

*Cost Accounting, Cdn. Ed., 7e (Horngren)*

**Chapter 17 Process Costing**

17.1 Distinguish process- from job-costing allocation methods within the decision framework, and apply the weighted-average method of inventory valuation when the beginning work-in-process inventory is zero.

1) The primary difference between job costing and process costing is the extent of averaging used to compute unit costs of products or services.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 17-1

2) Standard costing can be used in process costing systems.

Answer: TRUE

Explanation:

Diff: 1 Type: TF

Skill: Remember

Objective: LO 17-1

3) Operating personnel must be able to estimate the percentage of work-in-process completed in process costing.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 17-1

4) Equivalent units measure output in terms of the physical quantities of each of the inputs (factors of production) that have been consumed by the units.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-1

5) Process costing is extremely useful when there are a variety of products produced, as compared to the production of a single product.

Answer: FALSE

Explanation: In a process costing system all units produced are identical (or very similar)

Diff: 1 Type: TF

Skill: Remember

Objective: LO 17-1

6) Examples of industries that would use process costing include the pharmaceutical and semiconductor industry.

Answer: TRUE

Diff: 1 Type: TF

Skill: Understand

Objective: LO 17-1

7) Process-costing systems separate costs into cost categories according to the timing of when costs are introduced into the process.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-1

8) When identical or similar units of products or services are mass produced, job-costing is used to calculate an average production cost for all units produced.

Answer: FALSE

Explanation: When identical or similar units of products or services are mass produced, process costing is used to calculate an average production cost for all units produced.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-1

9) When there are insignificant amounts of beginning and ending inventory then the weighted-average and FIFO process costing methods will generate results that are not materially different.

Answer: TRUE

Diff: 2 Type: TF

Skill: Understand

Objective: LO 17-1

10) In process costing only the weighted average and FIFO methods are IFRS/ASPE compliant.

Answer: FALSE

Explanation: Standard costing is also IFRS/ASPE compliant.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-1

11) Costing systems that are used for costing like or similar units of products in mass production are called

A) inventory-costing systems.

B) job-costing systems.

C) process-costing systems.

D) weighted-average costing systems.

E) bulk costing systems.

Answer: C

Diff: 1 Type: MC

Skill: Remember

Objective: LO 17-1

12) Which of the following manufactured products should use process costing?

- A) 767 jet aircraft
- B) bags of cement
- C) custom build houses
- D) designer original evening gowns
- E) expensive jewelry

Answer: B

Explanation: B) Homogeneous product

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-1

13) Which of the following is FALSE concerning process costing?

- A) Process costing can only be used in manufacturing.
- B) Process costing is used when outputs are homogeneous.
- C) In process costing, labour and overhead costs are often combined and classified as conversion costs.
- D) In process costing, some units will be incomplete at the end of the period.
- E) Process costing averages unit costs of production.

Answer: A

Diff: 1 Type: MC

Skill: Remember

Objective: LO 17-1

14) Compare and contrast process costing and job order costing.

Answer: In job costing the job or product is a distinctly identifiable product or service. Each job requires (or can require) vastly different amounts of input. Job costing is usually associated with products that are unique or heterogeneous. Thus, each job requires different amounts of input, and they can require vastly different amount of costs to finish. Job-costed products tend to be high cost per unit. Thus the costs of each (unique) job are important for planning, pricing, and profitability.

In process costing, the jobs or products are similar (or homogeneous). Each job usually requires the same inputs, and results in approximately the same costs per unit. The cost of a product or service is obtained by assigning total costs to many identical or similar units. We assume each unit receives the same amount of direct material costs, direct manufacturing labour costs, and indirect manufacturing costs. Unit costs are then computed by dividing total costs by the number of units.

The principal difference between process costing and job costing is the extent of averaging used to compute unit costs. As noted above in job costing, individual jobs use different quantities of production resources; whereas in process costing, we assume that each job uses approximately the same amount of resources.

Diff: 3 Type: ES

Skill: Evaluate

Objective: LO 17-1

15) The president of the Gulf Coast Refining Corporation wants to know why his golfing partner, who is the chief financial officer of a large construction company, calculates his costs by the job, but his own corporation calculates costs by large units rather than by individual barrel of oil.

Answer: Oil refineries use process costing to calculate their costs per barrel of oil. Each barrel of oil is essentially the same. Thus, costs are accumulated for all the oil processed during a given time period, and the total costs are divided by the barrels of oil produced. An average cost is calculated. Since the costs to actually produce the oil are essentially the same, accuracy is not lost by this process.

The construction company calculates costs by each job, since each job can require substantially different amounts of the various inputs. Thus, the cost of each job could be radically different from the other jobs.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 17-1

16) Discuss some typical products which would likely use process costing.

Answer: In a process-costing system, the units produced as output are very similar to one another. As a result, the means by which the raw material is converted to a finished product is common among all of the products. This allows the conversion costs to be summed up and divided by the total number of units for an accurate conversion cost on a unit by unit basis. Some typical types of products which are likely to use process costing are oil refineries, ice cream, various food preparation industries, etc. This is because the raw material is processed in a similar manner for all of the units produced.

Diff: 1 Type: ES

Skill: Understand

Objective: LO 17-1

17) What is meant by the term "prime cost pool"?

Answer: A prime cost is a direct cost. In most process costing operations, labour is not treated as a direct cost, but rather as an indirect cost and is grouped with overhead as part of conversion costs. Therefore, a prime cost pool in process costing is normally the direct materials cost pool.

Diff: 2 Type: ES

Objective: LO 17-1

18) Why do we need to accumulate and calculate unit costs in process costing (and also job costing)?

Answer: We need to accumulate unit costs to:

1. Budget (planning)
2. Price
3. Account for the costs

1. *Budgeting* — To operate a successful business, we should prepare budgets, review the results, and make decisions as to how well our business is doing. Our business has formulated plans for the future. The resources we need for the future (materials, conversion costs, facilities, etc.) will depend on our estimate of the resources we need to accomplish these goals. An important part of these estimates is the unit costs of the products we plan to produce. These unit costs will tell us how many dollars we must acquire to accomplish our plans.

2. *Price* — In order to be a profitable business, we must sell our product at a price in excess of what it costs us to produce the product. Essential for the pricing decision is the cost per unit. We will also learn whether we can sell a product at a profit.

3. *Accounting* — During the course of the accounting period, we will be accumulating costs. At the end of the accounting period, we must allocate this pool of costs between the units that were transferred out and the goods in ending inventory. Unit costs are essential for this purpose.

Diff: 2 Type: ES

Skill: Understand

Objective: Cumulative

17.2 Contrast the journal entries for a process-costing system when there is and when there is not ending work-in-process inventory using the weighted-average method of inventory valuation.

1) Production costs are divided into three classifications: administrative costs, direct materials, and conversion costs in process costing.

Answer: FALSE

Explanation: Only inventoriable costs so administrative costs are incorrect

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-2

2) Process-costing journal entries and job-costing journal entries are similar with respect to direct materials and conversion costs.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-2

3) The accounting (for a bakery) entry to record the transfer of rolls from the mixing department to the baking department is:

Work in Process-Mixing Department
Work in Process-Baking Department

Answer: FALSE

Explanation: The correct accounting entry is the opposite of the entry shown here.

Diff: 2 Type: TF

Skill: Understand

Objective: LO 17-2

4) Process-costing journal entries and job-costing journal entries are similar except for the multiple work-in-process accounts in the job-costing system.

Answer: FALSE

Explanation: The number of WIP accounts is related to the number of processes or departments

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-2

5) A key feature in process costing is that

A) total costs are divided by total equivalent units.

B) total units are multiplied by total costs.

C) (total costs times percentage allocated to each unit) are divided by total units.

D) (total units multiplied by the percentage allocated to each unit) is multiplied by total costs.

E) total units are multiplied by individual costs.

Answer: A

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-2

6) Which of the following is FALSE concerning equivalent units?

A) Equivalent units are calculated separately for each cost category.

B) Equivalent units are equal to physical units.

C) Equivalent units measure output in terms of the physical quantities of the inputs consumed.

D) Equivalent units are necessary when process costing is used.

E) The number of equivalent units may be identical for direct materials and for conversion costs.

Answer: B

Diff: 2 Type: MC

Skill: Remember

Objective: LO 17-2

7) When a bakery transfers goods from the Baking Department to the Decorating Department, the accounting entry is

A)

Work in Process – Baking Department
Work in Process – Decorating Department

B)

Work in Process – Decorating Department
Accounts Payable

C)

Work in Process – Decorating Department
Work in Process-Baking Department

D)

Work in Process – Baking Department
Accounts Payable

E)

Finished Goods - Decorating Department
Work in Process-Baking Department

Answer: C

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-2

8) Excalibur Ltd. began operations on October 1 of the current year. Its production requires that direct materials are added at the beginning of the process and conversion costs are incurred uniformly. Direct materials costs for October were \$380,000 and conversion costs were \$1,750,000. There were 80,000 units started during the month. The ending inventory was 25,000 units which were 60% complete. The cost per equivalent unit for direct materials was

A) \$4.75.

B) \$15.20.

C) \$5.85.

D) \$5.43.

E) \$7.92.

Answer: A

Explanation: A)  $\$380,000/80,000 = \$4.75$ , direct materials are added at the beginning.

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-2

9) Excalibur Ltd. began operations on October 1 of the current year. Its production requires that direct materials are added at the beginning of the process and conversion costs are incurred uniformly. Direct materials costs for October were \$380,000 and conversion costs were \$1,750,000. There were 80,000 units started during the month. The ending inventory was 25,000 units which were 60% complete. The cost per equivalent unit for conversion was

A) \$25.00.

B) \$21.88.

C) \$70.00.

D) \$116.67.

E) \$16.67.

Answer: A

Explanation: A)  $\$1,750,000 / [55,000 + 15,000] = \$25$  (80,000 units started, 25,000 Ending, so 55,000 units started and completed in the period; 25,000 units \* 60% = 15,000 EU)

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-2

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

Father Time Clock Shop manufactures clocks on an automated assembly line. It utilizes two cost categories: direct materials and conversion costs. Each product must pass through the Assembly Department and the Testing Department. Direct materials are added at the beginning of production, while conversion costs are allocated evenly throughout production, and the company uses weighted-average costing.

Data for the Assembly Department are:

Work in process, beginning inventory	250 units
Direct materials (100% complete)	
Conversion costs (50% complete)	
Units started during June	800 units
Work in process, ending inventory	150 units
Direct materials (100% complete)	
Conversion costs (75% complete)	
Work in process, beginning inventory	
Direct materials	\$180,000
Conversion costs	\$270,000
Direct materials costs added during June	\$1,000,000
Conversion costs added during June	\$1,000,000

10) Which of the following entries would be made to record the issue of direct materials in the Testing Department, under process-costing?

- A) debit to Testing Department assets
- B) debit to Testing Department Materials Inventory
- C) debit to Work in Process - Testing Department
- D) credit to Direct Materials
- E) credit to Work in Process - Testing Department

Answer: C

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-2

11) The Zygon Corporation was recently formed to produce a semiconductor chip that forms an essential part of the personal computer manufactured by a major corporation. The direct materials are added at the start of the production process while conversion costs are added uniformly throughout the production process. June is Zygon's first month of operations, and therefore, there was no beginning inventory. Direct materials cost for the month totaled \$895,000, while conversion costs equaled \$4,225,000. Accounting records indicate that 475,000 chips were started in June and 425,000 chips were completed.

Ending inventory was 50% complete as to conversion costs.

Required:

- What is the total manufacturing cost per chip for June?
- Allocate the total costs between the completed chips and the chips in ending inventory.

Answer:

a.

	<b>Direct Materials</b>	<b>Conversion Costs</b>	<b>Total</b>
Cost to account for	\$895,000	\$4,225,000	\$5,120,000
Divided by equiv units	<u>475,000</u>	<u>450,000</u>	
Cost per equivalent units	<u>\$1.88</u>	<u>\$9.39</u>	\$11.27

Equivalent unit for conversion costs =

$$425,000 \text{ completed} + (50,000 \times 0.5 \text{ completed}) =$$

$$425,000 + 25,000 = 450,000$$

b.

$$\text{Completed units} = \$11.27 \times 425,000 = \$4,789,750$$

Ending work in process = Direct materials = 50,000 × \$1.88 =	\$94,000
Conversion costs = 25,000 × \$9.39 =	<u>234,750</u>
Total	<u>\$328,750</u>

Diff: 2 Type: ES

Skill: Apply

Objective: LO 17-2

12) Treated Lumber Company specializes in processing treated wood. All direct materials are included at the inception of the sawing process and conversion is applied at the end of the process. For December there was no beginning inventory in the sawmill. Direct materials totalled \$399,750 for the month and conversion costs totalled \$165,000. work-in-process records revealed that 75,000 boardmetres were started in December and that 55,000 boardmetres were completed. Ending work-in-process units are complete only in respect to direct materials costs.

Required:

- What is the total manufacturing cost per equivalent unit (boardmetres) for December?
- What are the costs assigned to completed boardmetres in December?
- What are the costs transferred out during December?
- What are the amounts assigned to December's ending work-in-process inventory?

Answer:

a.

	<u>Materials</u>	<u>Conversion</u>	<u>Totals</u>
Cost to account for:	\$399,750	\$165,000	\$564,750
Equivalent units:	75,000	55,000	
Cost per equivalent unit	<u>\$5.33</u>	<u>\$3.00</u>	<u>\$8.33</u>

b. Assigned to completed units:  $(55,000 \times \$8.33) = \$458,150$

c. Transferred out:  $(55,000 \times \$8.33) = \$458,150$

d. Ending work-in-process inventory:

Direct materials $(20,000 \times \$5.33)$	\$106,600
Conversion $(0 \times \$3.00)$	<u>0</u>
Total	<u>\$106,600</u>

Diff: 2 Type: ES

Skill: Apply

Objective: LO 17-2

13) The Parson Valve Corporation was recently formed to produce a brass valve that forms an essential part of a compressor manufactured by a major corporation. The direct materials are added at the start of the production process while conversion costs are added uniformly throughout the production process. September is Parson's first month of operations, and therefore, there was no beginning inventory. Direct materials cost for the month totaled \$1,400,000, while conversion costs equaled \$1,800,000. Accounting records indicate that 800,000 valves were started in September and 700,000 valves were completed.

Ending inventory was 20% complete as to conversion costs.

Required:

- What is the total manufacturing cost per valve for September?
- Allocate the total costs between the completed valves and the valves in ending inventory.

Answer:

a.

	Direct Materials	Conversion Costs	Total
Cost to account for	\$1,400,000	\$1,800,000	\$3,200,000
Divided by equiv. units	<u>800,000</u>	<u>720,000</u>	
Cost per equivalent units	<u>\$1.75</u>	<u>\$2.50</u>	\$4.25

Equivalent unit for conversion costs =

$$700,000 \text{ completed} + (100,000 \times 0.2 \text{ completed}) = \\ 700,000 + 20,000 = 720,000$$

b.

$$\text{Completed units} = \$4.25 \times 700,000 = \$2,975,000$$

$$\begin{aligned} \text{Ending work in process} = \text{Direct materials} &= 100,000 \times \$1.75 = \$175,000 \\ \text{Conversion costs} &= 20,000 \times \$2.50 = \underline{50,000} \\ \text{Total} &= \underline{\underline{\$225,000}} \end{aligned}$$

Diff: 2 Type: ES

Skill: Apply

Objective: LO 17-2

14) Cedar Rapids Chemical placed 220,000 liters of direct materials into the mixing process. At the end of the month, 10,000 liters were still in process, 30% converted as to labour and factory overhead. All direct materials are placed in mixing at the beginning of the process and conversion costs occur evenly during the process. Cedar Rapids Chemical uses weighted-average costing.

Required:

Determine the equivalent units in process for direct materials and conversion costs, assuming there was no beginning inventory.

Answer:

a. Direct materials:

Beginning inventory	0 liters
Units started	<u>220,000 liters</u>
Equivalent units	<u>220,000 liters</u>

Conversion costs:

Beginning inventory	0 liters
Units started	<u>220,000 liters</u>
To account for	220,000 liters
Units transferred out	<u>210,000 liters</u>
Ending inventory	<u>10,000 liters</u>

Units transferred out	210,000 liters
Ending inventory, 30% complete	<u>3,000 liters</u>
Equivalent units	<u>213,000 liters</u>

Diff: 2 Type: ES

15) List and describe the five steps in process costing.

Answer: Step 1 involves summarizing the physical flow of the units of output. Step 2 involves determining the number output expressed in terms of equivalent units. This means determining how many complete units would have been done with the materials, time, and effort expended had units been done one at a time. The third step involves computing the cost per equivalent unit—determining how much a whole unit cost for each item this period. In the fourth step, the costs that need to be assigned to the units are summarized. The fifth step involves assigning the costs to the completed units and the units still remaining in work in process.

Diff: 2 Type: ES

Skill: Remember

Objective: LO 17-2

17.3 Apply the weighted-average method of process costing to calculate the cost of goods manufactured and transferred out when there is both beginning and ending work-in-process inventory.

1) The final result of the process costing procedure is to compute the dollar amount of the credit to a work-in-process account and the corresponding debit to finished goods and/or other work-in-process accounts.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-2, 3

2) The weighted-average process costing method assigns the cost of the earliest equivalent units available to units completed and transferred out, and the cost of the most recent equivalent units worked on during the period to ending work-in-process inventory.

Answer: FALSE

Explanation: This is true for FIFO, not weighted-average

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-2, 3

3) The weighted-average process costing method distinguishes between units started in the previous period but completed during the current period and units started and completed during the current period.

Answer: FALSE

Explanation: The weighted-average method groups beginning inventory units with those started during the period for calculation purposes

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-2, 3

4) In the weighted-average method, costs of units completed and transferred out, and in ending work-in-process, are calculated using average total costs obtained after merging costs of beginning work-in-process and costs added in the current period.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-2, 3

5) Unit costs do not fluctuate between periods.

Answer: FALSE

Explanation: Unit costs will fluctuate when the ratio of inputs to outputs change, and when costs change.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-1, 2, 3

6) In the weighted-average costing method, the costs of direct materials in beginning inventory are not included in the cost per unit calculation since direct materials are almost always added at the start of the production process.

Answer: FALSE

Explanation: The costs of the direct materials are included in the cost per unit calculation.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-3

7) Equivalent units in beginning work in process plus equivalent units of work done in the current period equals equivalent units completed and transferred out in the current period minus equivalent units in ending work in process.

Answer: FALSE

Explanation: The second part of the equation should be: equivalent units completed and transferred out in the current period PLUS equivalent units in ending work in process.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-3

8) In process costing the end of period journal entry to record \$10,000 of ending inventory requires a debit to the ending inventory account and a credit to work-in-process inventory.

Answer: FALSE

Explanation: No entry is required to record the value of the ending inventory unless it is being written down.

Diff: 2 Type: TF

Objective: LO 17-3

9) Which of the following is an assumption implicit in process-costing?

A) All completed units receive more direct material inputs than units in process.

B) All completed units receive less direct material inputs than units in process.

C) Opening inventory is always nil, for the cost calculations.

D) Ending inventory is always nil, for the cost calculations.

E) All completed units receive the same amount of direct material inputs and the same amount of conversion costs.

Answer: E

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-1, 2, 3

10) Which of the following is NOT one of the procedures in process costing?

A) summarize the flow of physical units of output

B) assign costs to equivalent units based on their percentage of completion

C) compute equivalent unit costs

D) summarize total costs to account for

E) assign costs to completed units

Answer: B

Diff: 1 Type: MC

Skill: Understand

Objective: LO 17-2, 3

- 11) Which of the following assertions is TRUE concerning conversion costs?
- A) Direct labour costs are always included in conversion costs.
  - B) The conversion period (for conversion costs calculation) can only include one operation.
  - C) When conversion costs are estimated to be over 80% complete, then the cost-benefit constraint requires us to use 100% as the estimate.
  - D) Conversion costs are impossible to estimate with any reliability.
  - E) The conversion period often includes several operations, and it may be impossible to estimate conversion costs with any reliability in some cases.

Answer: E  
 Diff: 2 Type: MC  
 Skill: Understand  
 Objective: LO 17-2, 3

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

Plastic Molding, Inc.'s costing system utilizes two cost categories; direct materials and conversion costs. Each product must pass through the Assembly Department and the Testing Department. Direct materials are added at the beginning of production. Conversion costs are allocated evenly throughout production. Data for the Assembly Department for March are:

Work in process, beginning inventory, 40% converted	400 units
Units started during March	1,200 units
Work in process, ending inventory	200 units
Work in process, beginning inventory:	
Direct materials	\$200,000
Conversion costs	\$200,000
Direct materials costs added during March	\$2,000,000
Conversion costs added during March	\$2,500,000

- 12) How many units were completed and transferred out of the Assembly Department during March?
- A) 200 units
  - B) 1,200 units
  - C) 1,400 units
  - D) 1,600 units
  - E) 1,720 units

Answer: C  
 Explanation:  $C) 400 \text{ units} + 1,200 \text{ units} - 200 \text{ units} = 1,400 \text{ units}$   
 Diff: 2 Type: MC  
 Skill: Apply  
 Objective: LO 17-3

13) What is the unit cost for February in the Assembly Department?

- A) \$1,000
- B) \$1,750
- C) \$3,500
- D) \$3,750
- E) \$3,900

Answer: B

Explanation: B) Direct materials per unit ( $\$200,000/400$  units)    \$500

Conversion costs per unit ( $\$200,000/(400 \times 0.40)$  units)    1,250

Total costs per unit    \$1,750

Diff: 3    Type: MC

Skill: Apply

Objective: LO 17-3

14) Which of the following journal entries correctly reflects the transfer of goods completed from the Assembly Department to the Testing Department?

A)

Work in Process - Assembly	XXX	
Work-in-process - Testing		XXX

B)

Work in Process - Testing	XXX	
Work-in-process - Assembly		XXX

C)

Work in Process - Assembly	XXX	
Finished Goods - Testing		XXX

D)

Finished Goods - Testing	XXX	
Work-in-process - Assembly		XXX

E)

Finished Goods - Testing	XXX	
Work-in-process - Testing		XXX

Answer: B

Diff: 1    Type: MC

Skill: Apply

Objective: LO 17-2, 3

15) Beginning inventory contained 5,000 units of goods that were 40 percent complete as to direct material, and 50 percent complete as to conversion. What is the equivalent units completed for materials and conversion at the beginning of the year, respectively? Assume that both types of costs are incurred evenly throughout the process.

- A) 5,000 and 5,000
- B) 1,000 and 5,000
- C) 3,000 and 2,500
- D) 2,000 and 2,500
- E) 0 and 5,000

Answer: D

Explanation: D) Materials ( $0.40 \times 5,000$ ) 2,000 units

Conversion ( $0.50 \times 5,000$ ) 2,500 units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

16) The final step of the accounting for processes with respect to process costing is to

- A) compute the amount of debits to work-in-process.
- B) compute the amount of credits to work-in-process.
- C) compute the equivalent units for the period.
- D) account for all units placed in process during the period.
- E) account for all units in ending inventory at the end of the period.

Answer: B

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-2, 3

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

Father Time Clock Shop manufactures clocks on an automated assembly line. It utilizes two cost categories: direct materials and conversion costs. Each product must pass through the Assembly Department and the Testing Department. Direct materials are added at the beginning of production, while conversion costs are allocated evenly throughout production, and the company uses weighted-average costing.

Data for the Assembly Department are:

Work in process, beginning inventory	250 units
Direct materials (100% complete)	
Conversion costs (50% complete)	
Units started during June	800 units
Work in process, ending inventory	150 units
Direct materials (100% complete)	
Conversion costs (75% complete)	
Work in process, beginning inventory	
Direct materials	\$180,000
Conversion costs	\$270,000
Direct materials costs added during June	\$1,000,000
Conversion costs added during June	\$1,000,000

17) What are the equivalent units for direct materials and conversion costs at Father Time Clock Shop, respectively?

- A) 1,200.5 units; 1,160.64 units
- B) 1,050 units; 1,012.5 units
- C) 1,050 units; 887.5 units
- D) 962 units; 990 units
- E) 990 units and 962 units

Answer: B

Explanation: B)	<u>Direct materials</u>	<u>Conversion costs</u>
Completed and transferred out:	900	900.0
Work in process, ending:	<u>150</u>	<u>112.5</u>
Total equivalent units:	<u>1,050</u>	<u>1,012.5</u>

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

18) What is the total amount debited to the work-in-process account during the month of June at Father Time Clock Shop?

- A) \$450,000
- B) \$2,000,000
- C) \$2,270,000
- D) \$2,450,000
- E) \$3,250,000

Answer: B

Explanation: B)  $\$1,000,000 + \$1,000,000 = \$2,000,000$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

19) What is the direct materials cost per equivalent unit during June at Father Time Clock Shop?

- A) \$982.92
- B) \$1,226.61
- C) \$952.38
- D) \$1,123.81
- E) \$1,000.00

Answer: D

Explanation: D)  $\$180,000 + \$1,000,000 = \$1,180,000$

$\$1,180,000/1,050 \text{ units} = \$1,123.81$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-3

20) What is the conversion cost per equivalent unit in June at Father Time Clock Shop?

- A) \$1,254.32
- B) \$1,430.99
- C) \$987.65
- D) \$1,282.83
- E) \$1,320.17

Answer: A

Explanation: A)  $\$270,000 + \$1,000,000 = \$1,270,000$

$\$1,270,000/1,012.5 = \$1,254.32$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-3

21) What amount of conversion costs are assigned to ending work-in-process for June at Father Time Clock Shop?

- A) \$160,986.38
- B) \$137,993.63
- C) \$141,111.00
- D) \$188,148.00
- E) \$111,110.63

Answer: C

Explanation: C)  $(150 \text{ units} \times 75\%) \times \$1,254.32 = \$141,111$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-3

22) Process-costing systems separate costs into cost categories according to which factor(s)?

- A) physical units
- B) indirect labour
- C) fixed and variable costs
- D) standard costs
- E) direct materials, conversion costs, and in some cases, transferred-in costs

Answer: E

Diff: 1 Type: MC

Skill: Remember

Objective: LO 17-2, 3

23) Which one of the following methods focuses on the total costs and total equivalent units completed to date?

- A) equivalent-units method
- B) first-in, first-out method
- C) standard-costs method
- D) weighted-average method
- E) last-in, last-out method

Answer: D

Diff: 2 Type: MC

Skill: Remember

Objective: LO 17-2, 3

24) When using the weighted-average method, work completed in beginning work-in-process and work done during the current period are included in the

- A) equivalent units.
- B) process units.
- C) qualitative units.
- D) standard units.
- E) normal units.

Answer: A

Diff: 2 Type: MC

Skill: Remember

Objective: LO 17-2, 3

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

Carnival Furniture had 60,000 foam cushions in process at May 1 (70% converted) and 40,000 cushions in process at May 31 (50% converted). All direct materials are added at the beginning of the production process. During the month, 140,000 cushions were transferred to finished goods.

25) What is the Carnival Furniture equivalent units for materials costs for May using the weighted average method?

- A) 180,000 cushions
- B) 160,000 cushions
- C) 140,000 cushions
- D) 118,000 cushions
- E) 123,000 cushions

Answer: A

Explanation: A)  $120,000 \text{ cushions} + 60,000 \text{ cushions} = 180,000 \text{ cushions}$ ; or  
 $140,000 \text{ cushions} + 40,000 \text{ cushions} = 180,000 \text{ cushions}$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

26) What is the Carnival Furniture equivalent units for conversion costs for May using the weighted average method?

- A) 180,000 cushions
- B) 160,000 cushions
- C) 140,000 cushions
- D) 118,000 cushions
- E) 123,000 cushions

Answer: B

Explanation: B)  $(40,000 \text{ cushions} \times 50\%) = 20,000 \text{ cushions}$   
 $20,000 \text{ cushions} + 140,000 \text{ cushions} = 160,000 \text{ cushions}$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

27) How many cushions were started during May at Carnival Furniture?

- A) 60,000 cushions
- B) 120,000 cushions
- C) 140,000 cushions
- D) 180,000 cushions
- E) 223,000 cushions

Answer: B

Explanation: B)  $60,000 \text{ cushions} + X - 40,000 \text{ cushions} = 140,000 \text{ cushions}$   
 $X = 140,000 \text{ cushions} - 20,000 \text{ cushions}$ ;  $X = 120,000 \text{ cushions}$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

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

Apex Disk Company operates a computer disk manufacturing plant. Direct materials are added at the end of the process. The following data were presented for August:

Work in process, beginning inventory	100,000 units
Transferred-in costs (100% complete)	
Direct materials (0% complete)	
Conversion costs (90% complete)	
Transferred in during current period	300,000 units
Completed and transferred out	350,000 units
Work in process, ending inventory	
Transferred-in costs (100% complete)	
Direct materials (0% complete)	
Conversion costs (65% complete)	

28) Calculate the equivalent units for conversion costs at Apex Disk Company using the weighted-average method.

- A) 300,000 units
- B) 350,000 units
- C) 382,500 units
- D) 450,920 units
- E) 499,000 units

Answer: C

Explanation: C) Completed and transferred out 350,000 units

Ending work-in-process ( $50,000 \times .65$ ) 32,500 units

382,500 units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

29) Calculate equivalent units for direct materials at Apex Disk Company using the weighted-average method.

- A) 100,000 units
- B) 350,000 units
- C) 400,000 units
- D) 450,000 units
- E) 499,000 units

Answer: B

Explanation: B) 350,000 units + 0 units = 350,000 units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

Answer the following questions using the information below:

The Townsend Tractor Company manufactures small garden tractors on a highly automated assembly line. Its costing system uses two cost categories, direct materials and conversion costs. Each tractor must pass through the Assembly Department and the Testing Department. Direct materials are added at the beginning of the production process. Conversion costs are allocated evenly throughout production. Townsend Tractor uses weighted-average costing.

<i>Data for the Assembly Department for April are:</i>	
Work in process, beginning inventory	40 units
Direct materials (100% complete)	
Conversion costs (40% complete)	
Units started during April	1,200 units
Work in process, ending inventory:	250 units
Direct materials (100% complete)	
Conversion costs (80% complete)	
<i>Costs for April :</i>	
<i>Work in process, beginning inventory:</i>	
Direct materials	\$230,000
Conversion costs	\$220,000
Direct materials costs added during June	\$700,000
Conversion costs added during June	\$1,175,000

30) What are the Townsend Company equivalent units for direct materials and conversion costs, respectively, for April?

- A) 1,350 units; 1,350 units
- B) 1,850 units; 1,690 units
- C) 1,600 units; 1,550 units
- D) 250 units; 200 units
- E) 1,600 units; 1,350 units

Answer: C

	<u>Direct materials</u>	<u>Conversion costs</u>
Completed and transferred out	1,350	1,350
Work in process, ending	<u>250</u>	<u>200</u>
Total equivalent units	<u>1,600</u>	<u>1,550</u>

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

31) What is the total amount credited to the Townsend Company Work-in-Process account during the month of April?

- A) \$1,875,000.00
- B) \$2,370,000.00
- C) \$1,999,687.50
- D) \$2,295,937.50
- E) \$450,000.00

Answer: C

Explanation: C) Equivalent unit cost = \$581.25 for DM [ $\$930,000/1,600$ ] + \$900 for CC [ $\$1,395,000/1,550$ ]  
 $\$1,481.25 * 1,350$  units completed and transferred out = \$1,999,687.50

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-3

32) What is the Townsend Company direct materials cost per equivalent unit during April?

- A) \$1,250.00
- B) \$1,241.94
- C) \$575.00
- D) \$581.25
- E) \$900.00

Answer: D

Explanation: D)	<u>Direct materials</u>	<u>Conversion costs</u>
Completed and transferred out	1,350	1,350
Work in process, ending	<u>250</u>	<u>200</u>
Total equivalent units	<u>1,600</u>	<u>1,550</u>

$\$230,000 + \$700,000 = \$930,000$

$\$930,000/1,600$  units = \$581.25

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

33) What is the Townsend Company conversion cost per equivalent unit in April?

- A) \$1,250.00
- B) \$900.00
- C) \$575.00
- D) \$581.25
- E) \$1,241.94

Answer: B

Explanation: B)	<u>Direct materials</u>	<u>Conversion costs</u>
Completed and transferred out	1,350	1,350
Work in process, ending	<u>250</u>	<u>200</u>
Total equivalent units	<u>1,600</u>	<u>1,550</u>

$$\$220,000 + \$1,175,000 = \$1,395,000$$

$$\$1,395,000 / 1,550 \text{ units} = \$900.00$$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

34) What amount of direct materials costs are assigned to the Townsend Company ending Work-in-Process account for April?

- A) \$248,387.10
- B) \$250,000.00
- C) \$143,750.00
- D) \$145,312.50
- E) \$116,250.00

Answer: D

Explanation: D)	<u>Direct materials</u>	<u>Conversion costs</u>
Completed and transferred out	1,350	1,350
Work in process, ending	<u>250</u>	<u>200</u>
Total equivalent units	<u>1,600</u>	<u>1,550</u>

$$\$230,000 + \$700,000 = \$930,000$$

$$\$930,000 / 1,600 \text{ units} = \$581.25$$

$$250 \text{ units} \times \$581.25 = \$145,312.50$$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-3

35) What amount of conversion costs are assigned to the Townsend Company ending Work-in-Process account for April?

- A) \$143,750.00
- B) \$145,312.50
- C) \$180,000.00
- D) \$250,000.00
- E) \$116,250.00

Answer: C

Explanation: C)	<u>Direct materials</u>	<u>Conversion costs</u>
Completed and transferred out	1,350	1,350
Work in process, ending	<u>250</u>	<u>200</u>
Total equivalent units	<u>1,600</u>	<u>1,550</u>

$$\$220,000 + \$1,175,000 = \$1,395,000$$

$$\$1,395,000 / 1,550 \text{ units} = \$900.00$$

$$200 \text{ units} \times \$900.00 = \$180,000.00$$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-3

36) Weighty Steel processes a single type of steel. For the current period the following information is given:

	<b>Units</b>	<b>Material Costs</b>	<b>Conversion Costs</b>
Beginning Inventory	3,000	\$ 4,500	\$ 5,400
Started During the Current Period	20,000	\$32,000	\$78,200
Ending Inventory	2,500		

All materials are added at the beginning of the production process. The beginning inventory was 40% complete as to conversion, while the ending inventory was 30% completed for conversion purposes.

Weighty uses the weighted-average costing method.

What is the total cost assigned to the units completed and transferred this period?

- A) \$107,010
- B) \$109,440
- C) \$113,160
- D) \$120,100

Answer: C

$$\text{Explanation: C) EU (materials)} = 20,500 + (2,500 \times 100\%) = 23,000.$$

$$(\$4,500 + \$32,000) / 23,000 = \$1.59 \text{ per unit for material}$$

$$\text{EU (conversion)} = 20,500 + (2,500 \times 30\%) = 21,250.$$

$$(\$5,400 + \$78,200) / 21,250 = \$3.93 \text{ per unit for conversion.}$$

$$\text{Total cost per unit} = \$1.59 + \$3.93 = \$5.52$$

$$\text{Cost of transferred units} = 20,500 \times \$5.52 = \$113,160$$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-3

*Answer the following questions using the information below:*

Dustin Plastics, Inc., manufactures plastic moldings for car seats. Its costing system uses two cost categories, direct materials and conversion costs. Each product must pass through Department A and Department B. Direct materials are added at the beginning of production. Conversion costs are allocated evenly throughout production.

*Data for Department A for February 2015 are:*

Work in process, beginning inventory, 40% converted	200 units
Units started during February	600 units
Work in process, ending inventory:	100 units
30% complete as to conversion costs	
100% complete as to materials	

*Costs for the Department A for February 2015 are:*

Work in process, beginning inventory:	
Direct materials	\$200,000
Conversion costs	\$200,000
Direct materials costs added during February	\$2,000,000
Conversion costs added during February	\$2,500,000

37) What were the equivalent units of direct materials and conversion costs, respectively, for February? Assume Dustin Plastics, Inc., uses the weighted-average process costing method.

- A) 800; 730
- B) 800; 800
- C) 800; 700
- D) 600; 500
- E) 700; 630

Answer: A

Explanation: A) Ending inventory = 700 + 100 = 800

Conversion costs = 700 + (100 × 30%) = 730

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

38) What is the material cost per equivalent unit in Department A?

- A) \$2,000
- B) \$2,750
- C) \$3,667
- D) \$2,500
- E) \$3,143

Answer: B

Explanation: B)  $(\$200,000 + \$2,000,000)/800 = \$2,750$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

39) What is the conversion cost per equivalent unit in Department A?

- A) \$5,400
- B) \$3,425
- C) \$3,571
- D) \$3,699
- E) 3,857

Answer: D

Explanation: D)  $(\$200,000 + \$2,500,000)/730 = \$3,698.63$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-3

40) What is the total amount transferred to Department B in February?

- A) \$4,112,500
- B) \$4,450,000
- C) \$5,200,000
- D) \$6,346,900
- E) \$4,514,300

Answer: E

Explanation: E)  $700 \text{ units} \times (\$2,750 + \$3,699) = \$4,514,300$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-3

41) What is the total amount of the work-in-process ending inventory for Department A at the end of February?

- A) \$ 385,970
- B) \$619,900
- C) \$ 315,571
- D) \$ 276,157
- E) \$315,571

Answer: A

Explanation: A)  $(100 \text{ units} \times \$2,750) + [(100 \times 0.30) \times \$3,699] = \$385,970$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-3

42) The following production-cost worksheet has been prepared for the month of December for Ag Chemical.

Production-Cost Worksheet  
 Weighted-Average Method of Process Costing  
 Ag Chemical  
 December, 2016

Costs	Totals	Direct Materials	Conversion
Work in process, beginning	\$36,000	\$12,000	\$24,000
Costs added during period	<u>114,000</u>	<u>40,000</u>	<u>74,000</u>
Total costs to account for	\$150,000	\$52,000	\$98,000
Divided by equivalent units		<u>20,000</u>	<u>14,000</u>
Equivalent unit costs	\$9.60	\$2.60	\$7.00

Assignment of costs:

Costs transferred out (12,000 × \$9.60)	\$115,200
Work in process, ending:	
Direct materials (8,000 × \$2.6)	20,800
Conversion (2,000 × \$7)	<u>14,000</u>
Costs accounted for	<u>\$150,000</u>

Required:

Prepare general journal entries for the following:

- Record costs of materials put into process for December.
- Record conversion costs put into process in December.
- Record goods transferred-out to finished goods for December.

Answer:

a. Work in Process	40,000	
Materials Inventory		40,000
b. Work in Process	74,000	
Various accounts		74,000
c. Finished Goods	115,200	
Work in Process		115,200

Diff: 2 Type: ES

Skill: Apply

Objective: LO 17-3

43) Scarborough Chemical placed 440,000 litres of direct materials into the mixing process. At the end of the month, 20,000 litres were still in process, 30 percent converted as to labour and factory overhead. All direct materials are placed in mixing at the beginning of the process and conversion costs occur evenly during the process. Scarborough Chemical uses weighted-average costing.

Required:

- a. Determine the equivalent units in process for direct materials and conversion costs assuming there was no beginning inventory.
- b. Determine the equivalent units in process for direct materials and conversion costs assuming that a beginning inventory of 24,000 litres of chemicals were 40 percent complete as to conversion costs prior to the addition of the 440,000 litres.

Answer:

a.

Direct materials:

Beginning inventory	0 litres
Units started	440,000 litres
Equivalent units	<u>440,000 litres</u>

Conversion costs:

Beginning inventory	0 litres
Units started	440,000 litres
To account for	440,000 litres
Units transferred out	420,000 litres
Ending inventory	<u>20,000 litres</u>

Units transferred out	420,000 litres
Ending inventory 30 percent complete	<u>6,000 litres</u>
Equivalent units	<u>426,000 litres</u>

b.

Direct materials:

Beginning inventory, 100%	24,000 litres
Units started	<u>440,000 litres</u>
Equivalent units	<u>464,000 litres</u>

Conversion costs:

Completed and transferred out	444,000 litres
Ending inventory 30 percent complete	<u>6,000 litres</u>
Equivalent units	450,000 litres

Diff: 2 Type: ES

Skill: Apply

Objective: LO 17-2, 3

44) Calendar Time Company prints calendars. All direct materials are included at the inception of the printing process. There were 20,000 units in beginning inventory with a direct material cost of \$1,000 in March. Direct materials totalled \$26,000 for the month. work-in-process records revealed that 160,000 calendars were started in March and that a total of 144,000 were completed. Ending work-in-process units are complete in respect to direct materials costs and contain no labour and overhead costs. The weighted-average method is used by Calendar Time.

Required:

- Determine the equivalent units of materials.
- What are the material costs assigned to completed calendars?
- What amount of materials is assigned to the ending work-in-process inventory?

Answer:

a.

Physical Units:		Equivalent units	
Beginning inventory	20,000	Units completed	144,000
Units started	<u>160,000</u>	Ending inventory	<u>36,000</u>
To account for	180,000	Equivalent units	<u>180,000</u>
Units completed	<u>-144,000</u>		
Ending inventory	<u>36,000</u>		

b.

	<u>Materials</u>
Cost to account for	
Beginning work-in-process	\$1,000
Current period	<u>26,000</u>
Total costs to account for	\$27,000
Equivalent units	<u>180,000</u>
Cost per equivalent unit	<u>\$0.15</u>

Assigned to good units (144,000 × \$0.15)      \$21,600

c.

Ending work-in-process (36,000 × \$0.15)      \$5,400

Diff: 2 Type: ES

Skill: Apply

Objective: LO 17-3

45) Amana Woolens is a manufacturer of wool cloth. The information for March is as follows:

Beginning work in process	20,000 units
Units started	40,000 units
Units completed	50,000 units
Beginning work-in-process direct materials	\$ 12,000
Beginning work-in-process conversion	\$ 5,200
Direct materials added during month	\$60,000
Direct manufacturing labour during month	\$24,000
Factory overhead	\$ 10,000

Beginning work in process was half converted as to labour and overhead. Direct materials are added at the beginning of the process. All conversion costs are incurred evenly throughout the process. Ending work in process was 60% complete.

Required:

Prepare a production cost worksheet using the weighted-average method. Include any necessary supporting schedules.

Answer: **PRODUCTION COST WORKSHEET**

<i>Flow of production</i>	<b>Physical Units</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	20,000		
Started during period	<u>40,000</u>		
To account for	<u>60,000</u>		
Units completed	50,000	50,000	50,000
Work in process, ending	<u>10,000</u>	<u>10,000</u>	<u>6,000</u>
Accounted for	<u>60,000</u>	<u>60,000</u>	<u>56,000</u>

<i>Costs</i>	<b>Totals</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	\$ 17,200	\$ 12,000	\$ 5,200
Costs added during period	<u>94,000</u>	<u>60,000</u>	<u>34,000</u>
Total costs to account for	\$111,200	\$72,000	\$39,200
Divided by equivalent units		<u>60,000</u>	<u>56,000</u>
Equivalent unit costs	<u>\$ 1.90</u>	<u>\$ 1.20</u>	<u>\$ 0.70</u>

<i>Assignment of costs</i>	
Costs transferred out (50,000 × \$1.90)	\$95,000
Work in process, ending	
Direct materials (10,000 × \$1.20)	12,000
Conversion (10,000 × \$0.70 × 0.60)	<u>4,200</u>
Costs accounted for	<u>\$111,200</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 17-3

46) Jordana Woolens is a manufacturer of wool cloth. The information for March is as follows:

Beginning work in process	10,000 units
Units started	20,000 units
Units completed	25,000 units
Beginning work-in-process direct materials	\$ 6,000
Beginning work-in-process conversion	\$ 2,600
Direct materials added during month	\$30,000
Direct manufacturing labour during month	\$12,000
Factory overhead	\$ 5,000

Beginning work in process was half converted as to labour and overhead. Direct materials are added at the beginning of the process. All conversion costs are incurred evenly throughout the process. Ending work in process was 60% complete.

Required:

Prepare a production cost worksheet using the weighted-average method. Include any necessary supporting schedules.

Answer: **PRODUCTION COST WORKSHEET**

<i>Flow of production</i>	<b>Physical Units</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	10,000		
Started during period	<u>20,000</u>		
To account for	<u>30,000</u>		
Units completed	25,000	25,000	25,000
Work in process, ending	<u>5,000</u>	<u>5,000</u>	<u>3,000</u>
Accounted for	<u>30,000</u>	<u>30,000</u>	<u>28,000</u>

<i>Costs</i>	<b>Totals</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	\$ 8,600	\$ 6,000	\$ 2,600
Costs added during period	<u>47,000</u>	<u>30,000</u>	<u>17,000</u>
Total costs to account for	\$55,600	\$36,000	\$19,600
Divided by equivalent units		<u>30,000</u>	<u>28,000</u>
Equivalent unit costs	<u>\$ 1.90</u>	<u>\$ 1.20</u>	<u>\$ 0.70</u>

<i>Assignment of costs</i>	
Costs transferred out (25,000 × \$1.90)	\$47,500
Work in process, ending	
Direct materials (5,000 × \$1.20)	6,000
Conversion (5,000 × \$0.70 × 0.60)	<u>2,100</u>
Costs accounted for	<u>\$55,600</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 17-3

47) Four Seasons Company makes snow blowers. 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. Other data for the month include:

Beginning work-in-process inventory	1,600 units
Units started	2,000 units
Units placed in finished goods	3,200 units
Conversion costs	\$200,000
Cost of direct materials	\$260,000
Beginning work-in-process costs:	
Materials	\$154,000
Conversion	\$82,080

Required:

- Using the weighted-average method determine the assignment of costs to units transferred-out and ending inventory.
- Prepare journal entries to record transferring of material and conversion costs to work-in-process; and, the cost of the units completed and transferred from processing to finished goods.

Answer:

- Production Cost Worksheet

<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>2,000</u>		
To account for	<u>3,600</u>		
Units completed	3,200	3,200	3,200
Work in process ending	<u>400</u>	<u>400</u>	<u>240</u>
Accounted for	<u>3,600</u>	<u>3,600</u>	<u>3,440</u>

<u>Costs</u>	<u>Totals</u>	<u>Direct materials</u>	<u>Conversion</u>
Work in process, beginning	\$236,080	\$154,000	\$82,080
Costs added during period	<u>460,000</u>	<u>260,000</u>	<u>200,000</u>
Total costs to account for	\$696,080	\$414,000	\$282,080
Divided by equivalent units		<u>3,600</u>	<u>3,440</u>
Equivalent unit costs	\$197	\$115	\$82

Assignment of costs:

Completed units (3,200 × \$197)	\$630,400		
Work in process, ending	<u>65,680</u>	\$46,000	\$19,680
Direct materials (400 × \$115)			
Conversion (400 × \$82 × 0.60)			
Costs accounted for	<u>\$696,080</u>		

b. Work-in-process	460,000	
Materials Inventory		260,000
Various Accounts		200,000
Finished Goods Inventory	630,400	
Work-in-Process Inventory		630,400

Diff: 3 Type: ES  
Skill: Apply  
Objective: LO 17-3

48) Creative Colors Paint Company placed 315,000 litres of direct materials into the mixing process. All direct materials are placed in mixing at the beginning of the process and conversion costs occur evenly during the process. Creative Colors uses weighted-average costing. The initial forecast for the end of the month was to have 75,000 litres still in process, 15% converted as to labour and factory overhead.

Required:

a. Determine the total equivalent units (in process and transferred out) for direct materials and for conversion costs, assuming there was no beginning inventory.

b. With the installation of a new paint processing filtration device, the forecast for the end of the month was to have 50,000 litres still in process, 70% converted as to labour and factory overhead. In this event, determine the equivalent units (in process and transferred out) for direct materials and for conversion costs, assuming there was no beginning inventory.

Answer:

a. Direct materials:

Beginning inventory	0 litres
Units started	<u>315,000 litres</u>
Equivalent units	<u>315,000 litres</u>

Conversion costs:

Beginning inventory	0 litres
Units started	<u>315,000 litres</u>
To account for	315,000 litres
Units transferred out	<u>240,000 litres</u>
Ending inventory	<u>75,000 litres</u>

Units transferred out	240,000 litres
Ending inventory, 15% complete	<u>11,250 litres</u>
Equivalent units	<u>251,250 litres</u>

b. Direct materials:

Beginning inventory	0 litres
Units started	<u>315,000 litres</u>
Equivalent units	<u>315,000 litres</u>

Conversion costs:

Beginning inventory	0 litres
Units started	<u>315,000 litres</u>
To account for	315,000 litres
Units transferred out	<u>265,000 litres</u>
Ending inventory	<u>50,000 litres</u>

Units transferred out	265,000 litres
Ending inventory, 70% complete	<u>35,000 litres</u>
Equivalent units	<u>300,000 litres</u>

Diff: 2 Type: ES

Skill: Apply

Objective: LO 17-2, 3

49) Marv and Vicki own and operate a vegetable canning plant. In recent years their business has grown tremendously and at any point in time they may have 30 to 35 different vegetables being processed. Also, during the peak summer months there are several thousand bushels of vegetables in some stage of being processed at any one time. With the company's growth during the past few years the owners decided to employ an accountant to provide cost estimations on each vegetable category and prepare monthly financial statements. Although the accountant is doing exactly as instructed, Marv and Vicki are confused about the monthly operating costs. Although they process an average of 50,000 canned units a month, the monthly production report fluctuates wildly.

Required:

Explain how income can fluctuate when sales are relatively stable.

Answer: It appears that the accountant may not be using equivalent units of production but is only including completed units when preparing the monthly reports. Particularly with large summer inventories, the number and value of costs associated with ending work-in-process could cause wide fluctuations between months if the equivalent unit concept is ignored. The accountant should start using equivalent units to determine the costs to assign to finished goods and ending work-in-process each month.

Diff: 2 Type: ES

Skill: Apply

Objective: LO 17-1, 2, 3

17.4 Analyze weighted-average, FIFO, and standard-costing methods of inventory valuation of cost of goods manufactured and transferred out.

1) The first-in, first-out process-costing method computes unit costs by confining equivalent units to work only done during the current period.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 17-4

2) Process-costing systems using standard costs usually accumulate actual costs separately from the inventory accounts.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-4

3) The cost of units completed can differ materially between the weighted average and the FIFO methods of process costing.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-4

4) A distinctive feature of the FIFO process costing method is that the work done on beginning inventory before the current period is averaged with work done in the current period.

Answer: FALSE

Explanation: A distinctive feature of the FIFO process costing method is that the work done on beginning inventory before the current period is kept separate from work done in the current period.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-4

5) The first-in, first-out process-costing method assumes that units in beginning inventory are completed during the current accounting period.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-4

6) Activity-based costing has more applicability in a process-costing system than in a job-costing environment.

Answer: FALSE

Explanation: Activity-based costing is less applicable to process costing because the process-costing units all go through similar processes.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-4

7) Standard costing is not possible in a firm that uses process costing.

Answer: FALSE

Explanation: Standard costing is possible in a firm that uses process costing.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-4

8) The first-in, first-out (FIFO) process costing method assigns the cost of the previous accounting period's equivalent units in beginning work-in-process inventory to the first units completed and transferred out of the process.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-4

9) The weighted average method of process costing assigns the cost of equivalent units worked on during the *current* period first to complete beginning inventory, next to start and complete new units, and finally to units in ending work-in-process inventory.

Answer: FALSE

Explanation: The FIFO method of process costing assigns the cost of equivalent units worked on during the *current* period first to complete beginning inventory, next to start and complete new units, and finally to units in ending work-in-process inventory.

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-3, 4

10) Select the TRUE statement regarding process costing.

A) The degree of completion for conversion costs in ending work-in-process depends on the amount of direct materials used during the period.

B) Because it tracks beginning inventory's actual costs of completion, the weighted-average method is the most accurate process costing system.

C) Estimating the degree of completion is usually easier for conversion costs than for transferred-in costs.

D) Estimating the degree of completion is usually easier for direct materials than for conversion costs.

E) The accuracy of the completion percentages depends on the accounting system used.

Answer: D

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-3, 4

11) The first-in, first-out method computes unit costs by

A) dividing total units by units completed this period.

B) confining equivalent units to the work completed during the current period only.

C) the standard-costing method.

D) separately identifying the conversion costs of beginning and ending inventories.

E) adding opening inventory units to work-in-process units and dividing by total cost.

Answer: B

Diff: 2 Type: MC

Skill: Remember

Objective: LO 17-4

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

Hollywood North Magic, a cosmetic manufacturer, began operations in January. During the first month of operations, \$60,000 was incurred for direct materials and \$80,000 was incurred for conversion costs. During January, 30,000 litres of cosmetics were started and 6,000 litres were unfinished at the end of the month. Ending work-in-process was 45% completed. All inputs are added evenly throughout the production process.

12) Calculate the equivalent units for conversion costs in January using the FIFO method.

- A) 24,000 litres
- B) 26,700 litres
- C) 30,000 litres
- D) 36,000 litres
- E) 39,000 litres

Answer: B

Explanation: B)  $(30,000 - 6,000) + (6,000 \times 0.45) = 26,700$  litres

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-4

13) What is the materials cost per unit in January using the FIFO method?

- A) \$2.00
- B) \$1.67
- C) \$2.25
- D) \$2.50
- E) \$3.00

Answer: C

Explanation: C)  $\$60,000/26,700 = \$2.25$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-4

14) Which of the following items is not a component of "total costs to be accounted for in a given department's operations" when using process costing?

- A) direct manufacturing labour used in the given department
- B) the cost of materials requisitioned and used by the given department
- C) transferred-in costs from the prior processing department
- D) transferred-out costs to the next department
- E) conversion costs

Answer: D

Diff: 2 Type: MC

Skill: Remember

Objective: LO 17-3, 4

15) Bag Company had a beginning inventory of 4,000 bags with costs of \$18,000 on January 1. The direct materials were complete and all overhead had been assigned; however, only 40 percent of direct manufacturing labour was added in the prior period. Another 20,000 units were started and completed during the current period. Bag Company uses FIFO process-costing and calculated equivalent unit costs as follows: materials, \$8.00; labour, \$9.00; and overhead, \$5.00.

What is the total cost of goods transferred out using the FIFO method?

- A) \$440,000
- B) \$468,000
- C) \$470,000
- D) \$491,600
- E) \$519,500

Answer: C

Explanation: C) Materials (20,000 units × \$8.00)	\$160,000
Labour (20,000 units × \$5.00)	100,000
Overhead (20,000 units × \$9.00)	180,000
Complete beg. (2,400 × \$5.00)	12,000
Beginning	<u>18,000</u>
	<u>\$470,000</u>

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-4

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

Canadian Oil Company manufactures cooking oils. All direct materials are added at the beginning of the production process. The company currently uses the FIFO method. Data for the month of July is listed below.

Production data:	
Beginning work-in-process	100,000 units
Units started during the period	200,000 units
Completed and transferred out	270,000 units
Manufacturing cost:	
Beginning work-in-process	\$176,000
Direct materials used	\$244,000

16) How many units were started and completed with respect to direct materials during the month?

- A) 170,000 units
- B) 200,000 units
- C) 270,000 units
- D) 300,000 units
- E) 330,000 units

Answer: A

Explanation: A)  $100,000 + 200,000 - 270,000 = 30,000$  ending inventory

$200,000 - 30,000 = 170,000$  started and completed units

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-4

17) What is the amount of direct materials assigned to ending work-in-process?

- A) \$63,000
- B) \$42,000
- C) \$36,600
- D) \$21,050
- E) \$17,000

Answer: C

Explanation: C)  $\$244,000 / 200,000 \text{ units} = \$1.22 \text{ per unit}$

$\$1.22 \times 30,000 = \$36,600$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-4

18) What is the amount of goods transferred-out during the month assuming no labour or conversion costs?

- A) \$398,950
- B) \$383,400
- C) \$378,000
- D) \$357,000
- E) \$391,000

Answer: B

Explanation: B)  $\$244,000 + \$176,000 - \$36,600 = \$383,400$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-4

19) Unit costs of the weighted-average and FIFO methods will differ significantly when

- A) direct materials or conversion costs per unit vary little from period to period.
- B) physical inventory levels of work-in-process are small in relation to the number of units transferred out.
- C) direct materials or conversion cost per unit vary greatly and physical inventory levels of work-in-process are large relative to the number of units transferred out.
- D) conversion costs per unit vary greatly and physical inventory levels of work-in-process are small relative to the number of units transferred out.
- E) direct materials or conversion costs per unit are similar and physical inventory of work-in-process are small relative to the number of units transferred in.

Answer: C

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-4

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

Apex Disk Company operates a computer disk manufacturing plant. Direct materials are added at the end of the process. The following data were presented for August:

Work in process, beginning inventory	100,000 units
Transferred-in costs (100% complete)	
Direct materials (0% complete)	
Conversion costs (90% complete)	
Transferred in during current period	300,000 units
Completed and transferred out	350,000 units
Work in process, ending inventory	
Transferred-in costs (100% complete)	
Direct materials (0% complete)	
Conversion costs (65% complete)	

20) How many units must be accounted for during the period, assuming a FIFO cost flow assumption?

- A) 450,000 units
- B) 400,000 units
- C) 359,000 units
- D) 300,000 units
- E) 275,000 units

Answer: B

Explanation: B)  $100,000 \text{ units} + 300,000 = 400,000 \text{ units}$

Diff: 1 Type: MC

Skill: Apply

Objective: LO 17-4

21) How many actual units remain in ending work-in-process, assuming a FIFO cost flow assumption?

- A) 200,000 units
- B) 150,000 units
- C) 100,000 units
- D) 50,000 units
- E) 25,000 units

Answer: D

Explanation: D)  $400,000 \text{ units} - 350,000 = 50,000 \text{ units}$

Diff: 1 Type: MC

Skill: Apply

Objective: LO 17-4

22) Calculate equivalent units for conversion costs using the FIFO method.

- A) 401,500 units
- B) 350,000 units
- C) 300,000 units
- D) 292,500 units
- E) 170,000 units

Answer: D

Explanation: D) Beginning work-in-process ( $100,000 \times .10$ )	10,000 units
Started and completed	250,000 units
Ending work-in-process ( $50,000 \times .65$ )	<u>32,500 units</u>
	<u>292,500 units</u>

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-4

23) Calculate equivalent units for direct materials using the FIFO method.

- A) 100,000 units
- B) 350,000 units
- C) 400,000 units
- D) 450,000 units
- E) 515,000 units

Answer: B

Explanation: B)  $100,000 \text{ units} + 250,000 \text{ units} + 0 = 350,000 \text{ units}$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-4

24) Using standard costs simplifies the calculations for which of the following in process-costing?

- A) direct materials
- B) conversion costs
- C) equivalent units
- D) direct materials and conversion costs but standard costs not relevant for equivalent units
- E) direct materials and conversion costs and equivalent units

Answer: C

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-4

25) Which costing system is well-suited for companies which have infrequent changes in their basic products?

- A) equivalent-average unit costing method
- B) first-in, first-out method
- C) standard costing
- D) weighted-average costing
- E) last in first out costing

Answer: C

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-4

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

Reynolds Dock Company manufactures boat docks on an assembly line. Its standard costing system utilizes two cost categories; direct materials and conversion costs. Each product must pass through the Assembly Department and the Finishing Department. Direct materials are added at the beginning of the production process. Conversion costs are allocated evenly throughout production. Data for the Assembly Department for October 2016 are:

Work in process, beginning inventory:	70 units
Direct materials (100% complete)	
Conversion costs (25% complete)	
Units started during October	40 units
Work in process, ending inventory:	10 units
Direct materials (100% complete)	
Conversion costs (50% complete)	
Standard Costs for Assembly:	
Direct materials	\$4,000 per unit
Conversion costs	\$16,000 per unit
Work in process, beginning inventory:	
Direct materials	\$140,000
Conversion costs	\$260,000

26) What is the balance in ending work-in-process inventory?

- A) \$82,000
- B) \$120,000
- C) \$200,000
- D) \$170,000
- E) \$174,000

Answer: B

Explanation: B)  $10 \text{ units} \times \$4,000 = \$40,000$   
 $10 \text{ units} \times 50\% \times \$16,000 = \underline{80,000}$   
\$120,000

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-4

27) Which of the following journal entries records the actual Assembly Department's conversion costs for the month assuming conversion costs are 20 percent higher than expected?

A)

Assembly Department Conversion Cost Control	1,680,000
Various accounts	1,680,000

B)

Materials Inventory	1,680,000
Assembly Department Conversion Cost Control	1,680,000

C)

Assembly Department Conversion Cost Control	1,400,000
Materials Inventory	1,400,000

D)

Materials Inventory	1,680,000
Various accounts	1,680,000

E)

Work-in-process Assembly	1,680,000
Various accounts	1,680,000

Answer: A

Explanation: A) 70 units × 75% × \$16,000 = \$840,000

(40 - 10 units) × \$16,000 = 480,000

10 units × 50% × \$16,000 = 80,000

Budgeted \$1,400,000

\$1,400,000 × 1.20% = \$1,680,000

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-4

28) Which of the following journal entries properly records the assignment of conversion costs to work-in-process inventory, and the conversion-cost variances of the Assembly Department assuming that conversion costs are 20% higher than expected?

A)

Work in Process - Assembly	1,680,000
Conversion-Cost Variances	280,000
Assembly Department Conversion Cost Control	1,400,000

B)

Work in Process - Assembly	1,680,000
Direct Materials Variances	280,000
Testing Department Conversion Cost Control	1,400,000

C)

Work in Process - Assembly	1,400,000
Conversion-Cost Variances	280,000
Assembly Department Conversion Cost Control	1,680,000

D)

Work in Process - Testing	1,400,000
Assembly Department Conversion Cost Control	\$1,400,000

E)

Work-in-process - Assembly	1,680,000
Materials Inventory	1,680,000

Answer: C

Explanation: C)  $\$1,680,000 - \$1,400,000 = \$280,000$  conversion cost variances

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-4

29) Which of the following journal entries properly records direct materials requisitions for the work-in-process inventory and direct materials variances assuming that the Assembly department used 10 percent less materials than expected?

A)

Work in Process - Assembly	160,000
Assembly Department Materials Cost Control	160,000

B)

Work in Process - Assembly	160,000
Direct Materials Variances	16,000
Assembly Department Materials Cost Control	144,000

C)

Work in Process - Assembly	144,000
Assembly Department Materials Cost Control	144,000

D)

Work in Process - Assembly	144,000
Direct Materials Variances	16,000
Assembly Department Materials Cost Control	160,000

E)

Work-in-process - Assembly	144,000
Materials Inventory	144,000

Answer: B

Explanation: B)  $40 \times \$4,000 = \$160,000$

$\$160,000 \times .9 = \$144,000$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-4

*Answer the following questions using the information below:*

The Rest-a-Lot chair company manufactures a standard recliner. During February, the firm's Assembly Department started production of 75,000 chairs. During the month, the firm completed 80,000 chairs, and transferred them to the Finishing Department. The firm ended the month with 10,000 chairs in ending inventory. There were 15,000 chairs in beginning inventory. All direct materials costs are added at the beginning of the production cycle and conversion costs are added uniformly throughout the production process. The FIFO method of process costing is used by Rest-a-Lot. Beginning work in process was 30% complete as to conversion costs, while ending work in process was 80% complete as to conversion costs.

*Beginning inventory:*

Direct materials	\$24,000
Conversion costs	\$35,000

*Manufacturing costs added during the accounting period:*

Direct materials	\$168,000
Conversion costs	\$278,000

30) How many of the Rest-a-Lot company units that were started during February were completed during February?

- A) 85,000
- B) 80,000
- C) 75,000
- D) 65,000
- E) 70,000

Answer: D

Explanation: D)  $80,000 - 15,000 = 65,000$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-4

31) What were the Rest-a-Lot company equivalent units for conversion costs during February?

- A) 83,500
- B) 85,000
- C) 75,000
- D) 79,500
- E) 73,000

Answer: A

Explanation: A)  $(15,000 \times 0.7) + 65,000 + (10,000 \times 0.8) = 83,500$

Diff: 2 Type: MC

Skill: Apply

Objective: LO 17-4

32) What is the Rest-a-Lot company amount of direct materials cost assigned to ending work-in-process inventory at the end of February?

- A) \$19,200
- B) \$22,400
- C) \$25,600
- D) \$22,500
- E) \$21,000

Answer: B

Explanation: B)  $\$168,000/75,000 = \$2.24 \times 10,000 = \$22,400$

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-4

33) What is the Rest-a-Lot company cost of the goods transferred out during February?

- A) \$417,750
- B) \$421,050
- C) \$476,750
- D) \$505,000
- E) \$456,015

Answer: E

Explanation: E)  $75,000 - 10,000 = 65,000$

$(15,000 \times 0.7) + 65,000 + (10,000 \times 0.8) = 83,500$

$\$168,000/75,000 = \$2.24 \times 10,000 = \$22,400$

The costs in beginning inventory  $\$24,000 + \$35,000 =$  \$ 59,000

Direct materials =  $\$2.24 \times 65,000 =$  145,600

Conversion costs =

$[\$278,000/(10,500 + 8,000 + 65,000)] \times 65,000 =$  216,450

also FG beginning inventory  $(15,000 \times 0.7 \times \$3.33) =$  34,965

Total \$456,015

Diff: 3 Type: MC

Skill: Apply

Objective: LO 17-4

34) Surf Products Company uses an automated process to clean and polish its souvenir items. Direct materials are placed into production at the beginning of the process and conversion costs are incurred evenly throughout the process. The following data pertain to March.

Beginning work-in-process inventory	6,000 items, 1/3 complete as to conversion costs
Units placed in production	24,000 units
Units completed	18,000 units
Ending work-in-process inventory	12,000 items, 1/2 complete as to conversion costs
Cost of beginning work-in-process	\$5,000
Direct material costs, current month	\$18,000
Conversion costs, current month	\$15,400

Required:

Using the first-in, first-out method determine the assignment of costs to units transferred-out and ending inventory.

Answer:

Production Cost Worksheet

<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>		

Units completed:

Beginning work-in-process	6,000		4,000
Started and completed	12,000	12,000	12,000
Work in process ending	<u>12,000</u>	<u>12,000</u>	<u>6,000</u>
Accounted for	<u>30,000</u>	<u>24,000</u>	<u>22,000</u>

Costs	Totals	Direct materials	Conversion
Work in process, beginning	\$5,000		
Costs added during period	<u>33,400</u>	<u>\$18,000</u>	<u>\$15,400</u>
Total costs to account for	\$38,400	\$18,000	\$15,400
Divided by equivalent units		<u>24,000</u>	<u>22,000</u>
Equivalent unit costs	\$1.45	\$0.75	\$0.70

Assignment of costs:

Work in process, beginning		\$5,000
Completion of beginning (4,000 × \$0.70)		<u>2,800</u>
Total beginning inventory		\$7,800
Started and Completed (12,000 × \$1.45)		<u>17,400</u>
Total costs transferred out		\$25,200
Work in process, ending		
Direct materials (12,000 × \$0.75)	\$9,000	
Conversion (12,000 × \$0.70 × 0.50)	<u>4,200</u>	<u>13,200</u>
Costs accounted for		<u>\$38,400</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 17-4

35) Pet Products Company uses an automated process to manufacture its pet replica products. For June, the company had the following activities:

Beginning work in process inventory	4,500 items, 1/4 complete
Units placed in production	15,000 units
Units completed	17,500 units
Ending work in process inventory	2,000 items, 3/4 complete
Cost of beginning work in process	\$5,250
Direct material costs, current	\$16,500
Conversion costs, current	\$23,945

Direct materials are placed into production at the beginning of the process and conversion costs are incurred evenly throughout the process.

Required:

Prepare a production cost worksheet using the FIFO method. Round equivalent unit costs to the nearest cent.

Answer:

PRODUCTION COST WORKSHEET

<i>Flow of production</i>	<b>Physical Units</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	4,500		
Started during period	<u>15,000</u>		
To account for	<u>19,500</u>		
<i>Units completed</i>			
Work in process, beginning	4,500		3,375
Started and completed	13,000	13,000	13,000
Work in process, ending	<u>2,000</u>	<u>2,000</u>	<u>1,500</u>
	<u>19,500</u>	<u>15,000</u>	<u>17,875</u>

<i>Costs</i>	<b>Totals</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	\$5,250		
Costs added during period	<u>40,445</u>	<u>\$16,500</u>	<u>\$23,945</u>
Total costs to account for	\$45,695	\$16,500	\$23,945
Divided by equivalent units		<u>15,000</u>	<u>17,875</u>
Equivalent unit costs	<u>\$2.44</u>	<u>\$1.10</u>	<u>\$1.34</u>

<i>Assignment of costs</i>		
Work in process, beginning		5,250.00
Completion of beginning (3,375 × \$1.34)		<u>4,522.50</u>
Total beginning inventory		9,772.50
Started and Completed (13,000 × \$2.44)		<u>31,720.00</u>
Total costs transferred out		\$41,492.50
Work in process, ending		
Direct materials (2,000 × \$1.10)	\$2,200.00	
Conversion (2,000 × \$1.34 × 0.75)	2,010.00	<u>4,210.00</u>
Costs accounted for		<u>\$45,702.50</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 17-4

36) Brampton Ltd. uses an automated process to manufacture key chains. For September, the company had the following activities:

Beginning work in process inventory	40,000 unit 30% complete
Units placed in production	140,000 units
Units completed	?
Ending work in process inventory	30,000 items, 60% complete
Cost of beginning work in process	\$36,080
Direct material costs, current	\$100,800
Conversion costs, current	\$101,400

Direct materials are placed into production at the beginning of the process and conversion costs are incurred evenly throughout the process. There is no spoilage.

Required:

Prepare a production cost worksheet using the FIFO method.

Answer:

PRODUCTION COST WORKSHEET

<i>Flow of production</i>	<b>Physical Units</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	40,000		
Started during period	<u>140,000</u>		
To account for	<u>180,000</u>		
<i>Units completed</i>			
Work in process, beginning	40,000		28,000
Started and completed	110,000	110,000	110,000
Work in process, ending	<u>30,000</u>	<u>30,000</u>	18,000
	<u>180,000</u>	<u>140,000</u>	<u>156,000</u>

<i>Costs</i>	<b>Totals</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	\$36,080		
Costs added during period	<u>202,200</u>	<u>\$100,800</u>	<u>\$101,400</u>
Total costs to account for	\$238,280	\$100,800	\$101,400
Divided by equivalent units		<u>140,000</u>	<u>156,000</u>
Equivalent unit costs	<u>\$1.37</u>	<u>\$0.72</u>	<u>\$0.65</u>

<i>Assignment of costs</i>		
Work in process, beginning		36,080
Completion of beginning (28,000 × \$0.65)		<u>18,200</u>
Total beginning inventory		54,280
Started and Completed (110,000 × \$1.37)		<u>150,700</u>
Total costs transferred out		\$204,980
Work in process, ending		
Direct materials (30,000 × \$0.72)	\$21,600	
Conversion (18,000 × \$0.65)	<u>11,700</u>	<u>33,300</u>
Costs accounted for		<u>\$238,280</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 17-4

37) Smithers Ltd. uses the FIFO method for its production costing. On June 1, it had 35,000 units in beginning work in process that were 60% complete with respect to conversion costs. During the month it completed 80,000 units and on June 30, there were 16,000 units in ending work in process. These units were 35% complete with respect to conversion. Direct materials are added at the beginning of the process and no units are lost during production. The costs associated with the beginning inventory were \$83,300 for direct materials and \$66,780 for conversion. During the month, Smithers issued \$146,400 of direct materials and incurred \$206,720 of conversion costs.

Required:

Prepare a production cost worksheet using the FIFO method.

Answer:

PRODUCTION COST WORKSHEET

<i>Flow of production</i>	<b>Physical Units</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	35,000		
Started during period	<u>61,000</u>		
To account for	<u>96,000</u>		
<i>Units completed</i>			
Work in process, beginning	35,000		14,000
Started and completed	45,000	45,000	45,000
Work in process, ending	<u>16,000</u>	<u>16,000</u>	<u>5,600</u>
	<u>96,000</u>	<u>61,000</u>	<u>64,600</u>

<i>Costs</i>	<b>Totals</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	\$150,080		
Costs added during period	<u>353,120</u>	<u>\$146,400</u>	<u>\$206,720</u>
Total costs to account for	\$503,200	\$146,400	\$206,720
Divided by equivalent units		<u>61,000</u>	<u>64,600</u>
Equivalent unit costs	<u>\$5.60</u>	<u>\$2.40</u>	<u>\$3.20</u>

<i>Assignment of costs</i>		
Work in process, beginning		\$150,080
Completion of beginning (14,000 × \$3.20)		<u>44,800</u>
Total beginning inventory		194,880
Started and Completed (45,000 × \$5.60)		<u>252,000</u>
Total costs transferred out		\$446,880
Work in process, ending		
Direct materials (16,000 × \$2.40)	\$38,400	
Conversion (5,600 × \$3.20)	<u>17,920</u>	<u>56,320</u>
Costs accounted for		<u>\$503,200</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 17-4

38) Marvin Ltd. uses an automated process in its manufacturing operations. On November 1, the company had 25,000 units in beginning work in process which were 80% complete with respect to conversion. During the month of November, it started 120,000 into production. On November 30, there were 20,000 units in process, which were 40% complete with respect to conversion. Direct materials are added at the beginning of the process, and no units are spoiled in production.

The beginning inventory had direct materials costs of \$105,750 and conversion costs of \$45,500. During the month, the company issues \$510,000 of direct materials and incurred \$203,400 of conversion costs.

Required:

Prepare a production cost worksheet using the FIFO method.

Answer:

### PRODUCTION COST WORKSHEET

<i>Flow of production</i>	<b>Physical Units</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	25,000		
Started during period	<u>120,000</u>		
To account for	<u>145,000</u>		
<i>Units completed</i>			
Work in process, beginning	25,000		5,000
Started and completed	100,000	100,000	100,000
Work in process, ending	<u>20,000</u>	<u>20,000</u>	<u>8,000</u>
	<u>145,000</u>	<u>120,000</u>	<u>113,000</u>

<i>Costs</i>	<b>Totals</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	\$151,250		
Costs added during period	<u>713,400</u>	<u>\$510,000</u>	<u>\$203,400</u>
Total costs to account for	\$864,650	\$510,000	\$203,400
Divided by equivalent units		<u>120,000</u>	<u>113,000</u>
Equivalent unit costs	<u>\$6.05</u>	<u>\$4.25</u>	<u>\$1.80</u>

<i>Assignment of costs</i>		
Work in process, beginning		\$151,250
Completion of beginning (5,000 × \$1.80)		<u>9,000</u>
Total beginning inventory		160,250
Started and Completed (100,000 × \$6.05)		<u>605,000</u>
Total costs transferred out		\$765,250
Work in process, ending		
Direct materials (20,000 × \$4.25)	\$85,000	
Conversion (8,000 × \$1.80)	<u>14,400</u>	<u>99,400</u>
Costs accounted for		<u>\$864,650</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 17-4

39) Jackson Ltd. uses an automated process in its manufacturing operations. On September 1, the company had 15,000 units in beginning work in process which were 60% complete with respect to conversion. During the month of September, it started 100,000 into production. On September 30, there were 20,000 units in process, which were 30% complete with respect to conversion. Direct materials are added at the beginning of the process, and no units are spoiled in production.

The beginning inventory had direct materials costs of \$135,900 and conversion costs of \$38,500. During the month, the company issues \$620,000 of direct materials and incurred \$199,400 of conversion costs.

Required:

Prepare a production cost worksheet using the FIFO method. Round equivalent unit costs to the nearest cent.

Answer:

PRODUCTION COST WORKSHEET

<i>Flow of production</i>	<b>Physical Units</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	15,000		
Started during period	<u>100,000</u>		
To account for	<u>115,000</u>		
<i>Units completed</i>			
Work in process, beginning	15,000		6,000
Started and completed	80,000	80,000	80,000
Work in process, ending	<u>20,000</u>	<u>20,000</u>	<u>6,000</u>
	<u>115,000</u>	<u>100,000</u>	<u>92,000</u>

<i>Costs</i>	<b>Totals</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	\$174,400		
Costs added during period	<u>819,400</u>	<u>\$620,000</u>	<u>\$199,400</u>
Total costs to account for	\$993,800	\$620,000	\$199,400
Divided by equivalent units		<u>100,000</u>	<u>92,000</u>
Equivalent unit costs	<u>\$8.37</u>	<u>\$6.20</u>	<u>\$2.17</u>

<i>Assignment of costs</i>		
Work in process, beginning		\$174,400
Completion of beginning (6,000 × \$2.17)		<u>13,020</u>
Total beginning inventory		187,420
Started and Completed (80,000 × \$8.37)		<u>669,600</u>
Total costs transferred out		\$857,020
Work in process, ending		
Direct materials (20,000 × \$6.20)	\$124,000	
Conversion (6,000 × \$2.17)	<u>13,020</u>	<u>137,020</u>
Costs accounted for		<u>\$994,040</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 17-4

40) Lehman Pottery Company manufactures clay molded pottery on an assembly line. Its standard costing system uses two cost categories, direct materials and conversion costs. Each product must pass through the Assembly Department and the Finishing Department. Direct materials are added at the beginning of the production process. Conversion costs are allocated evenly throughout production.

Data for the Assembly Department for August 2015 are:

	Work in process, beginning inventory:	800 units
Direct materials (100% complete)		
Conversion costs (40% complete)		
Units started during August		
	450 units	
Work in process, ending inventory:		
	300 units	
Direct materials (100% complete)		
Conversion costs (60% complete)		

Costs for August:

Standard costs for Assembly:	
Direct materials	\$30 per unit
Conversion costs	\$55 per unit

Work in process, beginning inventory:	
Direct materials	\$22,000
Conversion costs	\$16,500

Required:

Prepare general journal entries to record:

1. The actual Assembly Department's conversion costs for the month assuming conversion costs are 10 percent higher than expected.
2. The assignment of conversion costs to work-in-process inventory, and the conversion-cost variances of the Assembly Department assuming that conversion costs are 10 percent higher than expected.
3. The direct materials requisitions for the work-in-process inventory and direct materials variances assuming that the Assembly department used 10 percent less materials than expected.

Answer:

1.

Assembly Department Conversion Cost Control	49,005
Various accounts	49,005

800 units × 60% × \$55	=	\$ 26,400
(450 - 300 units) × \$55	=	8,250
300 units × 60% × \$55	=	<u>9,900</u>
Budgeted		<u>\$44,550</u>

$$\$44,550 \times 1.10\% = \$49,005$$

2.

Work in Process - Assembly	44,550	
Conversion-Cost Variances	4,455	
Assembly Department Conversion Cost Control		49,005

3.

Work in Process - Assembly	13,500	
Direct Materials Variances		1,350
Assembly Department Materials Cost Control		12,150

$$450 \times \$30 = \$13,500$$

$$\$13,500 \times .9 = \$12,150$$

Diff: 3 Type: ES

41) Vita-Heath Company manufactures three different types of vitamins: vitamin C, vitamin B, and vitamin D. The company uses four operations to manufacture the vitamins: mixing, tableting, encapsulating, and bottling. Vitamins C and B are produced in tablet form (in the tableting department) and vitamin D is produced in capsule form (in the encapsulating department). Each bottle contains 80 vitamins, regardless of the product.

Conversion costs are applied based on the number of bottles in the tableting and encapsulating departments. Conversion costs are applied based on direct labour hours in the mixing department. It takes two minutes to mix ingredients for a 80-unit bottle for each product. Conversion costs are applied based on machine hours in the bottling department. It takes one-tenth of a minute of machine time to fill a 80-unit bottle, regardless of product.

Vita-Health Company uses operation costing.

The company is planning to complete one batch of each type of vitamin in March. The budgeted number of bottles and expected direct material cost for each type of vitamin is as follows:

	Vitamin C	Vitamin B	Vitamin D
Number of 80 unit bottles	11,000	9,000	19,000
Direct material cost	\$ 25,600	\$19,320	\$44,790

The budgeted conversion costs for March are as follows:

Department	Budgeted Conversion Cost
Mixing	\$ 9,180
Tableting	25,300
Encapsulating	27,580
Bottling	4,670

Required:

1. Calculate the conversion cost rates for each department.
2. Calculate the budgeted cost of goods manufactured for vitamin C, vitamin B, and vitamin D for the month of March.
3. Calculate the cost per 80-unit bottle for each type of vitamin for the month of July.

Answer:

1. Calculate the conversion rates for each department:

	Vitamin C	Vitamin B	Vitamin D	Total
Budgeted 80-unit bottles	11,000	9,000	19,000	39,000
Budgeted labour hours	366.7	300.0	633.3	1,300
Budgeted machine hours	18.3	15.0	31.7	65

Budgeted labour hours = (2 minutes × # of bottles)/60

Budgeted machine hours = (0.10 minutes × # of bottles)/60

	Budgeted conversion cost	Cost driver	Budgeted qty. of cost driver	Conversion cost rate
Mixing	\$ 9,180	labour hrs	1,300	\$ 7.06
Tabletting	25,300	# of bottles	39,000	0.65
Encapsulating	27,580	# of bottles	39,000	0.71
Bottling	4,670	machine hrs	65	71.85

2. Budgeted cost of goods manufactured:

	Vitamin C	Vitamin B	Vitamin D
Direct materials	\$ 25,600.00	\$ 19,320.00	\$ 44,790.00
Mixing	2,588.90	2,118.00	4,471.10
Tabletting	7,150.00	5,850.00	12,350.00
Encapsulating	7,810.00	6,390.00	13,490.00
Bottling	1,314.86	1,077.75	2,277.65
Total	\$ 44,463.76	\$ 34,755.75	\$ 77,378.75

3. Budgeted cost per bottle:

	Vitamin C	Vitamin B	Vitamin D
Total budgeted costs	\$ 44,463.76	\$ 34,755.75	\$ 77,378.75
# of bottles	11,000	9,000	19,000
Budgeted cost per bottle	\$ 4.04	\$ 3.86	\$ 4.07

Diff: 2 Type: ES

Skill: Apply

Objective: LO 17-4 & 4-1

42) What is the difference between a weighted-average method of process costing and a first-in, first-out method of process costing?

Answer: The weighted average method computes unit costs by dividing total costs entering the work-in-process account (whether from beginning work-in-process or from work started during the period) by total equivalent units completed to date, and assigns this average cost to units completed and to units in ending work-in process inventory.

The first-in, first-out (FIFO) method computes unit costs based on costs incurred during the current period and equivalent units of work done in the current period. It assigns the costs of beginning work-in-process inventory to the first units completed, and it assigns costs of the equivalent units worked on during the current period first to complete beginning inventory, next to start and complete new units, and finally to units in ending work-in-process inventory.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 17-3, 4

43) Universal Industries operates a division in Brazil, a country with very high inflation rates. Traditionally, the company has used the same costing techniques in all countries so as to facilitate reporting to corporate headquarters. However, the financial accounting reports from Brazil never seem to match the actual unit results of the division. Management has studied the problem and it appears that beginning inventories may be the cause of the unmatched information. The reason is that the inventories have a different financial base because of the severe inflation.

Required: How can process costing assist in addressing the problem facing Universal Industries?

Answer: Probably the best way to address the problem of inflation is to use FIFO costing. This method keeps the cost of beginning inventories separate from production units started and completed in a given period. Therefore, the company may be able to track the cost of items that were actually produced in a given period, versus mixing the units and costs of multiple periods.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 17-4

44) BIG Manufacturing Products has been using FIFO process costing for tracking the costs of its manufacturing activities. However, in recent months the system has become somewhat bogged down with details. It seems that when the company purchased Brown Electronics last year its product lines increased six fold. This has caused both the accountants and the suppliers of the information, the line managers, great difficulty in keeping the costs of each product line separate. Likewise, the estimation of the completion of ending work-in-process inventories and the associated costs has become very cumbersome. The chief financial officer of the company is looking for ways to improve the reporting system of product costs.

Required:

What can you recommend to improve the situation?

Answer: A beginning point would be to change to a standard costing system. Standard costing eliminates many of the problems of FIFO costing in tracking actual costs to products. With standard costing only the equivalent units have to be determined immediately, not the actual cost of the period. A standard cost for materials and conversion are then applied to the equivalent units for the reporting period. Actual costs and variances from standard can be determined later. This approach is very appropriate for a company that has many products.

Diff: 2 Type: ES

Skill: Evaluate

Objective: LO 17-4

45) Ford Motor Company is said to use a hybrid costing system. What is a hybrid costing system, and what would be the advantage to Ford of such a system?

Answer: A hybrid costing system is one that combines the elements of job costing and process costing systems. Important elements of profitability include knowing what the costs are, and controlling costs. Ford has a basic platform that they use to produce cars. Vehicles undergo essentially the same processing and are in effect manufactured in a continuous flow using standard parts and standardized manufacturing processes.

Another important part of profitability is making a product different than other vehicles so buyers will be attracted to purchase the vehicle. Vehicles that are different can command a higher price and increase profitability. Costs are accumulated using process costing up to the point where the product is differentiated. Job costing is used from that point forward.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 17-4

17.5 Apply process-costing methods to report transferred-in costs.

1) Transferred-in costs are an allocated indirect cost in process costing.

Answer: FALSE

Explanation: They can contain direct and indirect costs from the previous department

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-5

2) Transferred in costs are costs which have been incurred in a preceding department.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 17-5

3) An operation-costing system is a hybrid costing system, applied to batches of similar products.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 17-5

4) Operation-costing captures the non-financial impact of the control of physical processes.

Answer: FALSE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 17-5

5) Operation-costing differs from pure process-costing in that operation-costing charges each work order separately for direct material cost.

Answer: TRUE

Diff: 2 Type: TF

Skill: Remember

Objective: LO 17-5

6) It is possible to design a hybrid costing system, to combine elements of both job costing and of process costing.

Answer: TRUE

Diff: 1 Type: TF

Skill: Remember

Objective: LO 17-5

7) Transferred-in costs incurred in a previous department and charged to a subsequent department

A) are combined with direct materials costs of the subsequent department for a total direct materials costs figure.

B) are always from the previous period.

C) become part of Cost of Goods Sold in the current period.

D) are always assigned using the FIFO method.

E) follow the physical movement of the units.

Answer: E

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-5

8) Regardless of whether previous departments used the weighted-average or the FIFO method, all transferred-in costs during a given period are carried at

- A) the cost at which it was transferred in.
- B) the previous period's costs.
- C) multiple unit-cost figures.
- D) the final cost.
- E) one average unit-cost.

Answer: E

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-5

9) Which of the following is an error when accounting for transferred-in costs?

- A) including transferred-in costs from previous departments
- B) costing units at average costs
- C) converting units to a common measurement when transferred in
- D) consider costs assigned at the beginning of the period when calculating costs to be transferred on a weighted average basis
- E) consider costs assigned at the beginning of the period when calculating costs to be transferred on a FIFO basis

Answer: D

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-5

10) Which of the following is FALSE concerning an operations-costing system?

- A) It has characteristics of a job-costing system and of a process-costing system.
- B) Within each operation, all product-units are treated exactly alike with respect to conversion costs.
- C) Direct materials that are unique to different work orders, are specifically identified with the appropriate work order, as in job-costing.
- D) Work orders are used to specify direct materials and step-by-step operations.
- E) A separate conversion cost is calculated for each work order, as in job costing.

Answer: E

Diff: 2 Type: MC

Skill: Understand

Objective: LO 17-5

11) Conceptually transferred-in costs from another department are similar to

- A) direct labour.
- B) finished goods inventory.
- C) direct labour and materials.
- D) manufacturing overhead.
- E) materials provided by external suppliers.

Answer: E

Diff: 2 Type: MC

Skill: Remember

Objective: LO 17-5

- 12) An operation costing system would be applicable to
- A) batches of similar products where each batch is a variation of a single design.
  - B) the construction of a bridge.
  - C) a cement plant.
  - D) a company that makes special order products that are unique.
  - E) cost systems that are not hybrid.

Answer: A

Diff: 2 Type: MC

Skill: Remember

Objective: LO 17-5

- 13) Managers find operation costing useful in cost management because it
- A) often results in profit maximization.
  - B) results in cost minimization.
  - C) captures the financial impact of hybrid processes.
  - D) overstates production costs.
  - E) understates operating income.

Answer: C

Diff: 2 Type: MC

Skill: Remember

Objective: LO 17-5

14) The Leather Factory has two departments that process all of its production, the Tanning Department and the Finishing Department. Production begins in the Tanning Department, then the units are transferred to the Finishing Department. Conversion costs are added evenly throughout the process, no additional materials are added in the Finishing Department.

Beginning work-in-process in the finishing department was 60 percent complete as to conversion; ending inventory was 30 percent complete. Additional information about the Finishing Department follows:

Beginning work-in-process inventory	8,000 units
Units transferred-in	32,000 units
Ending work-in-process inventory	4,000 units
Conversion costs	\$38,000
Transferred-in costs	\$100,000
Beginning work-in-process costs:	
Transferred-in	\$14,000
Conversion	\$20,000

Required:

Using the weighted-average method determine the assignment of costs to units transferred-out and ending inventory for the Finishing Department. Round costs per equivalent unit to the nearest cent.

Answer:           Production Cost Worksheet  
                      Finishing Department

<u>Flow of Production</u>	<u>Phys. units</u>	<u>Conversion</u>	<u>Trans.-in</u>
Work in process, beginning	8,000		
Transferred in during period	<u>32,000</u>		
To account for	<u>40,000</u>		
Units transferred out	36,000	36,000	36,000
Work in process ending	<u>4,000</u>	<u>1,200</u>	<u>4,000</u>
Accounted for	<u>40,000</u>	<u>37,200</u>	<u>40,000</u>

<u>Costs</u>	<u>Totals</u>	<u>Conversion</u>	<u>Trans.-in</u>
Work in process, beginning	\$34,000	\$20,000	\$14,000
Costs added during period	<u>138,000</u>	<u>38,000</u>	<u>100,000</u>
Total costs to account for	\$172,000	\$58,000	\$114,000
Divided by equivalent units		37,200	40,000
Equivalent unit costs	\$4.41	\$1.56	\$2.85

Assignment of costs:

Transferred out (36,000 × \$4.41)		\$158,760
Work in process, ending:		
Transferred-in costs (4,000 × \$2.85)	\$11,400	
Conversion (1,200 × \$1.56)	<u>1,872</u>	<u>13,272</u>
Costs accounted for		<u>\$172,032</u>

Diff: 3   Type: ES

Skill: Apply

Objective: LO 17-5

15) Lexington Company produces baseball bats and cricket paddles. It has two departments that process all products. During July, the beginning work in process in the cutting department was half completed as to conversion, and complete as to direct materials. The beginning inventory included \$40,000 for materials and \$60,000 for conversion costs. Ending work-in-process inventory in the cutting department was 40% complete. Direct materials are added at the beginning of the process.

Beginning work in process in the finishing department was 80% complete as to conversion. Direct materials for finishing the units are added near the end of the process. Beginning inventories included \$24,000 for transferred-in costs and \$28,000 for conversion costs. Ending inventory was 30% complete. Additional information about the two departments follows:

	<b>Cutting</b>	<b>Finishing</b>
Beginning work-in-process units	20,000	24,000
Units started this period	60,000	
Units transferred this period	64,000	68,000
Ending work-in-process units		20,000
Material costs added	\$48,000	\$34,000
Conversion costs	28,000	68,500
Transferred-out cost	128,000	

Required:

Prepare a production cost worksheet, using FIFO for the finishing department.

Answer:

Production Cost Worksheet  
Finishing Department  
FIFO Method

<i>Flow of production</i>	<b>Physical Units</b>	<b>Direct Materials</b>	<b>Conversion</b>	<b>Trans-In</b>
Work in process, beginning	24,000			
Started during period	<u>64,000</u>			
To account for	<u>88,000</u>			
<i>Good units completed</i>				
Beginning work in process	24,000	24,000	4,800	
Started and completed	44,000	44,000	44,000	44,000
Ending work in process	<u>20,000</u>	<u>0</u>	<u>6,000</u>	<u>20,000</u>
Accounted for	<u>88,000</u>	<u>68,000</u>	<u>54,800</u>	<u>64,000</u>

<i>Costs</i>	<b>Totals</b>	<b>Direct Materials</b>	<b>Conversion</b>	<b>Trans-in</b>
WIP, beginning	\$52,000			
Costs added during period	<u>230,500</u>	<u>\$34,000</u>	<u>\$68,500</u>	<u>\$128,000</u>
Total costs to account for	\$282,500	\$34,000	\$68,500	\$128,000
Divided by equivalent units		<u>68,000</u>	<u>54,800</u>	<u>64,000</u>
Equivalent-unit costs	<u>\$ 3.75</u>	<u>\$ 0.50</u>	<u>\$1.25</u>	<u>\$ 2.00</u>

<i>Assignment of costs</i>		
Work in process, beginning		\$52,000
Completion of beginning		
Direct Materials (24,000 × \$0.50)	\$12,000	
Conversion (4,800 × \$1.25)	<u>6,000</u>	<u>18,000</u>
Total Beginning Inventory		\$70,000
Started and Completed (44,000 × \$3.75)		<u>165,000</u>
Total costs transferred out		\$235,000
Work in process, ending		
Transferred-in (20,000 × \$2.00)	\$40,000	
Conversion (20,000 × \$1.25 × 0.30)	<u>7,500</u>	<u>47,500</u>
Costs accounted for		<u>\$282,500</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 17-5

16) General Fabricators assembles its product in several departments. It has two departments that process all units. During October, the beginning work in process in the cutting department was half completed as to conversion, and complete as to direct materials. The beginning inventory included \$12,000 for materials and \$3,000 for conversion costs. Ending work-in-process inventory in the cutting department was 40% complete. Direct materials are added at the beginning of the process.

Beginning work in process in the finishing department was 75% complete as to conversion. 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. Ending inventory was 25% complete. Additional information about the two departments follows:

	<b>Cutting</b>	<b>Finishing</b>
Beginning work-in-process units	20,000	20,000
Units started this period	40,000	50,000
Units transferred this period	50,000	
Ending work-in-process units	10,000	20,000
Material costs added	\$48,000	\$28,000
Direct manufacturing labour	\$16,000	\$40,000
Other conversion costs	\$8,000	\$24,000

Required:

Prepare a production cost worksheet using weighted-average for the cutting department and FIFO for the finishing department.

Answer:

Production Cost Worksheet  
Cutting Department  
Weighted-Average Method

<i>Flow of production</i>	<b>Physical Units</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	20,000		
Started during period	<u>40,000</u>		
To account for	<u>60,000</u>		
Units transferred out	50,000	50,000	50,000
Work in process, ending	<u>10,000</u>	<u>10,000</u>	<u>4,000</u>
Accounted for	<u>60,000</u>	<u>60,000</u>	<u>54,000</u>

<i>Costs</i>	<b>Totals</b>	<b>Direct Materials</b>	<b>Conversion</b>
Work in process, beginning	\$15,000	\$12,000	\$ 3,000
Costs added during period	<u>72,000</u>	<u>48,000</u>	<u>24,000</u>
Total costs to account for	\$87,000	\$60,000	27,000
Divided by equivalent units		<u>60,000</u>	<u>54,000</u>
Equivalent-unit costs	<u>\$ 1.50</u>	<u>\$ 1.00</u>	<u>\$ 0.50</u>

<i>Assignment of costs</i>		
Transferred out (50,000 × \$1.50)		\$75,000
Work in process, ending		
Direct materials (10,000 × \$1.00)	\$10,000	
Conversion (10,000 × 0.40 × \$0.50)	<u>2,000</u>	<u>12,000</u>
Costs accounted for		<u>\$87,000</u>

Production Cost Worksheet  
Finishing Department  
FIFO Method

<i>Flow of production</i>	<b>Physical Units</b>	<b>Direct Materials</b>	<b>Conversion</b>	<b>Trans-In</b>
Work in process, beginning	20,000			
Started during period	<u>50,000</u>			
To account for	<u>70,000</u>			
<i>Good units completed</i>				
Beginning work in process	20,000	20,000	5,000	
Started and completed	30,000	30,000	30,000	30,000
Ending work in process	<u>20,000</u>	<u>0</u>	<u>5,000</u>	<u>20,000</u>
Accounted for	<u>70,000</u>	<u>50,000</u>	<u>40,000</u>	<u>50,000</u>

<i>Costs</i>	<b>Totals</b>	<b>Direct Materials</b>	<b>Conversion</b>	<b>Trans-in</b>
WIP, beginning	\$36,000			
Costs added during period	<u>167,000</u>	<u>\$28,000</u>	<u>\$64,000</u>	<u>\$75,000</u>
Total costs to account for	\$203,000	\$28,000	\$64,000	\$75,000
Divided by equivalent units		<u>50,000</u>	<u>40,000</u>	<u>50,000</u>
Equivalent-unit costs	<u>\$ 3.66</u>	<u>\$ 0.56</u>	<u>\$1.60</u>	<u>\$ 1.50</u>

<i>Assignment of costs</i>		
Work in process, beginning		\$36,000
Completion of beginning		
Direct Materials (20,000 × \$0.56)	\$11,200	
Conversion (20,000 × 0.25 × \$1.60)	8,000	<u>\$19,200</u>
Total Beginning Inventory		55,200
Started and Completed (30,000 × \$3.66)		<u>109,800</u>
Total costs transferred out		165,000
Work in process, ending		
Transferred-in (20,000 × \$1.50)	\$30,000	
Conversion (20,000 × \$1.60 × 0.25)	8,000	<u>38,000</u>
Costs accounted for		<u>\$203,000</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 17-5

17) Caulfield Ltd. has two production departments in the manufacturing of its products. In the first department, Fabricating, component parts are manufactured. In the second department, Assembly, the components are assembled and finished. Direct materials are added at the start of production in Fabricating and at the 90% point of the process in Assembly. During July the beginning work-in-process of 50,000 units in the Fabricating Department was 40% complete with respect to conversion. The Assembly Department had 38,000 units in beginning work in process; these units were 85% complete with respect to conversion. On July 31, the ending work-in-process inventory was 20% complete in the Fabricating Department and 40% complete in the Assembly Department. Conversion costs are added evenly throughout both departments.

Beginning work-in-process in the Fabricating Department had costs assigned of \$290,000 for direct materials and \$52,000 for conversion. In the Assembly Department, the beginning work in process included \$318,440 for transferred-in costs and \$8,550 for conversion costs. Additional information about the two departments follows:

	<u>Fabricating</u>	<u>Assembly</u>
Units started or transferred-in in July	60,000	?
Units transferred out in July	70,000	76,000
Ending work in process	?	?
Material costs added	\$348,000	\$60,800
Other conversion costs	\$150,800	\$79,100

Required:

Determine the assignment of costs to units transferred-out and ending inventory , using weighted-average for the Assembly Department and FIFO for the Finishing Department.

Answer:

Production Cost Worksheet  
Fabricating Department  
Weighted-average Method

<u>Flow of Production</u>	<u>Physical units</u>	<u>Direct materials</u>	<u>Conversion</u>
Work in process, beginning	50,000		
Started during period	<u>60,000</u>		
To account for	<u>110,000</u>		
Units transferred out	70,000	70,000	70,000
Work in process ending	<u>40,000</u>	<u>40,000</u>	<u>8,000</u>
Accounted for	<u>110,000</u>	<u>110,000</u>	<u>78,000</u>

<u>Costs</u>	<u>Totals</u>	<u>Direct materials</u>	<u>Conversion</u>
Work in process, beginning	\$342,000	\$290,000	\$52,000
Costs added during period	<u>498,800</u>	<u>348,000</u>	<u>150,800</u>
Total costs to account for	\$840,800	\$638,000	\$202,800
Divided by equivalent units		<u>110,000</u>	<u>78,000</u>
Equivalent unit costs	\$8.40	\$5.80	\$2.60

Assignment of costs:

Transferred out (70,000 × \$8.40)			\$588,000
Work in process, ending:			
Direct materials (40,000 × \$5.80)		\$232,000	
Conversion (40,000 × 0.20 × \$2.60)		<u>20,800</u>	<u>252,800</u>
Costs accounted for			<u>\$840,800</u>

Production Cost Worksheet  
 Assembly Department  
 FIFO Method

<u>Flow of Production</u>	<u>Phy.Units</u>	<u>D.mat.</u>	<u>Conversion</u>	<u>Trans.-in</u>
Work in process, beginning	38,000			
Started during period	<u>70,000</u>			
To account for	<u>108,000</u>			

Good units completed:

Beginning work-in-process	38,000	38,000	5,700	0
Started and completed	38,000	38,000	38,000	38,000
Work in process ending	<u>32,000</u>	<u>0</u>	<u>12,800</u>	<u>32,000</u>
Accounted for	<u>108,000</u>	<u>76,000</u>	<u>56,500</u>	<u>70,000</u>

<u>Costs</u>	<u>Totals</u>	<u>D. mat.</u>	<u>Conversion</u>	<u>Trans.-in</u>
Work in process, beginning	\$326,990			
Costs added during period	<u>727,900</u>	<u>\$60,800</u>	<u>\$79,100</u>	<u>\$588,000</u>
Total costs to account for	\$1,054,890	\$60,800	\$79,100	\$588,000
Divided by equivalent units	<u>          </u>	<u>76,000</u>	<u>56,500</u>	<u>70,000</u>
Equivalent unit costs	\$10.60	\$0.80	\$1.40	\$8.40

Assignment of costs:

Work in process, beginning			\$326,990
Completion of beginning:			
D. mat. (38,000 × \$0.80)		\$30,400	
Conv. (38,000 × 0.15 × \$1.40)		<u>7,980</u>	<u>38,380</u>
Total beginning inventory			\$365,370
Started and Completed (38,000 × \$10.60)			<u>402,800</u>
Total costs transferred out			\$768,170
Work in process, ending:			
Trans.-in (32,000 × \$8.40)		\$268,800	
Conversion (32,000 × 0.40 × \$1.40)		<u>17,920</u>	286,720
Costs accounted for			<u>\$1,054,890</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 17-3, 5

18) The president of Sampson Ltd. has approached the controller for the company with concerns over the projected year end results. The company needs to present its financial statements to the bank to renew its loan and the president is concerned that the loan may either be denied, or the renewal terms will impose a much higher interest rate. The following summarizes the conversation between the president and the controller:

President: I am very concerned about the upcoming loan renewal. Our cash position is low and our operating results for the year were not as strong as expected. Our unit cost of production has come in at \$1,800 based on equivalent units of production of 2,590. I know that currently we have 600 units in ending work in process that are only 15% complete. If we were to reclassify these as 80% complete, we would increase our equivalent units of production by 390. Since all of our 2,500 completed units were sold, this reclassification would lower our unit costs, reduce cost of goods sold and increase our ending work in process inventory which could be used as collateral. This would improve our financial position and allow us to renew our loan and keep our current rate of interest.

Controller: I think this is risky. It would be easy to determine that the units are not 80% complete.

President: I don't see how. By the time we are audited, the units will have long since been completed and shipped to customers.

Required:

Assume you are the controller for Sampson Ltd. and that you hold a professional accounting designation.

- Determine the impact of the president's proposal on the financial results for Sampson Ltd.
- Referring back to the standards of ethical conduct, what should you do as controller?

Answer:

a.

**Current Results (Ending Work in Process reported as 15% complete)**

Cost of Goods Sold (2,500 * \$1,800)	\$4,500,000
Ending Work in Process (600 * 15% * \$1,800)	<u>\$162,000</u>
Total Costs of Production	\$4,662,000

**Revised Results (Ending Work in Process reported as 80% complete)**

Cost of Goods Sold (2,500 * \$1,564.43*)	\$3,911,075
Ending Work in Process (600 * 80% * \$1,564.43)	<u>750,925</u>
Total Costs of Production	\$4,662,000

\*Costs

Total Costs	\$4,662,000
Divided by equivalent units [600 * 80%] + 2,500	<u>2,980</u>
Cost per equivalent unit	\$1,564.43

Percentage decrease in CGS [\$588,925/\$4,500,000]	13.09%
Percentage increase in EWIP [\$588,925/\$162,000]	363.53%

b. The controller should not agree to this reclassification. In order to comply with an accountant's code of ethical conduct, the controller must remain objective and free from bias. The controller has a fiduciary duty to act with fidelity for public needs, maintain independence of thought and action and disclose all material facts to ensure that financial reports and statements are not misleading.

Diff: 3 Type: ES

Skill: Analyze

Objective: Cumulative

19) The Laramie Factory produces expensive boots. It has two departments that process all the items. During January, the beginning work in process in the tanning department was 40% complete as to conversion and 100% complete as to direct materials. The beginning inventory included \$6,000 for materials and \$18,000 for conversion costs. Ending work-in-process inventory in the tanning department was 40% complete. Direct materials are added at the beginning of the process.

Beginning work in process in the finishing department was 60% complete as to conversion. Beginning inventories included \$7,000 for transferred-in costs and \$10,000 for conversion costs. Ending inventory was 30% complete.

Additional information about the two departments follows:

	<b>Tanning</b>	<b>Finishing</b>
Beginning work-in-process units	5,000	4,000
Units started this period	14,000	?
Units transferred this period	16,000	18,000
Ending work-in-process units	?	2,000
Material costs added	\$18,000	?
Conversion costs	32,000	\$19,000
Transferred-out cost	50,000	?

Required:

Prepare a production cost worksheet using weighted-average costing for the finishing department.

Answer:

Production Cost Worksheet  
Finishing Department  
Weighted-Average Method

<i>Flow of production</i>	<b>Physical Units</b>	<b>Conversion</b>	<b>Trans-In</b>
Work in process, beginning	4,000		
Transferred in during period	<u>16,000</u>		
To account for	<u>20,000</u>		
Units transferred out	18,000	18,000	18,000
Work in process, ending	<u>2,000</u>	<u>600</u>	<u>2,000</u>
Accounted for	<u>20,000</u>	<u>18,600</u>	<u>20,000</u>

<i>Costs</i>	<b>Totals</b>	<b>Conversion</b>	<b>Trans-in</b>
Work in process, beginning	\$17,000	\$10,000	\$ 7,000
Costs added during period	<u>69,000</u>	<u>19,000</u>	<u>50,000</u>
Total costs to account for	\$86,000	\$29,000	\$57,000
Divided by equivalent units		<u>18,600</u>	<u>20,000</u>
Equivalent-unit costs	<u>\$ 4.41</u>	<u>\$ 1.56</u>	<u>\$ 2.85</u>

<i>Assignment of costs</i>		
Transferred out (18,000 × \$4.41)		\$79,380
Work in process, ending		
Transferred-in costs (2,000 × \$2.85)	\$5,700	
Conversion (600 × \$1.56)	<u>936</u>	<u>6,636</u>
Costs accounted for		<u>\$86,016</u>

Diff: 3 Type: ES

Skill: Apply

Objective: LO 17-5

20) When there are multiple support departments within an organization, it is common to use journal entries to transfer-in costs from one department to another. What are some of the points to remember about these costs?

Answer:

1. Be sure to include transferred-in costs from previous departments in your calculations.
2. If you are using a FIFO basis, do not overlook costs assigned in the previous period to units that were in process at the beginning of the current period but are now included in the units transferred.
3. Unit costs may fluctuate between periods, consequently, transferred units may contain batches accumulated at different unit costs.
4. Different departments may have different measurement denominations. If this is the case, as units are received in one department coming from another department, their measurements must be converted to the denomination of the receiving department.

Diff: 2 Type: ES

Skill: Understand

Objective: LO 17-5