [89,000 + 3,000] = 7,000$ units

$89,000 * 6\% = 5,340$ normal spoilage; abnormal = $7,000 - 5,340 = 1,660$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-2

28) Assuming Hawk uses the weighted-average method for process costing, the equivalent units for direct materials and conversion for October are

- A) 89,000 units; 88,100 units.
- B) 87,000 units; 93,300 units.
- C) 82,000 units; 91,100 units.
- D) 99,000 units; 98,100 units.
- E) 92,000 units; 90,200 units.

Answer: D

Explanation: D)	Direct Materials	Conversion
Units Completed	89,000	89,000
Normal Spoilage	5,340	5,340
Abnormal Spoilage	1,660	1,660
Ending WIP (70% converted)	<u>3,000</u>	<u>2,100</u>
Total Equivalent units	99,000	98,100

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-2

29) Assuming Hawk uses the FIFO method of process costing, the equivalent units for direct materials and conversion costs respectively for October are

- A) 87,000 units; 93,300 units.
- B) 87,000 units; 94,200 units.
- C) 80,000 units; 86,300 units.
- D) 87,000 units; 90,900 units.
- E) 99,000 units; 94,200 units.

Answer: A

Explanation: A)	Direct Materials	Conversion
From Beginning inventory	0	7,200
Started & Completed in October	77,000	77,000
Normal Spoilage	5,340	5,340
Abnormal Spoilage	1,660	1,660
Ending WIP (70% converted)	3,000	2,100
Total Equivalent units	87,000	93,300

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-2

30) Assuming Hawk uses the weighted average method of process costing, the cost per equivalent unit for direct materials and conversion costs respectively are

- A) \$3.20; \$6.40.
- B) \$3.44; \$6.89.
- C) \$2.81; \$6.09.
- D) \$3.64; \$6.40.
- E) \$3.22; \$6.42.

Answer: A

Explanation: A) EU for DM = 89,000 + 5,340 + 1,660 + 3,000 = 99,000

EU for Conversion = 89,000 + 5,340 + 1,660 + 2,100 = 98,100

Cost per EU for DM = $[\$280,000 + \$36,800] / 99,000 = \$3.20$

Cost per EU for Conversion = $[\$599,400 + \$28,600] / 98,100 = \$6.40$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

31) Assuming Hawk uses the FIFO method of process costing, the cost per equivalent unit for direct materials and conversion costs respectively are

- A) \$3.20; \$6.40.
- B) \$3.64; \$6.40.
- C) \$2.81; \$6.09.
- D) \$3.22; \$6.42.
- E) \$3.44; \$6.89.

Answer: D

Explanation: D) EU for DM = 77,000 + 5,340 + 1,660 + 3,000 = 87,000

EU for Conversion = 7,200 + 77,000 + 5,340 + 1,660 + 2,100 = 93,300

Cost per EU for DM = $[\$280,000]/87,000 = \3.22

Cost per EU for Conversion = $[\$599,400]/93,300 = \6.42

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

32) Assuming Hawk uses the weighted average method for process costing, the total cost of goods completed and transferred to finished goods is

- A) \$854,400.
- B) \$921,600.
- C) \$877,440.
- D) \$928,704.
- E) \$905,664.

Answer: E

Explanation: E) 89,000 units completed and transferred out at $[\$3.20 + \$6.40] = \$854,400$

Add normal spoilage = $5,340 * \$9.60 = \$51,264$

Total = $\$854,400 + \$51,264 = \$905,664$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

33) Assuming Hawk uses the FIFO method of process costing, the cost of the ending work-in-process inventory is

- A) \$23,040.
- B) \$23,142.
- C) \$28,800.
- D) \$28,920.
- E) \$19,200.

Answer: B

Explanation: B) Cost per EU for DM = $[\$280,000]/87,000 = \3.22

Cost per EU for Conversion = $[\$599,400]/93,300 = \6.42

Ending WIP: $\$9,660 + \$13,482 = \$23,142$

Direct materials 3,000 units @ $\$3.22 = \$9,660$

Conversion costs 2,100 units @ $\$6.42 = \$13,482$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

Answer the following questions using the information below:

Fish Fillet Incorporated obtains fish and then processes them into frozen fillets and then prepares the frozen fish fillets for distribution to its retail sales department. Direct materials are added at the initiation of the cycle. Conversion costs are incurred evenly throughout the production cycle. Before inspection, some fillets are spoiled due to nondetectible defects. Inspection occurs when units are 50% converted. Spoiled fillets generally constitute 3.5% of the good fillets. Data for April 2015 are as follows:

WIP, beginning inventory April 1, 2015	80,000 fillets
Direct materials (100% complete)	
Conversion costs (50% complete)	
Started during April	150,000 fillets
Completed and transferred in April	200,000 fillets
WIP, ending inventory April 30, 2015	16,000 fillets
Direct materials (100% complete)	
Conversion costs (20% complete)	

Costs for April:

WIP, beginning Inventory:	
Direct materials	\$ 110,000
Conversion costs	80,000
Direct materials added	290,200
Conversion costs added	376,130

34) What is the number of total spoiled units?

- A) 16,000 units
- B) 10,000 units
- C) 50,000 units
- D) 14,000 units
- E) 7,000 units

Answer: D

Explanation: B) Spoiled units = 80,000 + 150,000 - 200,000 - 16,000 = 14,000 units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-2

35) What is the total cost per equivalent unit using the weighted-average method of process costing?

- A) \$4.00
- B) \$1.74
- C) \$2.10
- D) \$3.84
- E) \$3.74

Answer: D

Explanation: D)	<u>Direct Materials</u>	<u>Conversion Costs</u>
WIP, beginning inventory	\$ 110,000	\$ 80,000
Costs added during period	<u>290,200</u>	<u>376,130</u>
Total cost to account for	400,200	456,130
Divide by equivalent units	<u>230,000</u>	<u>217,200</u>
Equivalent-unit costs	<u>\$ 1.74</u>	<u>\$ 2.10</u>

Total cost per equivalent unit = \$1.74 + \$2.10 = \$3.84

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-2

36) What cost is allocated to abnormal spoilage using the weighted-average process-costing method?

- A) \$ 0
- B) \$26,880
- C) \$53,760
- D) \$29,000
- E) \$14,700

Answer: B

Explanation: B) Spoiled units = (80,000 units + 150,000) - (200,000 units + 16,000 units) 14,000 units

Normal spoilage = 3.5% × 200,000 units = 7,000 spoiled units

Abnormal spoilage = 14,000 units - 7,000 units = 7,000 units

	<u>Direct Materials</u>	<u>Conversion Costs</u>
WIP, beginning inventory	\$ 110,000	\$ 80,000
Costs added during period	<u>290,200</u>	<u>376,130</u>
Total cost to account for	400,200	456,130
Divide by equivalent units	<u>230,000</u>	<u>217,200</u>
Equivalent-unit costs	<u>\$ 1.74</u>	<u>\$ 2.10</u>

Total cost per equivalent unit = \$1.74 + \$2.10 = \$3.84

7,000 units × \$3.84 = \$26,880

Diff: 3 Type: MC

Skill: Apply

Objective: LO 18-2

37) What are the amounts of direct materials and conversion costs assigned to ending work-in-process using the weighted-average process-costing method?

- A) \$6,720; \$27,840
- B) \$27,840; \$6,720
- C) \$27,840; \$33,600
- D) \$33,600; \$27,840
- E) \$633,600; \$6,720

Answer: B

Explanation: B)	<u>Direct Materials</u>	<u>Conversion Costs</u>
WIP, beginning inventory	\$ 110,000	\$ 80,000
Costs added during period	<u>290,200</u>	<u>376,130</u>
Total cost to account for	400,200	456,130
Divide by equivalent units	<u>230,000</u>	<u>217,200</u>
Equivalent-unit costs	<u>\$ 1.74</u>	<u>\$ 2.10</u>

Total cost per equivalent unit = \$1.74 + \$2.10 = \$3.84

Direct materials = 16,000 units × \$1.74 = \$27,840

Conversion costs = 16,000 units × 20% × \$2.10 = \$6,720

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-2

38) Viking Sports is a manufacturer of sport swear. It produces all of its products in one department. The information for the current month is as follows:

Beginning work-in-process	20,000 units
Units started	40,000 units
Units completed	50,000 units
Ending work-in-process	8,000 units
Spoilage	2,000 units

Beginning work-in-process direct materials	\$12,000
Beginning work-in-process conversion	\$4,000
Direct materials added during month	\$60,000
Direct manufacturing labour during month	\$20,000

Beginning work-in-process was half complete as to conversion. Direct materials are added at the beginning of the process. Factory overhead is applied at a rate equal to 50 percent of direct manufacturing labour. Ending work-in-process was 60 percent complete. All spoilage is normal and is detected at end of the process.

Required:

Prepare a production cost worksheet assuming that spoilage is recognized and the weighted-average method is used.

Answer:

<u>Flow of Production</u>	<u>Physical units</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in-process, beginning	20,000		
Started during period	<u>40,000</u>		
To account for	<u>60,000</u>		
Good units completed	50,000	50,000	50,000
Normal spoilage	2,000	2,000	2,000
Work-in-process ending	<u>8,000</u>	<u>8,000</u>	<u>4,800</u>
Accounted for	<u>60,000</u>	<u>60,000</u>	<u>56,800</u>

<u>Costs</u>	<u>Totals</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in-process, beginning	\$16,000	\$12,000	\$4,000
Costs added during period	<u>90,000</u>	<u>60,000</u>	<u>30,000</u>
Total costs to account for	\$106,000	\$72,000	\$34,000
Divided by equivalent units		<u>60,000</u>	<u>56,800</u>
Equivalent unit costs	<u>\$1.80</u>	<u>\$1.20</u>	<u>\$0.60</u>

Assignment of costs:

Good units completed (50,000 × \$1.80)	\$90,000
Normal spoilage (2,000 × \$1.80)	<u>3,600</u>
Total cost of good units completed	<u>\$93,600</u>
Work-in-process, ending	
Direct materials (8,000 × \$1.20)	\$9,600
Conversion (8,000 × \$0.60 × 0.60)	<u>2,880</u>
	<u>\$12,480</u>
Costs accounted for (rounding error)	<u>\$106,080</u>

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-2

39) The Skate Board Company uses a process cost system for making skateboard wheels. Materials are added at the beginning of the process and conversion costs are uniformly incurred. At the beginning of September the work-in-process is 40 percent complete and at the end of the month it is 60 percent complete. Spoilage is detected at the end of the process. Other data for the month include:

Beginning work-in-process inventory	1,600 units
Units started	20,000 units
Units placed in finished goods	12,000 units
Ending work-in-process inventory	1,200 units
Normal spoilage % on all units finished	20 percent

Conversion costs	\$40,320
Cost of direct materials	\$40,000
Beginning work-in-process costs:	
Materials	\$4,000
Conversion	\$4,032

Required:

- Prepare a production cost worksheet assuming that spoilage is recognized and the weighted-average method is used.
- Prepare journal entries to record transferring out of cost from the work-in-process accounts.

Answer:

a.

Normal spoilage = $(1,600 + 20,000 - 1,200) \times 0.20 = 4,080$

Abnormal spoilage = $1,600 + 20,000 - 12,000 - 1,200 - 4,080 = 4,320$

<u>Flow of Production</u>	<u>Physical units</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in-process, beginning	1,600		
Started during period	<u>20,000</u>		
To account for	<u>21,600</u>		
Good units completed	12,000	12,000	12,000
Normal spoilage	4,080	4,080	4,080
Abnormal spoilage	4,320	4,320	4,320
Work-in-process ending (60%)	<u>1,200</u>	<u>1,200</u>	<u>720</u>
Accounted for	<u>21,600</u>	<u>21,600</u>	<u>21,120</u>

<u>Costs</u>	<u>Totals</u>	<u>Direct Materials</u>	<u>Conversion</u>
Work-in-process, beginning	\$8,032	\$4,000	\$4,032
Costs added during period	<u>80,320</u>	<u>40,000</u>	<u>40,320</u>
Total costs to account for	\$88,352	\$44,000	\$44,352
Divided by equivalent units		<u>21,600</u>	<u>21,120</u>
Equivalent unit costs	<u>\$4.137</u>	<u>\$2.037</u>	<u>\$2.10</u>

Assignment of costs:

Completed units $(12,000 \times \$4.14)$ \$49,680

Normal spoilage $(4,080 \times \$4.14)$ 16,891

Total costs transferred out \$66,571

Abnormal spoilage $(4,320 \times \$4.14)$ 17,885

Work-in-process, ending

Direct materials $(1,200 \times \$2.04)$ \$2,448

Conversion $(1,200 \times \$2.10 \times 0.60)$ 1,512

\$3,960

Costs accounted for (rounding) \$88,416

b.

Finished Goods	\$66,571
Work-in-process	\$66,571
Loss from Abnormal Spoilage	\$17,885
Work-in-Process	\$17,885

Diff: 3 Type: ES

Skill: Apply

Objective: LO 18-2

40) The Skate Board Company uses a process cost system for making skateboard wheels. Materials are added at the beginning of the process and conversion costs are uniformly incurred. At the beginning of September the work-in-process is 40 percent complete and at the end of the month it is 60 percent complete. Spoilage is detected at the end of the process. Other data for the month include:

Beginning work-in-process inventory	1,600 units
Units started	20,000 units
Units placed in finished goods	12,000 units
Ending work-in-process inventory	1,200 units
Normal spoilage % on all units finished	20 percent

Conversion costs	\$40,320
Cost of direct materials	\$40,000
Beginning work-in-process costs:	
Materials	\$4,000
Conversion	\$4,032

Required:

- Prepare a production cost worksheet assuming that spoilage is recognized and the FIFO method is used.
- Prepare journal entries to record transferring out of cost from the work-in-process accounts.

Answer:

a.

Normal spoilage = $(1,600 + 20,000 - 1,200) \times 0.20 = 4,080$

Abnormal spoilage = $1,600 + 20,000 - 12,000 - 1,200 - 4,080 = 4,320$

<u>Flow of Production</u>	<u>Physical units</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in-process, beginning	1,600		
Started during period	<u>20,000</u>		
To account for	<u>21,600</u>		
From beginning inventory	1,600	0	960
Started & completed current period	10,400	10,400	10,400
Normal spoilage	4,080	4,080	4,080
Abnormal spoilage	4,320	4,320	4,320
Work-in-process ending (60%)	<u>1,200</u>	<u>1,200</u>	<u>720</u>
Accounted for	<u>21,600</u>	<u>20,000</u>	<u>20,480</u>

<u>Costs</u>	<u>Totals</u>	<u>Direct Materials</u>	<u>Conversion</u>
Work-in-process, beginning	\$8,032	\$4,000	\$4,032
Costs added during period	<u>80,320</u>	<u>40,000</u>	<u>40,320</u>
Current period costs only	\$88,352	\$40,000	\$40,320
Divided by equivalent units		20,000	20,480
Equivalent unit costs	<u>\$3.97</u>	<u>\$2.00</u>	<u>\$1.97</u>

Assignment of costs:

Beginning inventory	\$8,032
Costs to complete	<u>\$1,891</u>
Total from beginning inventory	\$9,923
Started & complete $(10,400 \times \$3.97)$	41,288
Normal spoilage $(4,080 \times \$3.97)$	<u>16,198</u>
Total costs transferred out	\$67,409
Abnormal spoilage $(4,320 \times \$3.97)$	17,150
Work-in-process, ending	
Direct materials $(1,200 \times \$2.00)$	\$2,400
Conversion $(1,200 \times \$1.97 \times 0.60)$	<u>1,418</u>
Total WIP, ending	<u>\$3,818</u>
Costs accounted for (rounding)	<u>\$88,377</u>

41) New Image Sports uses a process costing system. Direct materials are placed into production at the beginning of the process. All spoilage is normal and is detected at the end of the process. For March the company had the following activities:

Beginning work-in-process inventory	6,000 units, one-third complete
Units placed in production	24,000 units
Good units completed	18,000 units
Ending work-in-process inventory	10,000 units, one-half complete
Cost of beginning work-in-process	\$5,000
Direct material costs, current	\$18,000
Conversion costs, current	\$13,800

Required:

Prepare a production cost worksheet assuming that spoilage is recognized and the FIFO method is used.

Answer: Normal spoilage = 6,000 + 24,000 - 18,000 - 10,000 = 2,000
 Started and completed = 18,000 - 6,000 = 12,000

<u>Flow of Production</u>	<u>Physical units</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in-process, beginning	6,000		
Started during period	<u>24,000</u>		
To account for	<u>30,000</u>		

Good units completed:

Beginning work-in-process	6,000		4,000
Started and completed	12,000	12,000	12,000
Normal spoilage	2,000	2,000	2,000
Work-in-process ending	<u>10,000</u>	<u>10,000</u>	<u>5,000</u>
Accounted for	<u>30,000</u>	<u>24,000</u>	<u>23,000</u>

<u>Costs</u>	<u>Totals</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in-process, beginning	\$5,000		
Costs added during period	<u>31,800</u>	<u>\$18,000</u>	<u>\$13,800</u>
Total costs to account for	\$36,800	\$18,000	\$13,800
Divided by equivalent units		<u>24,000</u>	<u>23,000</u>
Equivalent unit costs	<u>\$1.35</u>	<u>\$0.75</u>	<u>\$0.60</u>

Assignment of costs:

Work-in-process, beginning	\$5,000	\$5,000	
Completion of beginning (4,000 × \$0.60)	<u>2,400</u>		2,400
Total beginning inventory	\$7,400		
Started and Completed (12,000 × \$1.35)	16,200		
Normal spoilage (2,000 × \$1.35)	<u>2,700</u>		
Total costs transferred out	\$26,300		
Work-in-process, ending			
Direct materials (10,000 × \$0.75)	\$7,500	\$7,500	
Conversion (10,000 × \$0.60 × 0.5)	<u>3,000</u>		\$3,000
Total WIP, ending	<u>\$10,500</u>		
Costs accounted for	<u>\$36,800</u>		

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-2

42) Wilson Sports uses a process costing system. Direct material A is placed into production at the beginning of the process, while direct material B is placed into production at the end of the process. Inspection occurs at the end of the process, before the addition of direct material B. Normal spoilage is 5% of good units. For March the company had the following activities:

Beginning work-in-process inventory	4,000 units, 30% complete
Units placed in production	28,000 unit
Good units completed	24,000 units
Ending work-in-process inventory	6,000 units, 60% complete
Cost of beginning work-in-process	\$10,000 (\$5,500 direct material A, \$4,500 conversion)
Direct material A costs, current	\$38,000
Direct material B costs, current	\$26,400
Conversion costs, current	\$42,500

Required:

Prepare a production cost worksheet assuming that spoilage is recognized and the weighted-average method is used.

Answer: Total spoilage = 4,000 + 28,000 - 24,000 - 6,000 = 2,000

Normal spoilage = 5% of 24,000 = 1,200 units, so abnormal spoilage = 2,000 - 1,200 = 800 units

<u>Flow of Production</u>	<u>Physical units</u>	<u>DM A</u>	<u>DM B</u>	<u>Conversion</u>
WIP, beg	4,000			
Started during period	<u>28,000</u>			
To account for	<u>32,000</u>			
Good units completed	24,000	24,000	24,000	24,000
Normal spoilage	1,200	1,200	0	1,200
Abnormal spoilage	800	800	0	800
Work-in-process ending	<u>6,000</u>	<u>6,000</u>	<u>0</u>	<u>3,600</u>
Accounted for	<u>32,000</u>	<u>32,000</u>	<u>24,000</u>	<u>29,600</u>

Costs

WIP begin	\$10,000	\$5,500	\$0	\$4,500
Costs added	<u>\$106,900</u>	<u>\$38,000</u>	<u>\$26,400</u>	<u>\$42,500</u>
Total costs	\$116,900	\$43,500	\$26,400	\$47,000
Divided by equivalent units		<u>32,000</u>	<u>24,000</u>	<u>29,600</u>
Equivalent unit costs	<u>\$4.05</u>	<u>\$1.36</u>	<u>\$1.10</u>	<u>\$1.59</u>

Assignment of costs:

Good units completed	\$97,200	[24,000 * \$4.05]
Normal spoilage	<u>\$3,540</u>	[1,200 * \$2.95]
Total costs transferred out	\$100,740	
Abnormal spoilage	\$2,360	[800 * \$2.95]
Work-in-process, ending		
Direct materials A(6,000 × \$1.36)	\$8,160	
Conversion (6,000 × 60% * \$1.59)	<u>\$5,724</u>	
Total ending WIP	\$13,884	
Costs accounted for (rounding)	<u>\$116,984</u>	

Diff: 3 Type: ES

Skill: Apply

Objective: LO 18-2

43) Weather Instruments assembles products from component parts. It has two departments that process all products. During January the beginning work-in-process in the assembly department was half completed as to conversion and complete as to direct materials. The beginning inventory included \$12,000 for materials and \$4,000 for conversion costs. Overhead is applied at the rate of 50 percent of direct manufacturing labour costs. Ending work-in-process inventory in the assembly department was 40 percent complete. All spoilage is considered normal and is detected at the end of the process. Beginning work-in-process in the finishing department was 75 percent complete as to conversion and ending work-in-process was 25 percent converted. Direct materials are added at the end of the process. Beginning inventories included \$16,000 for transferred-in costs and \$20,000 for conversion costs. Overhead in this department is equal to direct manufacturing labour costs. Additional information about the two departments follows:

	<u>Assembly</u>	<u>Finishing</u>
Beginning work-in-process units	20,000	24,000
Units started this period	40,000	?
Units transferred this period	50,000	54,000
Ending work-in-process units	8,000	20,000
Material costs added	\$44,000	\$28,000
Direct manufacturing labour	\$16,000	\$24,000

Required:

Prepare a production cost worksheet using weighted-average for the assembly department and FIFO for the finishing department assuming that spoilage is recognized.

Answer: Normal spoilage assembly = 20,000 + 40,000 - 50,000 - 8,000 = 2,000

Production Cost Worksheet for Assembly Department
Weighted-average Method

<u>Flow of Production</u>	<u>Physical units</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in-process, beginning	20,000		
Started during period	40,000		
To account for	<u>60,000</u>		
Good units completed and			
Transferred out	50,000	50,000	50,000
Normal spoilage	2,000	2,000	2,000
Work-in-process ending	<u>8,000</u>	<u>8,000</u>	<u>3,200</u>
Accounted for	<u>60,000</u>	<u>60,000</u>	<u>55,200</u>

<u>Costs</u>	<u>Totals</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in-process, beginning	\$16,000	\$12,000	\$4,000
Costs added during period	<u>68,000</u>	<u>44,000</u>	<u>24,000</u>
Total costs to account for	\$84,000	\$56,000	\$28,000
Divided by equivalent units		<u>60,000</u>	<u>55,200</u>
Equivalent unit costs	<u>\$1.44</u>	<u>\$0.93</u>	<u>\$0.51</u>

Assignment of costs:

Transferred out (50,000 × \$1.44)	\$72,000
Normal spoilage (2,000 × \$1.44)	<u>2,880</u>
Total costs transferred out	\$74,880
Work-in-process, ending	
Direct materials	
(8,000 × \$0.93)	\$7,440
Conversion	
(8,000 × 0.40 × \$0.51)	<u>1,632</u>
Costs accounted for (rounding error)	<u>\$83,952</u>

Production Cost Worksheet for Finishing Department
FIFO Method

<u>Flow of Production</u>	<u>Phy. units</u>	<u>D. mat.</u>	<u>Conversion</u>	<u>Trans.-in</u>
WIP, beginning	24,000			
Started during period	<u>50,000</u>			
To account for	<u>74,000</u>			

Good units completed:

Beginning work-in-process	24,000	24,000	6,000	
Started and completed	30,000	30,000	30,000	30,000
Work-in-process ending	<u>20,000</u>	<u>0</u>	<u>5,000</u>	<u>20,000</u>
Accounted for	74,000	54,000	41,000	50,000

<u>Costs</u>	<u>Totals</u>	<u>D. mat.</u>	<u>Conversion</u>	<u>Trans.-in</u>
Work-in-process, beginning	\$36,000			
Costs added in the period	<u>150,880</u>	<u>\$28,000</u>	<u>\$48,000</u>	<u>\$74,880</u>
Total costs to account	\$186,880	\$28,000	\$48,000	\$74,880
Divided by equivalent units		<u>54,000</u>	<u>41,000</u>	<u>50,000</u>
Equivalent unit costs	<u>\$3.19</u>	<u>\$0.52</u>	<u>\$1.17</u>	<u>\$1.50</u>

Assignment of costs:

Work-in-process, beginning	\$36,000		
Completion of beginning:			
Direct materials (24,000 × \$0.52)	12,480	\$12,480	
Conv. (24,000 × 0.25 × \$1.17)	<u>7,020</u>		\$7,020
Total beginning inventory	\$55,500		
Started & Completed	<u>95,700</u>		(30,000 × \$3.19)
Total costs transferred out	<u>\$151,200</u>		
Work-in-process, ending:			
Transferred in (20,000 × \$1.50)	\$30,000		
Conversion	<u>5,850</u>		(20,000 × \$1.17 × 0.25)
	<u>\$35,850</u>		

Costs accounted for (rounding) \$187,050

Diff: 3 Type: ES

Skill: Apply

Objective: LO 18-2

44) Dutton Industries is a manufacturer of cleaning products. Its main product goes through two departments: Mixing and Bottling. During June, the beginning WIP in the Mixing department was 32% complete as to conversion cost. The beginning inventory included \$15,200 for materials and \$19,800 for conversion costs. Ending WIP in the Mixing department was 80% complete. All direct materials are added at the beginning of the process in each department. Inspection occurs at the end of the process in both departments. Normal spoilage is 2.5% of good output in Mixing and 1.4% of good output in Bottling. Beginning WIP in Bottling was 60% complete with respect to conversion costs and ending WIP was 30% converted. Beginning WIP included \$8,850 for direct materials, \$72,200 for transferred in costs and \$23,800 for conversion costs. Additional information follows:

	<u>Mixing</u>	<u>Bottling</u>
Beginning work-in-process units	45,000	42,000
Units started this period	130,000	?
Units transferred this period	159,000	187,000
Ending work-in-process units	9,800	10,600
Material costs added	\$45,500	\$35,000
Conversion costs added	\$209,650	\$154,910

Required:

Prepare a production cost worksheet using weighted-average for the Mixing department and FIFO for the Bottling department assuming that spoilage is recognized.

Answer: Total spoilage Mixing = $45,000 + 130,000 - 159,000 - 9,800 = 6,200$
 Normal spoilage = $159,000 * 2.5\% = 3,975$ Abnormal spoilage = $6,200 - 3,975 = 2,225$

Production Cost Worksheet for Mixing Department
 Weighted-average Method

<u>Flow of Production</u>	<u>Physical units</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in-process, beginning	45,000		
Started during period	<u>130,000</u>		
To account for	<u>175,000</u>		
Good units completed and			
Transferred out	159,000	159,000	159,000
Normal spoilage	3,975	3,975	3,975
Abnormal spoilage	2,225	2,225	2,225
Work-in-process ending	<u>9,800</u>	<u>9,800</u>	<u>7,840</u>
Accounted for	<u>175,000</u>	<u>175,000</u>	<u>173,040</u>

<u>Costs</u>	<u>Totals</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in-process, beginning	\$35,000	\$15,200	\$19,800
Costs added during period	<u>\$255,150</u>	<u>45,500</u>	<u>209,650</u>
Total costs to account for	\$290,150	\$60,700	\$229,450
Divided by equivalent units		<u>175,000</u>	<u>173,040</u>
Equivalent unit costs	<u>\$1.673</u>	<u>\$0.347</u>	<u>\$1.326</u>

Assignment of costs:

Transferred out (159,000 × \$1.673)	\$265,983
Normal spoilage (3,975 × \$1.673)	<u>6,650</u>
Total costs transferred out	\$272,633
Abnormal spoilage (2,225 * \$1.673)	\$3,722
Work-in-process, ending	
Direct materials	
(9,800 × \$0.347)	\$3,399
Conversion	
(9,800 × 0.80 × \$1.326)	<u>\$10,396</u>
Total ending work-in-process	\$13,795
Costs accounted for (rounding error)	<u>\$290,150</u>

Total spoilage Bottling = $42,000 + 159,000 - 187,000 - 10,600 = 3,400$
 Normal spoilage = $187,000 * 1.4\% = 2,618$ Abnormal spoilage = $3,400 - 2,618 = 782$

Production Cost Worksheet for Bottling Department
FIFO Method

<u>Flow of Production</u>	<u>Phy. units</u>	<u>D. mat.</u>	<u>Conversion</u>	<u>Trans.-in</u>
WIP, beginning	42,000			
Started during period	<u>159,000</u>			
To account for	<u>201,000</u>			

Good units completed:

Beginning work-in-process	42,000	0	16,800	0
Started and completed	145,000	145,000	145,000	145,000
Normal Spoilage	2,618	2,618	2,618	2,618
Abnormal Spoilage	782	782	782	782
Work-in-process ending (30%)	<u>10,600</u>	<u>10,600</u>	<u>3,180</u>	<u>10,600</u>
Accounted for	201,000	159,000	168,380	159,000

<u>Costs</u>	<u>Totals</u>	<u>D. mat.</u>	<u>Conversion</u>	<u>Trans.-in</u>
Work-in-process, beginning	\$104,850	\$8,850	\$23,800	\$72,200
Costs added in the period	<u>\$462,543</u>	<u>\$35,000</u>	<u>\$154,910</u>	<u>\$272,633</u>
Current period costs	\$567,393	\$35,000	\$154,910	\$272,633
Divided by equivalent units		<u>52,000</u>	<u>168,380</u>	<u>159,000</u>
Equivalent unit costs	<u>\$2.855</u>	<u>\$0.220</u>	<u>\$0.920</u>	<u>\$1.715</u>

Assignment of costs:

Work-in-process, beginning		\$104,850
Completion of beginning:		
Conv. (42,000 × 0.4 × \$0.92)		<u>\$15,456</u>
Total from beginning WIP		\$120,306
Started & Completed (145,000 × \$2.855)		413,946
Normal Spoilage (2,618 × \$2.855)		<u>7,474</u>
Total costs transferred out		\$541,726
Abnormal spoilage (782 × \$2.855)		2,232
Work-in-process, ending		
Transferred in (10,600 × \$1.715)		\$18,176
Direct materials (10,600 × \$0.22)		2,333
Conversion (10,600 × 0.30 × \$0.92)		<u>2,926</u>
Total ending WIP		\$23,434
Costs accounted for (rounding)	<u>\$567,393</u>	

Diff: 3 Type: ES

Skill: Apply

Objective: LO 18-2

45) Playtime Ltd. manufactures toys in two departments: Forming and Finishing. During August, the beginning WIP in the Forming Department was 38% complete with respect to conversion, direct materials are added at the beginning of the process. The beginning inventory in Forming included \$36,400 for materials and \$9,400 for conversion costs. Ending WIP in the Forming department was 70% complete. In the second department, Finishing, direct materials are added at the end of the process. Beginning WIP in Finishing was 22% complete with respect to conversion costs and ending WIP was 85% converted. Beginning WIP included \$35,200 for transferred in costs and \$12,350 for conversion costs. Additional information follows:

	<u>Forming</u>	<u>Finishing</u>
Beginning work-in-process units	29,000	17,000
Units started this period	228,000	?
Units transferred this period	232,500	232,850
Ending work-in-process units	12,000	11,200
Material costs added	\$286,200	\$114,380
Conversion costs added	\$197,750	\$805,490
Normal spoilage	3.6%	1.8%
Inspection (degree of completion)	100%	100%

Required:

Prepare a production cost worksheet using weighted-average for the Forming department and FIFO for the Finishing department assuming the spoilage is recognized.

Answer: Total spoilage Forming = 29,000 + 228,000 - 232,500 - 12,000 = 12,500
 Normal spoilage = 232,500 * 3.6% = 8,370 Abnormal spoilage = 12,500 - 8,370 = 4,130

Production Cost Worksheet for Forming Department
 Weighted-average Method

<u>Flow of Production</u>	<u>Physical units</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in-process, beginning	29,000		
Started during period	<u>228,000</u>		
To account for	<u>257,000</u>		
Good units completed and			
Transferred out	232,500	232,500	232,500
Normal spoilage	8,370	8,370	8,370
Abnormal spoilage	4,130	4,130	4,130
Work-in-process ending	<u>12,000</u>	<u>12,000</u>	<u>8,400</u>
Accounted for	<u>257,000</u>	<u>257,000</u>	<u>253,400</u>

<u>Costs</u>	<u>Totals</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in-process, beginning	\$45,800	\$36,400	\$9,400
Costs added during period	<u>\$483,950</u>	<u>286,200</u>	<u>197,750</u>
Total costs to account for	\$529,750	\$322,600	\$207,150
Divided by equivalent units		<u>257,000</u>	<u>253,400</u>
Equivalent unit costs	<u>\$2.072</u>	<u>\$1.255</u>	<u>\$0.817</u>

Assignment of costs:

Transferred out (232,500 × \$2.072)	\$481,740
Normal spoilage (8,370 × \$2.072)	<u>17,343</u>
Total costs transferred out	\$499,083
Abnormal spoilage (4,130 * \$2.072)	\$8,558
Work-in-process, ending	
Direct materials	
(12,000 × 1.255)	\$15,060
Conversion	
(12,000 × 0.70 × \$0.817)	<u>\$6,863</u>
Total ending work-in-process	\$21,923
Costs accounted for (rounding error)	<u>\$529,564</u>

Total spoilage Finishing = 17,000 + 232,500 - 232,850 - 11,200 = 5,450
 Normal spoilage = 232,850 * 1.8% = 4,191 Abnormal spoilage = 5,450 - 4,191 = 1,259

Production Cost Worksheet for Finishing Department
FIFO Method

<u>Flow of Production</u>	<u>Phy. units</u>	<u>D. mat.</u>	<u>Conversion</u>	<u>Trans.-in</u>
WIP, beginning	17,000			
Started during period	<u>232,500</u>			
To account for	<u>249,500</u>			

Good units completed:

Beginning work-in-process	17,000	17,000	13,260	0
Started and completed	215,850	215,850	215,850	215,850
Normal spoilage	4,191	4,191	4,191	4,191
Abnormal spoilage	1,259	1,259	1,259	1,259
Work-in-process ending	<u>11,200</u>	<u>0</u>	<u>9,520</u>	<u>11,200</u>
Accounted for	249,500	238,300	244,080	232,500

<u>Costs</u>	<u>Totals</u>	<u>D. mat.</u>	<u>Conversion</u>	<u>Trans.-in</u>
Work-in-process, beginning	\$47,550	\$0	\$12,350	\$35,200
Costs added in the period	<u>\$1,418,953</u>	<u>\$114,380</u>	<u>\$805,490</u>	<u>\$499,083</u>
Current period costs	\$1,466,503	\$114,380	\$805,490	\$499,083
Divided by equivalent units		<u>238,300</u>	<u>244,080</u>	<u>232,500</u>
Equivalent unit costs	<u>\$5.927</u>	<u>\$0.48</u>	<u>\$3.300</u>	<u>\$2.147</u>

Assignment of costs:

Work-in-process, beginning	\$47,550
Completion of beginning:	
Direct materials (17,000 × \$0.48)	\$8,160
Conv. (17,000 × 0.78 × \$3.30)	<u>\$43,758</u>
Total from beginning WIP	\$99,468
Started & Completed (215,850 × \$3.30)	1,279,343
Normal spoilage (4,191 × \$5.927)	<u>24,840</u>
Total costs transferred out	\$1,403,651
Abnormal spoilage (1,259 × \$5.927)	7,462
Work-in-process, ending	
Transferred in (11,200 × \$2.147)	\$24,046
Conversion (11,200 × 85% × 3.30)	<u>31,416</u>
Total ending WIP	\$55,462
Costs accounted for (rounding)	<u>\$1,466,575</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 18-2

46) Silver Spoon Incorporated is a manufacturer of kitchen utensils. It produces all of its products in one department. The information for the current month is as follows:

Beginning work-in-process	37,500 units
Units started	55,000 units
Units completed	75,000 units
Ending work-in-process	14,500 units
Spoilage	3,000 units
Beginning work-in-process direct materials	\$25,000
Beginning work-in-process conversion	\$ 10,000
Direct materials added during month	\$113,750
Direct manufacturing labour during month	\$40,020

Beginning work-in-process was 25% complete as to conversion. Direct materials are added at the beginning of the process. Factory overhead is applied at a rate equal to 37.5% of direct manufacturing labour. Ending work-in-process was 60% complete. All spoilage is normal and is detected at the end of the process.

Required:

Prepare a production cost worksheet if spoilage is recognized and the weighted-average method is used.

Answer: PRODUCTION COST WORKSHEET

<u>Flow of Production</u>	<u>Physical units</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in- process, beginning	37,500		
Started during period	<u>55,000</u>		
To account for	<u>92,500</u>		
Good units completed	75,000	75,000	75,000
Normal spoilage	3,000	3,000	3,000
Work-in-process, ending	<u>14,500</u>	<u>14,500</u>	<u>8,700</u>
Accounted for	<u>92,500</u>	<u>92,500</u>	<u>86,700</u>
<u>Costs</u>	<u>Totals</u>	<u>Direct Materials</u>	<u>Conversion</u>
Work-in-process, beginning	\$ 35,000	\$25,000	\$ 10,000
Costs added during period	<u>168,778</u>	<u>113,750</u>	<u>55,028</u>
Total costs to account for	\$203,778	\$138,750	\$65,028
Divided by equivalent units		<u>92,500</u>	<u>86,700</u>
Equivalent unit costs	<u>\$ 2.25</u>	<u>\$ 1.50</u>	<u>\$ 0.75</u>

Assignment of costs

Costs transferred out (75,000 × \$2.25)	\$ 168,750
Normal spoilage (3,000 × \$2.25)	6,750
Work-in- process, ending	
Direct materials (14,500 × \$1.50)	21,750
Conversion (14,500 × \$0.75 × 0.60)	<u>6,525</u>
Costs accounted for	<u>\$203,775</u>

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-2

18.3 Apply the standard-costing method to account for spoilage.

1) Under standard costing, there is no need to calculate a cost per equivalent unit.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-3

2) Process costing is simplified when using standard costs.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-3

3) The calculation of equivalent units under standard costing is the same as under FIFO.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-3

4) Which of the following can be used in accounting for spoilage?

A) standard costs

B) FIFO

C) Weighted average

D) FIFO and weighted average but not standard costs

E) FIFO and weighted average and standard costs

Answer: E

Diff: 1 Type: MC

Skill: Apply

Objective: LO 18-3

5) The standard-costing method

A) adds a layer of complexity to the calculation of equivalent-unit costs in a process-costing environment.

B) makes calculating equivalent-unit costs unnecessary.

C) requires an analysis of the spoilage costs in beginning inventory.

D) requires an analysis of the spoilage costs in ending inventory.

E) requires a calculation of the cost allocation rate.

Answer: B

Diff: 2 Type: MC

Skill: Understand

Objective: LO 18-3

6) Springfield Sign Shop manufactures only specific orders. It uses a standard cost system. During one large order for the transit authority, an unusual number of signs were spoiled. The normal spoilage rate is 10% of units started. The point of first inspection is half way through the process, the second is three-fourths through the process, and the final inspection is at the end of the process. Other information about the job is as follows:

Signs started 3,000
 Signs spoiled 450

Direct materials put into process at beginning \$60,000
 Conversion costs for job \$120,000
 Standard direct material costs per sign \$27
 Standard conversion cost per sign \$54
 Average point of spoilage is the 3/4 completion point
 Average current disposal cost per spoiled sign \$15

Required:

Make necessary journal entries to record all transactions related to the transit authority job.

Answer: Average cost per sign when spoiled:

Direct material cost \$27.00
 Conversion ($\$54 \times 3/4$) 40.50
 Total cost per spoiled sign \$67.50

Abnormal spoilage = Total spoilage - normal spoilage
 = 450 - 300
 = 150

Materials Control (450 × \$15)	6,750	
Loss from Abnormal Spoilage (150 × \$67.50)	10,125	
Manufacturing Overhead Control (300 × \$67.50)	20,250	
Work-in-Process Control,transport job (450 × \$67.50)		30,375
Cash/Accounts Payable (450 × \$15)		6,750

Diff: 3 Type: ES

Skill: Apply

Objective: LO 18-3

8) Intelligent Composite Materials Inc. is a manufacturer of advanced composites that can be formed electronically. Direct materials are added at the start of the production process. Conversion costs are added evenly during the process. Some units of the product XJ1 are spoiled as a result of defects not detectable before inspection of finished goods. Spoiled units are disposed of at zero net disposal value. The company uses standard costs with \$300 per equivalent unit for direct materials, and \$90 per equivalent unit for conversion costs for both beginning work-in-process inventory and work done during the period. Summary data for the month of July follow:

	Physical Units	Direct Materials	Conversion Costs
Work-in-process, beginning	500	\$168,000	\$42,000
Degree of completion of beginning WIP		100%	40%
Started during July	36,000		
Good units completed & transferred during July	33,000		
Work-in-process, ending	400		
Degree of completion of ending WIP		100%	60%
Total costs added during July		\$805,000	\$620,000
Normal spoilage as a percentage of good units	5%		
Degree of completion of normal spoilage		100%	100%
Degree of completion of abnormal spoilage		100%	100%

Required:

- Prepare a production cost report assuming the spoilage is recognized.
- Prepare the necessary journal entry to record abnormal spoilage.

Answer: Total spoiled units = 500 + 36,000 - 33,000 - 400 = 3,100

Normal spoilage = 33,000 × 5% = 1,650

Abnormal spoilage = 3,100 - 1,650 = 1,450

<u>Flow of Production</u>	<u>Physical units</u>	<u>Direct materials</u>	<u>Conversion</u>
Work-in-process, beginning	500		
Started during period	<u>36,000</u>		
To account for	<u>36,500</u>		
From beginning inventory	500	0	300
Started & completed current period	32,500	32,500	32,500
Normal spoilage	1,650	1,650	1,650
Abnormal spoilage	1,450	1,450	1,450
Work-in-process ending (60%)	<u>400</u>	<u>400</u>	<u>240</u>
Accounted for	<u>36,500</u>	<u>36,000</u>	<u>36,140</u>

<u>Costs</u>	<u>Totals</u>	<u>Direct Materials</u>	<u>Conversion</u>
Work-in-process, beginning	\$168,000	500 × \$300	200 × \$90
Costs added during period	<u>14,052,600</u>	<u>(36K × \$300)</u>	<u>36,140 × \$90</u>
Costs to account for	\$14,220,600	\$10,950,000	\$3,270,600

Assignment of costs at standard costs:

Good units completed and transferred:

Beginning inventory	\$168,000
Complete beginning inventory (300 × \$90)	27,000
Started & completed (32,500 × \$390)	<u>12,675,000</u>
	\$12,870,000
Normal spoilage (1,650 × \$390)	643,500
Abnormal spoilage (1,450 × \$390)	565,500
Work-in-process, ending:	
Direct materials (400 × \$300)	120,000
Conversion (240 × \$90)	<u>21,600</u>
Costs accounted for	<u>\$14,220,600</u>

b.

Loss from Abnormal Spoilage	\$565,500
Work-in-Process	\$565,500

Diff: 3 Type: ES

Skill: Apply

Objective: LO 18-3

18.4 Apply job cost allocation procedures to account for spoilage in job costing.

1) Spoilage can be attributed to a particular job in a process costing system.

Answer: TRUE

Explanation: True if normal spoilage is attributable to a specific job.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-4

2) The costs of normal spoilage are usually assigned to individual jobs in job costing.

Answer: FALSE

Explanation: Costs of normal spoilage are usually part of manufacturing overhead

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-4

3) When normal spoilage is detected, the work-in-process control account is debited in a job costing system.

Answer: FALSE

Explanation: Manufacturing department overhead control is debited

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-4

4) In job costing, costs of abnormal spoilage are not considered as inventoriable costs and are therefore written off as costs of the period in which detection occurs.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-4

5) When assigning costs, job-costing systems generally distinguish normal spoilage attributable to a specific job from normal spoilage common to all jobs.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-4

6) Costs incurred due to spoilage in a job order costing system, may be treated in all of the following ways, EXCEPT

- A) added to abnormal spoilage and written off.
- B) added to the total cost of that particular job.
- C) allocated equally to all units at an inspection point.
- D) added to all jobs through manufacturing overhead.
- E) allocated between normal and abnormal spoilage.

Answer: C

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-4

7) What is the effect of the following journal entry?

Materials Control	280
Manufacturing Overhead Control	320
Work-in-Process Control (job #219)	600

- A) \$320 of spoilage is attributed to job #219.
- B) \$280 of spoilage is attributed to job #219.
- C) \$600 of spoilage is attributed to job #219.
- D) \$320 of spoilage is attributed to all jobs evenly.
- E) \$280 of spoilage is attributed to all jobs evenly.

Answer: D

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-4

8) Boss Manufacturing generally has spoiled goods during each job. Costs are assigned to normal spoilage at \$10.00 per unit and abnormal spoilage at \$20.00 per unit. Boss has a policy never to rework spoiled units. Management believes that once a unit is damaged it cannot be reworked into a quality product.

What is the appropriate journal entry if 500 units are considered abnormal spoilage in a job costing system?

A)

Materials Control	\$10,000
Work-in-Process Control	\$10,000

B)

Work-in-Process Control	\$5,000
Loss from Abnormal Spoilage	\$5,000

C)

Loss from Abnormal Spoilage	\$10,000
Cost of Goods Sold	\$10,000

D)

Loss from Abnormal Spoilage	\$5,000
Work-in-Process Control	\$5,000

E)

Loss from Abnormal Spoilage	\$10,000
Work-in-Process Control	\$10,000

Answer: E

Explanation: E) 500 units × \$20.00 = \$10,000

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-4

9) The Hawg Manufacturing Shop produces motorcycle parts. Typically, 20 pieces out of a job lot of 2,000 parts are normally spoiled. Costs are assigned at the inspection point, \$100.00 per unit. Spoiled pieces may be disposed of for proceeds of \$20.00 per unit. The spoiled goods must be inventoried appropriately when the normal spoilage is detected. The current job requires the production of 5,000 good parts. Which of the following journal entries properly reflects the recording of spoiled goods?

A)

Materials Control	400
Mfg. Dept. Overhead Control	1,600
Work-in-Process Control	2,000

B)

Materials Control	1,000
Manufacturing Overhead Control	4,000
Work-in-Process Control	5,000

C)

Work-in-Process Control	5,000
Materials Control	1,000
Manufacturing Overhead Control	4,000

D)

Manufacturing Overhead Control	2,000
Materials Control	400
Work-in-Process Control	1,600

E)

Manufacturing Overhead Control	1,000
Materials Control	400
Work-in-Process Control	600

Answer: B

Explanation: B) Materials Control: 50 pieces × \$20.00 = \$1,000

Manufacturing Overhead Control: 50 pieces × (\$100.00 - \$20.00) = \$4,000

WIP - Control: 50 pieces × \$100.00 = \$5,000

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-4

10) A company manufactures draperies. Because of strict production specifications, the manufacturing department often has spoiled items. If the spoiled items are under 10 percent of a job's total items they are treated as normal spoilage. During February job #101 for 200 draperies had 16 spoiled items. The spoiled items were detected immediately before they were packaged. They had already passed the safety inspection. The marketing manager believes the items can be sold for \$280 each. They had a cost at point of detection of \$600 each. These costs included \$300 for direct manufacturing labour, \$200 for direct materials, and \$100 for factory overhead.

Required:

- a. Make the necessary journal entry, or entries, to record the spoiled units if the spoilage is normal and assigned to an overhead control account.
- b. Make the necessary journal entry, or entries, to record the spoiled units if the spoilage is assigned to job #101.

Answer:

a.

Materials Control (16 × \$280)	4,480	
Manufacturing Dept. Overhead Control (Normal spoilage) (16 × (\$600 - \$280))	5,120	
Work-in-Process Control (Job # 101)		9,600

b.

Materials Control	4,480	
Work-in-Process Control (Job # 101)		4,480

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-4

11) A company manufactures leather jackets. Because of strict production specifications, the manufacturing department often has spoiled items. If the spoiled items are under 5 percent of a job's total items they are treated as normal spoilage. During February job #301 for 200 jackets had 8 spoiled items. The spoiled items were detected immediately before they were packaged. They had already passed the safety inspection. The marketing manager believes the items can be sold for \$150 each. They had a cost at point of detection of \$500 each. These costs included \$250 for direct manufacturing labour, \$200 for direct materials, and \$50 for factory overhead.

Required:

- a. Make the necessary journal entry, or entries, to record the spoiled units if the spoilage is normal and assigned to an overhead control account.
- b. Make the necessary journal entry, or entries, to record the spoiled units if the spoilage is assigned to job #101.

Answer:

a.

Materials Control (8 × \$150)	1,200	
Manufacturing Dept. Overhead Control (Normal spoilage) (8 × (\$500 - \$150))	2,800	
Work-in-Process Control (Job # 301)		4,000

b.

Materials Control	1,200	
Work-in-Process Control (Job # 301)		1,200

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-4

12) Shazam Machines produces numerous types of money change machines. All machines are made in the same production department and many use exactly the same processes. Because customers have such different demands for the machine characteristics, the company uses a job costing system. Unfortunately, some of the production managers have been upset for the last few months when their jobs were charged with the spoilage that occurred over an entire processing run of several types of machines. Some of the best managers have even threatened to quit unless the accounting system is changed.

Required: What recommendations can you suggest to improve the accounting for spoilage?

Answer: Since the manufacturing process uses similar workstations for the products, it may be best to let the spoilage be considered a manufacturing problem rather than a job problem. With this assumption, the spoilage will be spread over the entire production process with each job being charged an appropriate amount of spoilage, thereby relieving some jobs of bearing the entire burden of spoilage just because they were being worked on when the machines or process malfunctioned.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-1

18.5 Apply cost allocation procedures to account for reworked units and scrap.

1) An example of rework is when a shoe manufacturer uses leftover leather from shoes to make leather watch bands.

Answer: FALSE

Explanation: Reworks are unacceptable units of production that are subsequently reworked into good units and sold.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-5

2) Accounting for rework in process-costing requires that abnormal rework be distinguished from normal rework.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-5

3) One of the major aspects of accounting for scrap is inventory costing, which includes when and how scrap affects operating income.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 18-5

4) There is no cost attached to scrap.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 18-5

5) Scrap has no value (or minimal value) therefore it is not traced back to specific jobs.

Answer: FALSE

Explanation: Scrap may be traced to individual jobs when the tracing can be done in an economically feasible way.

Diff: 2 Type: TF

Skill: Apply

Objective: LO 18-5

6) Reworked goods are unacceptable units of production usually not capable of being repaired or converted into a salable product.

Answer: FALSE

Explanation: Reworked goods are unacceptable units of production that can be repaired into a salable product.

Diff: 2 Type: TF

Skill: Understand

Objective: LO 18-5

7) When rework is normal and NOT attributable to a specific job, the costs of rework are charged to manufacturing overhead and are spread, through overhead allocation, over all jobs.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 18-5

8) What is the effect of the following journal entry?

Manufacturing Overhead Control (rework)	125
Materials Control	30
Wages Payable	80
Manufacturing Overhead Control Allocated	15

A) to allocate \$125 of overhead as rework costs

B) to expense \$125 of overhead as rework costs

C) to set up rework costs on the balance sheet

D) to record \$125 of overhead as rework costs

E) to accumulate rework costs so they can be assigned to a specific job

Answer: D

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-5

9) Which of the following entries reflects the original cost assignment before production items are reworked?

A)

Work-in-Process Control	XXX
Materials Control	XXX
Wages Payable Control	XXX
Mfg. Overhead Allocated	XXX

B)

Finished Goods Control	XXX
Work-in-Process Control	XXX

C)

Mfg. Overhead Allocated	XXX
Materials Control	XXX
Work-in-Process Control	XXX

D)

Materials Control	XXX
Wages Payable Control	XXX
Work-in-Process Control	XXX
Mfg. Overhead Allocated	XXX

E)

Work-in-Process Control	XXX
Materials Control	XXX
Wages Payable Control	XXX
Mfg. Overhead Allocated	XXX

Answer: A

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-5

10) Which of the following entries would correctly record costs associated with reworked items?

A)

Work-in-Process Control	XXX	
Materials Control		XXX
Wages Payable Control		XXX
Mfg. Overhead Allocated		XXX

B)

Finished Goods control	XXX	
Work-in-Process Control		XXX

C)

Mfg. Overhead Allocated	XXX	
Materials Control	XXX	
Work-in-Process Control		XXX

D)

Materials Control	XXX	
Wages Payable Control	XXX	
Work-in-Process Control		XXX
Mfg. Overhead Allocated		XXX

E)

Work-in-Process Control	XXX	
Materials Control	XXX	
Wages Payable Control		XXX
Mfg. Overhead Allocated		XXX

Answer: A

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-5

11) When abnormal rework is distinguished from normal rework, and charged to a separate loss account, which of the following is a likely result?

- A) Prices will have to increase on the company's products accordingly.
- B) The amount of normal spoilage unfavourable efficiency variances will be less.
- C) The amount of normal spoilage unfavourable efficiency variances will be more.
- D) The amount of normal spoilage unfavourable efficiency variances will be unchanged.
- E) The abnormal spoilage variance will be closed to cost of goods manufactured.

Answer: B

Diff: 3 Type: MC

Skill: Understand

Objective: LO 18-5

12) Which of the following is NOT a consideration when accounting for scrap?

- A) the timing of the recognition of proceeds from disposal
- B) inventory costing, including when and how to affect operating income
- C) planning and control includes physical tracking
- D) decisions as to whether to group scrap with reworked units
- E) the reduction from theft

Answer: E

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-5

13) Which of the following journal entries could appropriately record the cash sale of scrap?

A)

Cash	XXX
Materials control	XXX

B)

Sales of Scrap	XXX
Accounts Receivable	XXX

C)

Manufacturing Dept. Overhead Control	XXX
Accounts Payable	XXX

D)

Cash	XXX
Accounts Payable	XXX

E)

Cash	XXX
Manufacturing Overhead Allocated	XXX

Answer: A

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-5

14) Sales of scrap may be traced to the individual jobs in which it occurred when the _____ system is used.

- A) budgeted costing
- B) job-costing
- C) process costing
- D) revenue costing
- E) weighted-average costing

Answer: B

Diff: 1 Type: MC

Skill: Remember

Objective: LO 18-5

15) Which account is debited when scrap is reused as direct material?

- A) work-in-process-control
- B) materials control
- C) manufacturing overhead control
- D) scrap inventory
- E) manufacturing overhead allocated

Answer: A

Diff: 1 Type: MC

Skill: Remember

Objective: LO 18-5

16) When scrap is returned to the storeroom, so that it may be used as direct material, which account is debited?

- A) work-in-process control
- B) materials control
- C) manufacturing overhead control
- D) scrap inventory
- E) sales of scrap

Answer: B

Diff: 1 Type: MC

Skill: Remember

Objective: LO 18-5

17) Assume the amount of scrap is material and the scrap is sold immediately after it is produced. If the scrap attributable to a specific job is sold on account, the journal entry is

A)

Work-in-Process Control
Cash

B)

Work-in-Process Control
Accounts Receivable

C)

Accounts Receivable
Work-in-Process Control

D)

Work-in-Process Control
Accounts Payable

E)

Cash
Work-in-Process Control

Answer: C

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-5

18) If scrap, common to all jobs, is returned to the storeroom and the time between the scrap being inventoried and its disposal is quite lengthy, the journal entry is:

A)

Work-in-Process Control
Materials Control

B)

Materials Control
Work-in-Process Control

C)

Manufacturing Overhead Control
Materials Control

D)

Materials Control
Manufacturing Overhead Control

E)

Materials Control
Manufacturing Overhead Allocated

Answer: D

Diff: 2 Type: MC

Skill: Remember

Objective: LO 18-5

Answer the following questions using the information below:

Jansen Corporation uses job costing in its' metal fabrication plant. During February Job 117 was completed and the scrap generated was not usable by other jobs. Job 124 was also completed in February and the scrap created was usable by other jobs.

19) Which journal entry correctly records the sale of scrap from Job 117 for \$250?

A)

Cash	250	
Work-in-Process		250

B)

Cash	250	
Sales of Scrap		250

C)

Cash	250	
Materials Control		250

D)

Cash	250	
Manufacturing Overhead Control		250

E)

Cash	250	
Cash Manufacturing Overhead Allocated		250

Answer: A

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-5

20) Which of the following is the correct journal entry if Job 124 created scrap that is common to all jobs?

A)

Accounts Receivable	90	
Work-in-Process Control		90

B)

Materials Control	90	
Work-in-Process Control		90

C)

Work-in-Process Control	90	
Manufacturing Overhead Control		90

D)

Materials Control	90	
Manufacturing Overhead Control		90

E)

Cash	90	
Work-in-Process Control		90

Answer: D

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-5

21) Which of the following is the correct journal entry if the scrap created by Job 124 is subsequently used by another job?

A)

Materials Control	90
Manufacturing Overhead Control	90

B)

Work-in-Process Control	90
Manufacturing Overhead Control	90

C)

Manufacturing Overhead Allocated	90
Manufacturing Overhead Control	90

D)

Work-in-Process Control	90
Manufacturing Overhead Allocated	90

E)

Work-in-Process Control	90
Materials Control	90

Answer: E

Diff: 2 Type: MC

Skill: Apply

Objective: LO 18-5

22) Boutin Company uses a job costing system. During October, the following costs are incurred on Job 110 to manufacture 200 motors:

Original costs:

Direct materials	\$6,600
Direct manufacturing labour	8,000
Manufacturing overhead allocated (150% of direct manufacturing labour)	<u>12,000</u>
Total	<u>\$26,600</u>

Direct cost of reworking 10 motors:

Direct materials	\$1,000
Direct manufacturing labour	<u>1,600</u>
Total	<u>\$2,600</u>

Required:

- Prepare the journal entry to record the rework costs, assuming the rework is attributable specifically to Job 110.
- Compute the cost per finished motor for Job 110, assuming the rework is attributable specifically to this job.
- Prepare the journal entry to record the rework costs, assuming the rework is common to all jobs.
- Compute the cost per finished motor for Job 110, assuming the rework is common to all jobs.

Answer:

a.

Work-in-Process Control	5,000	
Materials Control		1,000
Wages Payable Control		1,600
MOH Allocated(\$1,600 × 150%)		2,400

b. Cost per finished motor = $\$26,600 + \$5,000/200 = \$158$

c.

MOH Control	5,000	
Materials Control		1,000
Wages Payable Control		1,600
MOH Allocated(\$1,600 × 150%)		2,400

d. Cost per finished motor = $\$26,600/200 = \133

Diff: 3 Type: ES

Skill: Apply

Objective: LO 18-5

25) Robotoys Incorporated manufactures and distributes small robotic toys. Reworked units are common. The average cost of the reworked orders is \$11.30: \$4.15 for labour, \$5.00 for more materials, and \$2.15 for overhead. This ratio of costs holds for the average original order. On a recent day, the shop reworked 83 orders out of 700. The original cost of the 83 orders totaled \$1,909. The average cost of all orders is \$24.34, including rework, with an average selling price of \$34.50.

Required:

Prepare the necessary journal entry to record the rework for the day if the shop charges such activities to Robo Department Overhead Control. Prepare journal entries to record all relevant rework charges as well as to transfer the reworked items finished goods to Finished Goods Inventory.

Answer:	Robo Department Overhead Control	937.90
	Materials Control (83 × \$5.00)	415.00
	Wages Payable Control (83 × \$4.15)	344.45
	Shop Overhead Control (83 × \$2.15)	178.45

Finished Goods	1,909	
Work-in-Process Control		1,909

Diff: 2 Type: ES

Skill: Apply

Objective: LO 18-5

26) Bluefish Machine Shop is a manufacturer of motorized cars for golf clubs. Leona Pez, the plant manager of Bluefish, obtained the following information for Job #99 in July 2015. A total of 50 units were started, and 3 spoiled units were detected and rejected at final inspection. The spoiled units were considered to be normal spoilage. Costs prior to the inspection point are \$1,200 per unit. The current disposal price of the spoiled units is \$600 per unit. When spoilage is detected, the spoiled units are inventoried at \$600 per unit.

Required:

1. Prepare journal entries to record the normal spoilage, assuming:
 - a. The spoilage is related to a specific job.
 - b. The spoilage is common to all jobs.
 - c. The spoilage is considered to be abnormal spoilage.
2. Assume that 2 spoiled units can be reworked for a total cost of \$800. A total cost of \$2,400 associated with these units has already been assigned to job #99 before the rework. Prepare journal entries for the rework assuming:
 - a. The rework is related to a specific job.
 - b. The rework is common to all jobs.
 - c. The rework is considered to be abnormal.

Answer:

1 (a) The spoilage is related to a specific job.

Materials Control (3 × \$600)	1,800	
Work-in-Process Control (Job #99)		1,800

1 (b) The spoilage is common to all jobs.

Materials Control	1,800	
Manufacturing Overhead Control	1,800	
Work-in-Process Control (Job #99)		3,600

1 (c) The spoilage is considered to be abnormal spoilage.

Materials Control	1,800	
Loss from Abnormal Spoilage	1,800	
Work-in-Process Job #99		3,600

2 (a) The rework is related to a specific job.

Work-in-Process Control (Job #99)	800	
Various Accounts		800

2 (b) The rework is common to all jobs.

Manufacturing Overhead Control	800	
Various Accounts		800

2 (c) The rework is considered to be abnormal.

Loss from Abnormal Rework	800	
Various Accounts		800

Diff: 3 Type: ES

Skill: Apply

Objective: 18-4, 5

27) Marvin Randall had a background in the manufacturing of building bricks. The building brick industry used clay and other material which were first mixed, then aged. After aging, they were molded into shapes, retouched and fired in kilns. The materials were fairly durable and spoilage was not significant. As a result, any spoilage that did occur was not specifically accounted for. Marvin saw the similarities between brick and tile manufacturing and felt that he could apply his knowledge successfully in tile manufacturing and started his business, Randall Tile Ltd. on July 1.

In tile manufacturing, as it brick manufacturing, the process starts with the selection of the raw materials including clays. However feldspar, sand, and other materials are used. In the initial stages, it is important that all materials are homogenized; this is done through a wet grinding process. The material output of this process is known as slip.

Water content is then removed from the slip through spray-drying . After, the material is moulded , pressed and dried before the tiles are fired. Hydraulic presses are used to guarantee maximum compaction. Consistency in the press cycle time is critical to ensure the tiles have the correct moisture content. If the water content is too high, the tiles will crack or break.

Unglazed tiles proceed to firing, whereas glazed tiles must first be covered with one or more layers of glaze. Firing time and temperature are important in the firing process to ensure the resulting product meets required specifications for strength, stability, resistance and easy cleaning.

After firing, tiles are inspected for quality. Irregularities in size, shape or colouring will lead to spoiled units. The final step is packing the ceramic tiles.

Randall Tile was organized into 4 main departments.: 1) Mixing & Grinding, 2) Moulding & Pressing, 3) Glazing & Firing and 4) Inspecting & Packing. Randall was not manufacturing many glazed tiles, so any glazing that was required was done in the Firing department. The weighted average method of process costing was used in each department, however spoilage was not tracked. Marvin quickly realized that, although the processes in brick and tile manufacturing processes were similar, tile manufacturing required much more precision. After 3 months of operations, he estimated that he had a 50% defect rate when considering all stages of manufacturing. Employees were frustrated by the constant changes in manufacturing as pressing times, firing times, and temperatures were all altered in attempts to improve quality. Furthermore, Marvin believed that both frustration and nervousness led to high spoilage in the packing process.

Required:

What factors might have contributed to the high defect rate that Marvin noted? What steps might Marvin have taken prior to starting production to minimize defects? What recommendations would you make to Marvin regarding the management accounting system at Randall Tile?

Answer: The question is intended to be open-ended. Instructors can gauge points that they feel should be brought up by students based on the sequencing of material.

Some factors that may have contributed to the high defect rate:

- 1) Inexperience of workers and Randall specifically in the tile business. This inexperience could cause inefficiencies not only in each stage of production, but also in purchasing appropriate direct materials. Students might refer to *learning curves*.
- 2) Inappropriate training. Any deficiencies in training affects productivity directly and indirectly through job dissatisfaction. The frustration and nervousness may be a result of workers feeling inadequate. This especially might be the case if the workers' compensation is adversely affected by the defect rate. (*relate to budgets, management control systems*)
- 3) Poor plant layout/conditions. It is possible that conditions in the plant itself are affecting productivity. For example, if humidity is not properly controlled, it will affect the moisture content of the tiles and result in more breakage.

Steps Prior to Production:

- 1) The problem refers to Marvin's experience in the brick industry. Perhaps he was not as familiar as he had hoped with the differences between the two production processes. He could have observed tile production, taken additional training, hired staff with experience in the tile industry, formed a strategic alliance or joint venture with another tile manufacturer.
- 2) The problem does not outline how much training the press operators and other production workers received. Students can identify additional training as an appropriate step.
- 3) Target spoilage rates could have been set and spoilage monitored. This would have allowed Marvin to know how much spoilage was occurring and might have permitted corrective actions to be taken early. (*Relate to budgeting and performance management*)
- 4) The company could have done small trial runs on different sizes and types of tiles rather than experimenting with the different variables (temperature etc.) during production.

Recommendations:

- 1) Set target normal spoilage rates and ensure that the accounting system is accounting for normal and abnormal spoilage.
- 2) Depending on the size of production runs, evaluate whether job costing or process costing should be used.
- 3) Set up a quality reporting system and evaluate whether there are testing procedures that can be used earlier in the production process to minimize the loss from spoiled units. (*Costs of quality*)
- 4) Assess the workers' morale and evaluate the alternative performance measures and rewards that may be used to assess and motivate the workers. (*Budgets and performance management*) If there is a learning curve, target performance to improvements in productivity or defect rates, rather than absolute measures.

Note: other valid points may be raised by students. The above comments are suggested points for discussion.

Diff: 3 Type: ES

Skill: Evaluate

Objective: Cumulative

28) When a unit has to be reworked, the rework may be classified in three ways. What are those ways, and how does the accounting for each differ?

Answer: The rework may be (1) normal rework attributable to a specific job; (2) normal rework common to all jobs; or (3) abnormal rework. If the rework is attributable to a specific job, then the cost of such rework should be charged to that job. If the rework is common to all jobs, then the cost of the rework should be charged to manufacturing overhead and spread across all jobs. If the rework is abnormal rework then the cost of the rework should be charged as a loss to the period in which the rework is required.

Diff: 2 Type: ES

Skill: Remember

Objective: LO 18-5

29) There are two alternative points in time for recognizing scrap in the accounting records. What are these two points in time? Explain why a company might choose one over the other.

Answer: The two points are 1) time of sale and 2) time of production. Recognizing the scrap at time of sales is the easier of the two approaches and is acceptable because, by definition, scrap has minimal sales value and hence is not material. However, if the value of the scrap is significant, and there is a delay between its occurrence and its sale, then it is appropriate to value the scrap at a conservative value. This permits better matching.

Diff: 2 Type: ES

Skill: Remember

Objective: LO 18-5

30) How can a company account for scrap? Include in your explanation a discussion of the two aspects of accounting for scrap.

Answer: Since scrap is a residual material that results from manufacturing a product, it has a low sales value as compared to the actual value of the product. The aspects of accounting for scrap are (1) planning and control of the scrap (which includes the physical tracking), and (2) inventory costing (which includes when and how scrap affects operating income).

Regarding the planning and control of the scrap it is important to measure how much scrap is being generated (by weighing or counting the pieces) and then keep records to indicate where the scrap is keeping a log of quantity and location. This will help to develop records that can be used to compare the amount of scrap generated to the expected amount generated based on budgets and units of good product completed. Also, since scrap has a value, it will reduce the likelihood that the scrap gets stolen.

In terms of the cost accounting for the scrap there are two options regarding when the scrap is potentially recognized in the accounting records: (1) at the time the scrap is produced, or (2) at the time the scrap is sold. If the dollar value of the scrap is immaterial, the simplest accounting method is to record the quantity of scrap returned to the storage area and then regard the scrap sales as a separate line item in the income statement. If the scrap is material in value, then it can be recognized at the time of its production and can have journal entries returning it to a materials control asset account (as a debit) and then credited when it later gets sold.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 18-5