Chapter 18(3)
Process Cost Systems

OBJECTIVES

Obj 1	Explain and illustrate the characteristics and cost flows for a process manufacturer.
Obj 2	Prepare a cost of production report accounting for completed units under the FIFO method.
Obj 3	Prepare journal entries for transactions of a process manufacturer.
Obj 4	Use cost of production reports for decision making.
Obj 5	Contrast just-in-time processing with conventional manufacturing practices.

TRUE/FALSE

1. Process cost systems use job order cost cards to accumulate cost data.
ANS: F DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

2. Both process and job order cost systems maintain perpetual inventory accounts with subsidiary ledgers.
ANS: T DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

3. If the principal products of a manufacturing process are identical, a process cost system is more appropriate than a job order cost system.
ANS: T DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

4. If the products of a manufacturing process are produced to customer specifications, a process cost system is more appropriate than a job order cost system.
ANS: F DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

5. Process manufacturers typically use large machines to process a continuous flow of raw materials into a finished state.
ANS: T DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

6. Industries that typically use process cost systems include chemicals, oil, metals, food, paper, and pharmaceuticals.
ANS: T DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

7. In a process cost system, product costs are accumulated by processing department rather than by job.
ANS: T DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

8. Conversion costs include materials, direct labor, and factory overhead.
ANS: F DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

9. The direct materials costs and direct labor costs incurred by a production department are referred to as conversion costs.
ANS: F DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

10. The direct labor costs and factory overhead costs incurred by a production department are referred to as conversion costs.
ANS: T DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

11. The first step in determining the cost of goods completed and ending inventory valuation using process costing is to calculate equivalent units of production.
ANS: F DIF: Easy OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

12. Conversion costs are usually incurred evenly throughout a process.
ANS: T DIF: Easy OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

13. Equivalent units of production are the number of units that could have been manufactured from start to finish during an accounting period.
ANS: T DIF: Easy OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

14. Both job order and process cost accounting use equivalent units of production to determine costs.
ANS: F DIF: Easy OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

15. If 30,000 units of materials enter production during the first year of operations, 25,000 of the units are finished, and 5,000 are 30% completed, the number of equivalent units of production would be 28,500.
ANS: F DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

16. If 16,000 units of materials enter production during the first year of operations, 12,000 of the units are finished, and 4,000 are 75% completed, the number of equivalent units of production would be 15,000.
ANS: T DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

17. If the costs for direct materials, direct labor, and factory overhead were $275,300, $42,600, and $41,000, respectively, for 14,000 equivalent units of production, the total conversion cost was $358,900.
ANS: F DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

18. If the costs for direct materials, direct labor, and factory overhead were $60,000, $35,000, and $25,000, respectively, for 20,000 equivalent units of production, the conversion cost per equivalent unit was $6.
ANS: F DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

19. If the costs for direct materials, direct labor, and factory overhead were $522,200, $82,700, and $45,300, respectively, for 16,000 equivalent units of production, the conversion cost per equivalent unit was $8.00.
ANS: T DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

20. If 10,000 units which were 40% completed are in process at November 1, 80,000 units were completed during November, and 12,000 were 20% completed at November 30, the number of equivalent units of production for November was 78,400. (Assume no loss of units in production and that inventories are costed by the first-in, first-out method.)
ANS: T DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

21. If 10,000 units which were 40% completed are in process at November 1, 80,000 units were completed during November, and 12,000 were 20% completed at November 30, the number of equivalent units of production for November was 75,600. (Assume no loss of units in production and that inventories are costed by the first-in, first-out method.)
ANS: F DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

22. In applying the first-in, first-out method of costing inventories, if 8,000 units which are 30% completed are in process at June 1, 28,000 units are completed during June, and 4,000 units were 75% completed at June 30, the number of equivalent units of production for June was 33,400.
ANS: F DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

23. In applying the first-in, first-out method of costing inventories, if 8,000 units which are 30% completed are in process at June 1, 28,000 units are completed during June, and 4,000 units were 75% completed at June 30, the number of equivalent units of production for June was 28,600.
ANS: T DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

24. The cost of production report reports the cost of the goods sold.
ANS: F DIF: Easy OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

25. The cost of production report reports the cost charged to production and the costs allocated to finished goods and work in process.
ANS: T DIF: Easy OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

26. The cost of production report summarizes (1) the units for which the department is accountable and the units to be assigned costs and (2) the costs charged to the department and the allocation of those costs.
ANS: T DIF: Easy OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

27. The amount journalized showing the cost added to finished goods is taken from the cost of production report.
ANS: T DIF: Easy OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

28. One of the differences in accounting for a process costing system compared to a job order system is that the amounts used to transfer goods from one department to the next comes from the cost of production report instead of job cost cards.
ANS: T DIF: Easy OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

29. One of the primary uses of a cost of production report is to assist management in controlling production costs.
ANS: T DIF: Easy OBJ: 18(3)-04
NAT: AACSB Analytic | IMA-Cost Management

30. Yield measures the ratio of the materials output quantity to the materials input quantity.
ANS: T DIF: Easy OBJ: 18(3)-04
NAT: AACSB Analytic | IMA-Cost Management

31. Companies recognizing the need to simultaneously produce products with high quality, low cost, and instant availability have adopted a just-in-time processing philosophy.
ANS: T DIF: Easy OBJ: 18(3)-05
NAT: AACSB Analytic | IMA-Cost Management

32. In a just-in-time system, processing functions are combined into work centers, sometimes called departments.
ANS: F DIF: Easy OBJ: 18(3)-05
NAT: AACSB Analytic | IMA-Cost Management

33. The FIFO method of process costing is simpler that the Average cost method.
ANS: F DIF: Easy OBJ: 18(3)-App
NAT: AACSB Analytic | IMA-Cost Management

34. Companies that use the average costing method for process costing have unit costs that include costs from more that one accounting period.
ANS: T DIF: Easy OBJ: 18(3)-App
NAT: AACSB Analytic | IMA-Cost Management

35. If a company uses average costing instead of FIFO they will still get the same unit costs.
ANS: F DIF: Easy OBJ: 18(3)-App
NAT: AACSB Analytic | IMA-Cost Management

36. The closer a company moves towards Just in Time production, the differences in unit costs between average costing and FIFO will be reduced.
ANS: T DIF: Moderate OBJ: 18(3)-App
NAT: AACSB Analytic | IMA-Strategic Planning

MULTIPLE CHOICE

1. For which of the following businesses would a process cost system be appropriate?
   a. Auto repair service
   b. Paint manufacturer
   c. Specialty printer
   d. Custom furniture manufacturer
ANS: B DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

2. Which of the following is NOT a way in which process and job order cost systems are similar?
   a. Both accumulate product costs--direct materials, direct labor, and factory overhead
   b. Both allocate product cost to units produced
   c. Both maintain perpetual inventories
   d. Both use job order cost cards
ANS: D DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

3. The cost system best suited to industries that manufacture a large number of identical units of commodities on a continuous basis is:
   a. process
   b. departmental
   c. first-in, first-out
   d. job order
ANS: A DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

4. In a process cost system, the amount of work in process inventory is valued by:
   a. finding the sum of all open job costs
   b. allocating departmental costs between completed and partially completed units
   c. multiplying units in ending inventory by the direct materials cost per unit
   d. all of the above
ANS: B DIF: Moderate OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

5. In process cost accounting, the costs of direct materials and direct labor are charged directly to:
   a. service departments
   b. processing departments
   c. customer accounts receivable
   d. job orders
ANS: B DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

6. The two categories of cost comprising conversion costs are:
   a. direct labor and indirect labor
   b. direct labor and factory overhead
   c. factory overhead and direct materials
   d. direct labor and direct materials

ANS: B DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

7. In a process cost system, the cost of completed production in Department A is transferred to Department B by which of the following entries?
   a. Debit Work in Process--Dept. B; credit Work in Process--Dept. A.
   b. Debit Work in Process--Dept. B; credit Finished Goods--Dept. A.
   c. Debit Work in Process--Dept. B; credit Cost of Goods Sold--Dept. A.
   d. Debit Finished Goods; credit Work in Process--Dept. B.

ANS: A DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

8. The three categories of manufacturing costs comprising the cost of work in process are direct labor, direct materials, and:
   a. indirect expenses
   b. direct expenses
   c. sales salaries expense
   d. factory overhead

ANS: D DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

9. For which of the following businesses would a process cost system be appropriate?
   a. An oil refinery
   b. Yacht builder
   c. Specialty furniture company
   d. Custom electronics manufacturer

ANS: A DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

10. Which of the following is not characteristic of a process cost system.
    a. The system may use several work in process inventory accounts.
    b. Manufacturing costs are groups by department rather than by jobs.
    c. The system accumulates costs per job.
    d. The system emphasizes time periods rather than the time it takes to complete a job.

ANS: C DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

11. Which of the following entities would probably use a process costing system?
    a. A custom boat builder
    b. A custom furniture manufacturer
    c. A one of a kind jewelry creator
    d. An oil refinery.

ANS: D DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

12. Which of the following is *not* a characteristic of a process cost system?
    a. Manufacturing costs are grouped by departments.
    b. The system may use several Work-in-Process accounts.
    c. The system measures costs for each completed job.
    d. The system allocates costs between completed and partially completed units within a department.

ANS: C DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

13. If a company uses a process costing system to account for the costs in its four production departments, how many Work-in-Process will it use?
    a. 3
    b. 4
    c. 1
    d. 2

ANS: B DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management

14. The four steps necessary to determine the cost of goods completed and the ending inventory valuation in a process cost system are:

    1. allocate costs to transferred and partially completed units
    2. determine the units to be assigned costs
    3. determine the cost per equivalent unit
    4. calculate equivalent units of production

    The correct ordering of the steps is:
    a. 2, 4, 3, 1
    b. 4, 2, 3, 1
    c. 2, 3, 4, 1
    d. 2, 3, 1, 4

ANS: A DIF: Easy OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

15. Which of the following costs incurred by a paper manufacturer would be included in the group of costs referred to as conversion costs?
    a. Advertising costs
    b. Raw lumber (direct materials)
    c. Machine operator's wages (direct labor)
    d. Sales salaries

ANS: C DIF: Easy OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

16. Which of the following costs incurred by a paper manufacturer would NOT be included in the group of costs referred to as conversion costs?
    a. Factory supervisor's salary
    b. Machine operator's wages (direct labor)
    c. Raw lumber (direct materials)
    d. Factory maintenance personnel supplies

ANS: C DIF: Easy OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

17. In the manufacture of 10,000 units of a product, direct materials cost incurred was $143,700, direct labor cost incurred was $85,000, and applied factory overhead was $43,500. What is the total conversion cost?
    a. $187,200
    b. $128,500
    c. $272,200
    d. $43,500

ANS: B DIF: Easy OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

18. If Department H had 500 units, 60% completed, in process at the beginning of the period, 6,000 units were completed during the period, and 600 units were 30% completed at the end of the period, what was the number of equivalent units of production for the period if the first-in, first-out method is used to cost inventories?
    a. 7,100
    b. 5,980
    c. 6,380
    d. 5,880

ANS: D DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

19. If Department K had 2,000 units, 45% completed, in process at the beginning of the period, 12,000 units were completed during the period, and 1,200 units were 40% completed at the end of the period, what was the number of equivalent units of production for the period if the first-in, first-out method is used to cost inventories?
    a. 11,580
    b. 11,280
    c. 13,680
    d. 10,000

ANS: A DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

Department G had 3,600 units, one-third completed at the beginning of the period, 12,000 units were completed during the period, 2,000 units were one-fifth completed at the end of the period, and the following manufacturing costs were debited to the departmental work in process account during the period:

Work in process, beginning of period	$30,000
Costs added during period:	
Direct materials (10,400 at $8)	83,200
Direct labor	62,000
Factory overhead	24,800

20. Assuming that all direct materials are placed in process at the beginning of production and that the first-in, first-out method of inventory costing is used, what is the total cost of the departmental work in process inventory at the end of the period?
    a. $19,100
    b. $26,000
    c. $23,200
    d. $12,000

ANS: A DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

21. Assuming that all direct materials are placed in process at the beginning of production and that the first-in, first-out method of inventory costing is used, what is the total cost of 3,600 units of beginning inventory which were completed during the period?
    a. $61,200
    b. $48,600
    c. $38,400
    d. $45,600

ANS: B DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

22. Assuming that all direct materials are placed in process at the beginning of production and that the first-in, first-out method of inventory costing is used, what is the total cost of the units "started and completed" during the period?
    a. $156,400
    b. $154,800
    c. $132,300
    d. $156,000

ANS: C DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

23. Department R had 5,000 units in work in process that were 75% completed as to labor and overhead at the beginning of the period, 30,000 units of direct materials were added during the period, 32,000 units were completed during the period, and 3,000 units were 40% completed as to labor and overhead at the end of the period. All materials are added at the beginning of the process. The first-in, first-out method is used to cost inventories. The number of equivalent units of production for conversion costs for the period was:
    a. 32,450
    b. 29,450
    c. 31,950
    d. 26,000

ANS: B DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

Department S had no work in process at the beginning of the period. 12,000 units of direct materials were added during the period at a cost of $84,000, 9,000 units were completed during the period, and 3,000 units were 30% completed as to labor and overhead at the end of the period. All materials are added at the beginning of the process. Direct labor was $49,500 and factory overhead was $9,900.

24. The total conversion costs for the period were:
    a. $59,400
    b. $49,500
    c. $143,400
    d. $9,900

ANS: A DIF: Easy OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

25. The total cost of units completed during the period were:
    a. $117,000
    b. $143,400
    c. $121,000
    d. $127,450

ANS: A DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

26. The following production data were taken from the records of the Finishing Department for June:

Inventory in process, 6-1, 1/3 completed	1,500 units
Transferred to finished goods during June	5,000 units
Equivalent units of production during June	5,200 units

Determine the number of equivalent units of production in the June 30 Finishing Department inventory, assuming that the first-in, first-out method is used to cost inventories.
a. 700 units
b. 200 units
c. 1,000 units
d. 300 units

ANS: A DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

27. The debits to Work in Process--Assembly Department for April, together with data concerning production, are as follows:

April 1, work in process:	
Materials cost, 3,000 units	$ 7,500
Conversion costs, 3,000 units, 2/3 completed	6,000
Materials added during April, 10,000 units	26,000
Conversion costs during April	31,000
Goods finished during April, 11,500 units	---
April 30 work in process, 1,500 units, 1/2 completed	---

All direct materials are placed in process at the beginning of the process and the first-in, first-out method is used to cost inventories. The materials cost per equivalent unit for April is:
a. $2.60
b. $2.26
c. $2.50
d. $5.50

ANS: A DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

28. Department E had 4,000 units in Work in Process that were 40% completed at the beginning of the period at a cost of $12,500. 14,000 units of direct materials were added during the period at a cost of $28,700. 15,000 units were completed during the period, and 3,000 units were 75% completed at the end of the period. All materials are added at the beginning of the process. Direct labor was $32,450 and factory overhead was $18,710. The number of equivalent units of production for the period for conversion if the first-in, first-out method is used to cost inventories was:
    a. 15,650
    b. 14,850
    c. 14,150
    d. 14,650

ANS: A DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

29. Department A had 1,000 units in Work in Process that were 70% completed at the beginning of the period at a cost of $7,000. 4,000 units of direct materials were added during the period at a cost of $8,200. 4,500 units were completed during the period, and 500 units were 60% completed at the end of the period. All materials are added at the beginning of the process. Direct labor was $28,700 and factory overhead was $4,510. The cost of the 500 units in process at the end of the period if the first-in, first-out method is used to cost inventories was:
    a. $1,025
    b. $5,000
    c. $5,075
    d. $3,455

ANS: D DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

30. In the manufacture of 10,000 units of a product, direct materials cost incurred was $145,800, direct labor cost incurred was $82,000, and applied factory overhead was $45,500. What is the total conversion cost?
    a. $127,500
    b. $145,800
    c. $272,200
    d. $273,300

ANS: A DIF: Easy OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

31. If Department H had 600 units, 60% completed, in process at the beginning of the period, 8,000 units were completed during the period, and 500 units were 30% completed at the end of the period, what was the number of equivalent units of production for the period if the first-in, first-out method is used to cost inventories?
    a. 7,790
    b. 8,390
    c. 8,600
    d. 8,000

ANS: A DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

32. If Department K had 2,500 units, 45% completed, in process at the beginning of the period, 15,000 units were completed during the period, and 1,200 units were 40% completed at the end of the period, what was the number of equivalent units of production for the period if the first-in, first-out method is used to cost inventories?
    a. 16,855
    b. 16,605
    c. 13,460
    d. 14,355

ANS: D DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

Department A had 4,000 units in work in process that were 75% completed as to labor and overhead at the beginning of the period, 30,000 units of direct materials were added during the period, 32,000 units were completed during the period, and 2,000 units were 40% completed as to labor and overhead at the end of the period. All materials are added at the beginning of the process. The first-in, first-out method is used to cost inventories.

33. The number of equivalent units of production for conversion costs for the period was:
    a. 31,800
    b. 29,800
    c. 33,800
    d. 32,000

ANS: B DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

34. The number of equivalent units of production for material costs for the period was:
    a. 31,800
    b. 29,800
    c. 30,000
    d. 32,000

ANS: C DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

The following production data were taken from the records of the Finishing Department for June:

Inventory in process, 6-1 (30% completed)	4,000 units
Completed units during June	58,000 units
Ending inventory (60% complete)	3,000 units

35. Determine the number of conversion equivalent units of production in the June 30 Finishing Department inventory, assuming that the first-in, first-out method is used to cost inventories.
    a. 58,600 units
    b. 57,000 units
    c. 62,600 units
    d. 57,000 units

ANS: A DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

36. Determine the number of material equivalent units of production in the June 30 Finishing Department inventory, assuming that the first-in, first-out method is used to cost inventories and materials were added at the beginning of the process.
    a. 61,000 units
    b. 57,000 units
    c. 59,800 units
    d. 59,200 units

ANS: B DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

37. The debits to Work in Process--Assembly Department for April, together with data concerning production, are as follows:

April 1, work in process:	
Materials cost, 3,000 units	$ 7,200
Conversion costs, 3,000 units, 60% completed	6,000
Materials added during April, 10,000 units	25,000
Conversion costs during April	35,750
Goods finished during April, 12,000 units	---
April 30 work in process, 1,000 units, 40% completed	---

All direct materials are placed in process at the beginning of the process and the first-in, first-out method is used to cost inventories. The materials cost per equivalent unit for April is:
    a. $2.48
    b. $2.08
    c. $2.50
    d. $5.25

ANS: C DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

38. The debits to Work in Process--Assembly Department for April, together with data concerning production, are as follows:

April 1, work in process:	
Materials cost, 3,000 units	$ 7,200
Conversion costs, 3,000 units, 40% completed	6,000
Materials added during April, 10,000 units	25,000
Conversion costs during April	30,800
Goods finished during April, 12,000 units	---
April 30 work in process, 1,000 units, 40% completed	---

All direct materials are placed in process at the beginning of the process and the first-in, first-out method is used to cost inventories. The conversion cost per equivalent unit for April is:
a. $2.48
b. $2.75
c. $2.50
d. $5.25

ANS: B DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

Department B had 3,000 units in Work in Process that were 40% completed at the beginning of the period at a cost of $12,500. 14,000 units of direct materials were added during the period at a cost of $28,700. 15,000 units were completed during the period, and 2,000 units were 75% completed at the end of the period. All materials are added at the beginning of the process. Direct labor was $32,450 and factory overhead was $18,710.

39. The number of equivalent units of production for the period for conversion if the first-in, first-out method is used to cost inventories was:
a. 15,650
b. 14,850
c. 18,500
d. 15,300

ANS: D DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

40. The number of equivalent units of production for the period for materials if the first-in, first-out method is used to cost inventories was:
a. 15,000
b. 17,800
c. 16,000
d. 14,000

ANS: D DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

The following unit data were assembled for the assembly process of the Fine Co. for the month of June. Direct materials are added at the beginning of the process. Conversion costs are added uniformly over the production process. The company uses the FIFO process.

	Units
Beginning work in process (60% complete)	5,000
Units started in September	51,000
Ending work in process (30% complete)	4,000

41. The number of equivalent units produced with respect to conversion costs is:
    a. 54,200
    b. 55,200
    c. 54,200
    d. 50,200

ANS: D DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

42. The number of equivalent units produced with respect to direct materials costs is:
    a. 51,000
    b. 50,000
    c. 47,000
    d. 56,000

ANS: A DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

Frank Inc., has the following information available:

	Costs from Beginning Inventory	Costs from Current Period
Direct materials	$2,500	$22,252
Conversion Costs	6,200	150,536

43. At the beginning of the period, there were 500 units in process that were 60 percent complete as to conversion costs and 100 percent complete as to direct materials costs. During the period 4,500 units were started and completed. Ending inventory contained 340 units that were 30 percent complete as to conversion costs and 100 percent complete as to materials costs. (Assume that the company uses the FIFO process cost method.)

The equivalent units of production for direct materials and conversion costs, respectively, were
    a. 5,340 for direct materials and 4,902 for conversion costs.
    b. 4,840 for direct materials and 4,802 for conversion costs.
    c. 4,602 for direct materials and 4,802 for conversion costs.
    d. 4,902 for direct materials and 4,802 for conversion costs.

ANS: B DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

44. At the beginning of the period, there were 500 units in process that were 40 percent complete as to conversion costs and 100 percent complete as to direct materials costs. During the period 4,500 units were started and completed. Ending inventory contained 340 units that were 30 percent complete as to conversion costs and 100 percent complete as to materials costs. (Assume that the company uses the FIFO process cost method.)

The cost of completing a unit during the current period was
a. $36.19
b. $34.88
c. $35.95
d. $35.89

ANS: C DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

45. At the beginning of the period, there were 500 units in process that were 40 percent complete as to conversion costs and 100 percent complete as to direct materials costs. During the period 4,500 units were started and completed. Ending inventory contained 340 units that were 80 percent complete as to conversion costs and 100 percent complete as to materials costs. (Assume that the company uses the FIFO process cost method.)

The total costs that will be transferred into Finished Goods for units started and completed were
a. $161,775
b. $156,960
c. $162,855
d. $161,505

ANS: A DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

46. Equivalent production units, usually are determined for
a. direct materials and conversion costs.
b. direct materials only.
c. conversion costs only.
d. direct materials and direct labor costs only.

ANS: A DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

47. The number of units that *could have been* completed within a given accounting period is the definition of
a. units started and completed.
b. equivalent units.
c. conversion costs.
d. ending work in process.

ANS: B DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

48. Which of the following is *not* included in conversion costs?
    a. Direct labor.
    b. Factory overhead.
    c. Indirect labor.
    d. Direct materials.

ANS: D DIF: Easy OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

49. A form prepared periodically for each processing department summarizing (1) the units for which the department is accountable and the units to be assigned costs and (2) the costs charged to the department and the allocation of these costs is termed a:
    a. factory overhead production report
    b. manufacturing cost report
    c. process cost report
    d. cost of production report

ANS: D DIF: Easy OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

Department W had 2,400 units, one-third completed at the beginning of the period, 12,000 units were transferred to Department X from Department W during the period, and 1,800 units were one-half completed at the end of the period.

50. What are the total number of units to be assigned cost on the cost of production report for Department W
    a. 12,000 units
    b. 13,600 units
    c. 12,700 units
    d. 13,800 units

ANS: D DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

51. What is the equivalent units of production used to compute unit conversion cost on the cost of production report for Department W (Assuming the company uses FIFO)?
    a. 12,100 units
    b. 12,000 units
    c. 15,000 units
    d. 11,400 units

ANS: A DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

Department J had no work in process at the beginning of the period, 18,000 units were completed during the period, 2,000 units were 30% completed at the end of the period, and the following manufacturing costs were debited to the departmental work in process account during the period (Assuming the company uses FIFO):

Direct materials (20,000 at $4)	$ 80,000
Direct labor	102,300
Factory overhead	37,200

52. Assuming that all direct materials are placed in process at the beginning of production, what is the total cost of the departmental work in process inventory at the end of the period?
    a. $4,500
    b. $23,000
    c. $6,900
    d. $12,500

ANS: D DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

53. Assuming that all direct materials are placed in process at the beginning of production, what is the total cost of the 18,000 units completed during the period?
    a. $139,500
    b. $219,500
    c. $80,000
    d. $207,000

ANS: D DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

Lombardi Company manufactures a single product by a continuous process, involving three production departments. The records indicate that direct materials, direct labor, and applied factory overhead for Department 1 were $100,000, $125,000, and $150,000, respectively. The records further indicate that direct materials, direct labor, and applied factory overhead for Department 2 were $50,000, $60,000, and $70,000, respectively. In addition, work in process at the beginning of the period for Department 1 totaled $75,000, and work in process at the end of the period totaled $60,000.

54. The journal entry to record the flow of costs into Department 1 during the period for direct materials is:

a.	Work in Process--Department 1	100,000	
	Materials		100,000
b.	Work in Process--Department 1	50,000	
	Materials		50,000
c.	Materials	100,000	
	Work in Process--Department 1		100,000
d.	Materials	50,000	
	Work in Process--Department 1		50,000

ANS: A DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

55. The journal entry to record the flow of costs into Department 2 during the period for direct materials is:

a. Work in Process--Department 2	100,000	
Materials		100,000
b. Work in Process--Department 2	50,000	
Materials		50,000
c. Work in Process--Department 2	150,000	
Materials		150,000
d. Materials	50,000	
Work in Process--Department 2		50,000

ANS: B DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

56. The journal entry to record the flow of costs into Department 1 during the period for direct labor is:

a. Work in Process--Department 1	60,000	
Wages Payable		60,000
b. Wages Payable	125,000	
Work in Process--Department 1		125,000
c. Work in Process--Department 1	125,000	
Wages Payable		125,000
d. Wages Payable	60,000	
Work in Process--Department 1		60,000

ANS: C DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

57. The journal entry to record the flow of costs into Department 2 during the period for direct labor is:

a. Work in Process--Department 2	60,000	
Wages Payable		60,000
b. Wages Payable	60,000	
Work in Process--Department 2		60,000
c. Work in Process--Department 2	125,000	
Wages Payable		125,000
d. Work in Process--Department 2	185,000	
Wages Payable		185,000

ANS: A DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

58. The journal entry to record the flow of costs into Department 1 during the period for applied overhead is:

a. Factory Overhead--Department 1	150,000	
Work in Process--Department 1		150,000
b. Work in Process--Department 1	125,000	
Factory Overhead--Department 1		125,000
c. Work in Process--Department 1	70,000	
Factory Overhead--Department 1		70,000
d. Work in Process--Department 1	150,000	
Factory Overhead--Department 1		150,000

ANS: D DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

59. The journal entry to record the flow of costs into Department 2 during the period for applied overhead is:

a.	Factory Overhead--Department 2	70,000	
	Work in Process--Department 2		70,000
b.	Work in Process--Department 2	220,000	
	Factory Overhead--Department 2		220,000
c.	Work in Process--Department 2	70,000	
	Factory Overhead--Department 2		70,000
d.	Work in Process--Department 2	150,000	
	Factory Overhead--Department 2		150,000

ANS: C DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

60. The journal entry to record the flow of costs from Department 1 into Department 2 during the period is:

a.	Work in Process--Department 2	390,000	
	Work in Process--Department 1		390,000
b.	Work in Process--Department 2	330,000	
	Work in Process--Department 1		330,000
c.	Work in Process--Department 2	255,000	
	Work in Process--Department 1		255,000
d.	Work in Process--Department 2	375,000	
	Work in Process--Department 1		375,000

ANS: A DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

61. Lombardi Company manufactures a single product by a continuous process, involving three production departments. The records indicate that direct materials, direct labor, and applied factory overhead for Department 1 were $100,000, $125,000, and $150,000, respectively. Work in process at the beginning of the period for Department 1 was $75,000, and work in process at the end of the period totaled $60,000. The records indicate that direct materials, direct labor, and applied factory overhead for Department 2 were $50,000, $60,000, and $70,000, respectively. In addition, work in process at the beginning of the period for Department 2 totaled $75,000, and work in process at the end of the period totaled $60,000. The journal entry to record the flow of costs into Department 3 during the period is:

a.	Work in Process--Department 3	585,000	
	Work in Process--Department 2		585,000
b.	Work in Process--Department 3	570,000	
	Work in Process--Department 2		570,000
c.	Work in Process--Department 3	555,000	
	Work in Process--Department 2		555,000
d.	Work in Process--Department 3	165,000	
	Work in Process--Department 2		165,000

ANS: A DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

62. Lombardi Company manufactures a single product by a continuous process, involving three production departments. The records indicate that direct materials, direct labor, and applied factory overhead for Department 1 were $100,000, $125,000, and $150,000, respectively. The records further indicate that direct materials, direct labor, and applied factory overhead for Department 2 were $50,000, $60,000, and $70,000, respectively. Department 2 has transferred-in costs of $390,000 for the current period. In addition, work in process at the beginning of the period for Department 2 totaled $75,000, and work in process at the end of the period totaled $90,000. The journal entry to record the flow of costs into Department 3 during the period is:

a.	Work in Process--Department 3	375,000	
	Work in Process--Department 2		375,000
b.	Work in Process--Department 3	570,000	
	Work in Process--Department 2		570,000
c.	Work in Process--Department 3	490,000	
	Work in Process--Department 2		490,000
d.	Work in Process--Department 3	555,000	
	Work in Process--Department 2		555,000

ANS: D DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

63. Lombardi Company manufactures a single product by a continuous process, involving three production departments. The records indicate that direct materials, direct labor, and applied factory overhead for Department 2 were $100,000, $125,000, and $150,000, respectively. The records further indicate that direct materials, direct labor, and applied factory overhead for Department 3 were $50,000, $60,000, and $70,000, respectively. In addition, work in process at the beginning of the period for Department 3 totaled $75,000, and work in process at the end of the period totaled $60,000. The journal entry to record the flow of costs into Department 3 during the period for direct materials is:

a.	Work in Process--Department 3	100,000	
	Materials		100,000
b.	Work in Process--Department 3	125,000	
	Materials		125,000
c.	Work in Process--Department 3	50,000	
	Materials		50,000
d.	Work in Process--Department 3	70,000	
	Materials		70,000

ANS: C DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

Department G had 3,600 units, one-third completed at the beginning of the period, 12,000 units were completed during the period, 2,000 units were one-fifth completed at the end of the period, and the following manufacturing costs were debited to the departmental work in process account during the period:

Work in process, beginning of period	$30,000
Costs added during period:	
Direct materials (10,400 at $8)	83,200
Direct labor	62,000
Factory overhead	24,800

64. Assuming that all direct materials are placed in process at the beginning of production and that the first-in, first-out method of inventory costing is used, what is the equivalent units for materials and conversion costs, respectively.
    a. 14,000 and 14,800
    b. 10,400 and 11,200
    c. 14,000 and 13,600
    d. 10,400 and 10,000

ANS: B DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

65. Assuming that all direct materials are placed in process at the beginning of production and that the first-in, first-out method of inventory costing is used, what is the material and conversion cost per unit (to the nearest penny), respectively.
    a. $5.94 and $5.86
    b. $5.94 and $6.38
    c. $8.00 and $8.68
    d. $8.00 and $7.75

ANS: D DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

66. From the selections offered below, select the one journal entry that properly presents the application of Factory Overhead to Work in Process if the driver is Drop-Forge Strokes and the rate is $1.75 per stroke and the meter read 1,780 at the start of the day and 2,890 at the end of the day.

a.	Jan 21	Work in Process	1.75	
		Factory Overhead		1.75
b.	Jan 21	Work in Process	1,942.50	
		Depreciation Expense		1,942.50
c.	Jan 21	Work in Process	1,942.50	
		Cash		1,942.50
d.	Jan 21	Work in Process	1,942.50	
		Factory Overhead		1,942.50

ANS: D DIF: Easy OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

67. The company maintains several standards for the allocation of indirect labor to factory overhead. 70% of Stockhandlers wages are allocated to Stamping and 30% to Finishing. Supervisors are allocated at 60% to Stamping and 20% to Finishing while the balance is left as a period expense due to activities outside production. Because of the ratio of production equipment to office equipment 40% of depreciation is allocated to Stamping, 30% is allocated to Finishing while the balance is left as a period expense representing office equipment.

If the stockhandlers wages are $2,750, the supervisors wages are $4,550, and the depreciation for the period is $15,000, the proper journal entry would be:

a.	Oct 31	Factory Overhead - Stamping	10,655	
		Factory Overhead - Finishing	6,235	
		Wage Expense		6,390
		Depreciation Expense		10,500
b.	Oct 31	Factory Overhead - Stamping	10,655	
		Factory Overhead - Finishing	6,235	
		Cash		16,890
c.	Oct 31	Factory Overhead	16,890	
		Cash		16,890
d.	Oct 31	Accounts Payable	16,890	
		Wage Expense		6,390
		Depreciation Expense		10,500

ANS: A DIF: Easy OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

68. Which of the following is not a use of the cost of production report?
    a. To help managers control operations.
    b. To help managers isolate problems.
    c. To project production.
    d. To help managers to improve operations.

ANS: C DIF: Easy OBJ: 18(3)-04
NAT: AACSB Analytic | IMA-Cost Management

69. Which of the following measures would *not* help managers to control and improve operations?
    a. Units produced per time period
    b. Cost trends of a product
    c. Yield trends
    d. Commissions paid per time period

ANS: D DIF: Moderate OBJ: 18(3)-04
NAT: AACSB Analytic | IMA-Cost Management

70. Just-in-time processing is a business philosophy that focuses on reducing time and cost and eliminating poor quality. This is accomplished in manufacturing and non-manufacturing processes by:
    a. moving a product from process to process as each function is completed
    b. combining processing functions into work centers and cross-training workers to perform more than one function
    c. having production supervisors attempt to enter enough materials into manufacturing to keep all manufacturing departments operating
    d. having workers typically perform one function on a continuous basis

ANS: B DIF: Easy OBJ: 18(3)-05
NAT: AACSB Analytic | IMA-Strategic Planning

71. When a firm adopts a just-in-time operating environment,
    a. new, more efficient machinery and equipment must be purchased and installed in the original layout.
    b. machinery and equipment are moved into small autonomous production lines called manufacturing cells.
    c. new machinery and equipment must be purchased from franchised JIT dealers.
    d. employees are retrained on different equipment but the plant layout generally stays unchanged.

ANS: B DIF: Easy OBJ: 18(3)-05
NAT: AACSB Analytic | IMA-Strategic Planning

72. Which of the following best describes the effect on direct labor when management adopts a just-in-time environment?
    a. Workers typically perform one function.
    b. The environment becomes more labor intensive.
    c. Each employee runs a single machine.
    d. Workers are often cross-trained to perform more than one function.

ANS: D DIF: Easy OBJ: 18(3)-05
NAT: AACSB Analytic | IMA-Strategic Planning

73. According to the just-in-time philosophy,
    a. finished goods should always be available in case a customer wants something.
    b. employees should be expert at one function rather than be cross-trained for multiple functions.
    c. movement of the product and material is reduced.
    d. the product moves from process to process until completion.

ANS: C DIF: Easy OBJ: 18(3)-05
NAT: AACSB Analytic | IMA-Strategic Planning

74. Just-in-time operations attempt to significantly reduce
    a. inspection time and processing time.
    b. moving time and processing time.
    c. inspection time and moving time.
    d. only storage time.

ANS: C DIF: Moderate OBJ: 18(3)-05
NAT: AACSB Analytic | IMA-Strategic Planning

The debits to Work in Process--Assembly Department for April, together with data concerning production, are as follows:

April 1, work in process:	
Materials cost, 3,000 units	$ 7,500
Conversion costs, 3,000 units, 2/3 completed	6,000
Materials added during April, 10,000 units	26,000
Conversion costs during April	31,000
Goods finished during April, 11,500 units	---
April 30 work in process, 1,500 units, 1/2 completed	---

All direct materials are placed in process at the beginning of the process and the average cost method is used to cost inventories.

75. The materials cost per equivalent unit (to the nearest cent) for April is:
    a. $2.60
    b. $2.58
    c. $3.02
    d. $2.26

ANS: B DIF: Moderate OBJ: 18(3)-App
NAT: AACSB Analytic | IMA-Cost Management

76. The conversion cost per equivalent unit (to the nearest cent) for April is:
    a. $2.70
    b. $2.53
    c. $3.02
    d. $5.60

ANS: C DIF: Moderate OBJ: 18(3)-App
NAT: AACSB Analytic | IMA-Cost Management

Department E had 4,000 units in Work in Process that were 40% completed at the beginning of the period at a cost of $12,500. 14,000 units of direct materials were added during the period at a cost of $28,700. 15,000 units were completed during the period, and 3,000 units were 75% completed at the end of the period. All materials are added at the beginning of the process. Direct labor was $32,450 and factory overhead was $18,710.

77. The number of equivalent units of production for the period for conversion if the average cost method is used to cost inventories was:
    a. 15,650
    b. 14,850
    c. 18,000
    d. 17,250

ANS: D DIF: Moderate OBJ: 18(3)-App
NAT: AACSB Analytic | IMA-Cost Management

78. The number of equivalent units of production for the period for materials if the average cost method is used to cost inventories was:
    a. 15,650
    b. 18,000
    c. 17,250
    d. 17,700

ANS: B DIF: Moderate OBJ: 18(3)-App
NAT: AACSB Analytic | IMA-Cost Management

Department E had 4,000 units in Work in Process that were 40% completed at the beginning of the period at a cost of $12,500. Of the $12,500, $8,000 was for material and $4,500 was for conversion costs. 14,000 units of direct materials were added during the period at a cost of $28,700. 15,000 units were completed during the period, and 3,000 units were 75% completed at the end of the period. All materials are added at the beginning of the process. Direct labor was $32,450 and factory overhead was $18,710.

79. If the average cost method is used the material cost per unit (to the nearest cent) would be:
    a. $2.04
    b. $1.59
    c. $1.91
    d. $2.00

ANS: A DIF: Difficult OBJ: 18(3)-App
NAT: AACSB Analytic | IMA-Cost Management

80. Department E had 4,000 units in Work in Process that were 40% completed at the beginning of the period at a cost of $12,500. Of the $12,500, $8,000 was for material and $4,500 was for conversion costs. 14,000 units of direct materials were added during the period at a cost of $28,700. 15,000 units were completed during the period, and 3,000 units were 75% completed at the end of the period. All materials are added at the beginning of the process. Direct labor was $32,450 and factory overhead was $18,710. If the average cost method is used the conversion cost per unit (to the nearest cent) would be:
    a. $3.71
    b. $2.84
    c. $2.97
    d. $3.23

ANS: D DIF: Difficult OBJ: 18(3)-App
NAT: AACSB Analytic | IMA-Cost Management

EXERCISE/OTHER

1. Which of the following industries would normally use job order costing systems and which would normally use process costing systems?

    Business consulting
    Chemicals
    Food
    Movie
    Soap and cosmetics
    Web designer

ANS:

Business consultant	Job Order
Chemicals	Process
Food	Process
Movie studio	Job Order
Soap and cosmetics	Process
Web designer	Job order

DIF: Easy OBJ: 18(3)-01
NAT: AACSB Analytic | IMA-Cost Management TOP: Example Exercise 18(3)-1

2. The Desert Springs Water Company has two departments. Purifying and Bottling. The Bottling Department received 62,000 liters from the Purifying Department. During the period, the Bottling Department completed 60,000 liters, including 3,000 liters of work in process at the beginning of the period. The ending work in process was 5,000 liters. How many liters were started and completed during the period?

ANS:
57,000 liters started and completed (60,000 completed - 3,000 beginning WIP)
DIF: Easy OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management TOP: Example Exercise 18(3)-2

3. The Desert Springs Water Company has two departments. Purifying and Bottling. The Bottling Department received 65,000 liters from the Purifying Department. During the period, the Bottling Department completed 66,000 liters, including 4,000 liters of work in process at the beginning of the period. The ending work in process was 3,000 liters. How many liters were started and completed during the period?

ANS:

62,000 liters started and completed (66,000 completed - 4,000 beginning WIP)

DIF: Easy OBJ: 18(3)-02

NAT: AACSB Analytic | IMA-Cost Management TOP: Example Exercise 18(3)-2

4. The Desert Springs Water Company has two departments, Purifying and Bottling. The Bottling Department had 3,000 liters in beginning work in process inventory (30% complete). During the period 60,000 liters were completed. The ending work in process was 5,000 liters (70% completed). What are the total equivalent units for direct materials if materials were added at the beginning of the process?

ANS:

	Whole Units		Equivalent Units
Inventory in process, beginning of period	3,000	× 0%	0
Started and completed during the period	57,000	× 100%	57,000
Transferred out of Bottling (completed)	60,000		57,000
Inventory in process, end of period	5,000	× 70%	5,000
Total units to be assigned costs	65,000		62,000
Answer: 62,000 equivalent units			

DIF: Moderate OBJ: 18(3)-02

NAT: AACSB Analytic | IMA-Cost Management TOP: Example Exercise 18(3)-3

5. The Desert Springs Water Company has two departments, Purifying and Bottling. The Bottling Department had 4,000 liters in beginning work in process inventory (40% complete). During the period 66,000 liters were completed. The ending work in process was 3,000 liters (60% completed). What are the total equivalent units for direct materials if materials were added at the beginning of the process?

ANS:

	Whole Units		Equivalent Units
Inventory in process, beginning of period	4,000	× 0%	0
Started and completed during the period	62,000	× 100%	62,000
Transferred out of Bottling (completed)	66,000		62,000
Inventory in process, end of period	3,000	× 60%	3,000
Total units to be assigned costs	69,000		65,000
Answer: 65,000 equivalent units			

DIF: Moderate OBJ: 18(3)-02

NAT: AACSB Analytic | IMA-Cost Management TOP: Example Exercise 18(3)-3

6. The Bottling Department of Desert Springs Water Company had 5,000 liters in beginning work in process inventory (30% complete). During the period, 58,000 liters were completed. The ending work in process inventory was 3,000 liters (60% complete). What are the equivalent units for conversion costs?

ANS:

	Whole Units		Equivalent Units
Inventory in process, beginning of period	5,000	× 70%	3,500
Started and completed during the period	53,000	× 100%	53,000
Transferred out of Bottling (completed)	58,000		56,500
Inventory in process, end of period	3,000	× 60%	1,800
Total units to be assigned costs	66,000		58,300
Answer: 63,300 equivalent units			

DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management TOP: Example Exercise 18(3)-4

7. The Bottling Department of Desert Springs Water Company had 4,000 liters in beginning work in process inventory (40% complete). During the period, 66,000 liters were completed. The ending work in process inventory was 3,000 liters (70% complete). What are the equivalent units for conversion costs?

ANS:

	Whole Units		Equivalent Units
Inventory in process, beginning of period	4,000	× 60%	2,400
Started and completed during the period	62,000	× 100%	62,000
Transferred out of Bottling (completed)	66,000		64,400
Inventory in process, end of period	3,000	× 70%	2,100
Total units to be assigned costs	69,000		66,500
Answer: 68,500 equivalent units			

DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management TOP: Example Exercise 18(3)-4

8. The cost of direct materials transferred into the Bottling Department of the Desert Springs Water Company is $27,225. The conversion cost for the period in the Bottling Department is $7,596. The total equivalent units for direct materials and conversion are 60,500 and 63,300 respectively. Determine the direct materials and conversion cost per equivalent unit.

ANS:

$$\text{Equivalent units of materials: } \frac{\$27,225}{60,500 \text{ liters}} = \$0.45$$

$$\text{Equivalent units of conversion: } \frac{\$7,596}{63,300 \text{ liters}} = \$0.12$$

DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management TOP: Example Exercise 18(3)-5

9. The cost of direct materials transferred into the Bottling Department of the Desert Springs Water Company is $28,072. The conversion cost for the period in the Bottling Department is $10,275. The total equivalent units for direct materials and conversion are 63,800 and 68,500 respectively. Determine the direct materials and conversion cost per equivalent unit.

ANS:

$$\text{Equivalent units of material: } \frac{\$28{,}072}{63{,}800 \text{ liters}} = \$0.44$$

$$\text{Equivalent units of conversion: } \frac{\$10{,}275}{68{,}500 \text{ liters}} = \$0.15$$

DIF: Moderate OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management TOP: Example Exercise 18(3)-5

10. The cost per equivalent units of direct materials and conversion in the Bottling Department of Desert Springs Water Company is $.45 and $.12, respectively. The equivalent units to be assigned costs are as follows.

	Direct Materials	Conversion
Inventory in process, beginning of period	0	3,500
Started and completed during the period	57,000	57,000
Transferred out of Bottling (completed)	57,000	60,500
Inventory in process, end of period	3,500	1,800
Total units to be assigned costs	60,500	62,300

The beginning work in process inventory had a cost of $2,200. Determine the cost of completed and transferred out production, and the ending work in process inventory.

ANS:

	Direct Materials	Conversion	Total
Inventory in process, balance			$2,200
Inventory in process, beginning of period	0	+ 3,500 × $0.12	420
Started and completed during the period	57,000 × $.45	+ 57,000 × $0.12	32,490
Transferred out of Bottling (completed)			$35,110
Inventory in process, end of period	3,500 × $.45	+ 1,800 × $0.12	1,791
Total units to be assigned costs			$36,901

Completed and transferred out production:	$35,110
Inventory in process, ending	$1,791

DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management TOP: Example Exercise 18(3)-6

11. The cost per equivalent units of direct materials and conversion in the Bottling Department of Beverages on Tap Company is $.47 and $.15, respectively. The equivalent units to be assigned costs are as follows.

	Direct Materials	Conversion
Inventory in process, beginning of period	0	3,000
Started and completed during the period	52,000	52,000
Transferred out of Bottling (completed)	52,000	55,000
Inventory in process, end of period	3,500	2,100
Total units to be assigned costs	55,500	57,100

The beginning work in process inventory had a cost of $3,500. Determine the cost of completed and transferred out production, and the ending work in process inventory.

ANS:

	Direct Materials	Conversion	Total
Inventory in process, balance			$3,500
Inventory in process, beginning of period	0	+ 3,000 × $0.15	450
Started and completed during the period	52,000 × $.47	+ 52,000 × $0.15	32,240
Transferred out of Bottling (completed)			$36,190
Inventory in process, end of period	3,500 × $.45	+ 2,100 × $0.15	1,890
Total units to be assigned costs			$38,080

Completed and transferred out production: $36,190
Inventory in process, ending $1,890
DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management TOP: Example Exercise 18(3)-6

12. The cost of materials transferred into the Bottling Department of Desert Springs Water Company is $28,400, with $22,000 from the Purifying Department, plus additional $6,400 from the materials storeroom. The conversion cost for the period in the Bottling Department is $8,750 ($3,750 factory applied and $5,000 direct labor.) The total costs transferred to finished goods for the period was $31,980. The Bottling Department had a beginning inventory of $1,860.
    (a) Journalize (1) the cost of transferred-in materials (2) conversion costs, and (3) the cost of transferred out to finished goods.

    (b) Determine the balance of Work in Process-Bottling at the end of the period.

ANS:

(a)	Work in Process-Bottling	28,400	
	Work in Process-Purifying		22,000
	Materials		6,400
	Work in Process-Bottling	8,750	
	Factory Overhead-Bottling		3,750
	Wages Payable		5,000
	Finished Goods	31,980	
	Work in Process-Bottling		31,980

(b) $7,030 ($1,860 + $28,400 + 8,750 - $31,980)
DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management TOP: Example Exercise 18(3)-7

13. The cost of energy consumed in producing good units in the Bottling Department of Desert Springs Water Company was $6,600 and $6,820 for June and July, respectively. The number of equivalent units produced in June and July was 55,000 and 62,000 liters respectively. Evaluate the cost of energy between the two months.

ANS:

$$\text{Energy costs per liter, June: } \frac{\$6{,}600}{55{,}000 \text{ liters}} = \$0.12$$

$$\text{Energy costs per liter, July: } \frac{\$6{,}820}{62{,}000 \text{ liters}} = \$0.11$$

DIF: Easy OBJ: 18(3)-04
NAT: AACSB Analytic | IMA-Cost Management TOP: Example Exercise 18(3)-8

PROBLEM

1. The inventory at June 1 and costs charged to Work in Process - Department 60 during June are as follows:

3,800 units, 80% completed	$ 60,400
Direct materials, 32,000 units	368,000
Direct labor	244,000
Factory overhead	188,000
Total cost to be accounted for	$860,400

During June, 32,000 units were placed into production and 31,200 units were completed, including those in inventory on June 1. On June 30, the inventory of work in process consisted of 4,600 units which were 40% completed. Inventories are costed by the first-in, first-out method and all materials are added at the beginning of the process.

Determine the following, presenting your computations:

(a) equivalent units of production for conversion cost
(b) conversion cost per equivalent unit
(c) total and unit cost of finished goods started in prior period and completed in the current period
(d) total and unit cost of finished goods started and completed in the current period
(e) total cost of work in process inventory at June 30

ANS:

(a) Equivalent units of production:

To process units in inventory on June 1:	
3,800 × 20%	760
To process units started and completed in June:	
31,200 - 3,800	27,400
To process units in inventory on June 30:	
4,600 × 40%	1,840
Equivalent units of production for conversion cost	30,000

(b) Conversion cost per equivalent unit of production:

Conversion costs:	
Direct labor	$244,000
Factory overhead	188,000
	$432,000
Unit conversion cost, $432,000 ÷ 30,000	$ 14.40

(c) Cost of finished goods started in the prior period and completed in current period:

Work in process inventory on June 1:	
3,800 × 80%	$60,400
Conversion costs in current period,	
3,800 × 20% = 760 units at $14.40	10,944
Total cost	$71,344
Beginning inventory,	
Unit cost, $71,344 ÷ 3,800	$ 18.77

(d) Cost of finished goods started and completed in current period:

Direct materials, 27,400 units at $11.50	$315,100
Conversion costs, 27,400 units at $14.40	394,560
Total cost	$709,660
Unit cost, $709,660 ÷ 27,400	$ 25.90

(e) Cost of work in process inventory at June 30:

Direct materials, 4,600 units at $11.50	$ 52,900
Conversion costs, 1,840 units at $14.40	26,496
Total cost	$ 79,396

Total cost accounted for, $71,344 + $709,660 + $79,396	$860,400

DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

2. The inventory at May 1 and the costs charged to Work in Process--Department B during May for Star Company are as follows:

12,000 units, 2/5 completed	$ 62,400
From Department A, 55,000 units	115,500
Direct labor	364,915
Factory overhead	148,000

During May, all direct materials are transferred from Department A, the units in process at May 1 were completed, and of the 55,000 units entering the department, all were completed except 6,000 units which were 3/4 completed. Inventories are costed by the first-in, first-out method.

Prepare a cost of production report for May.

ANS:

Star Company
Cost of Production Report--Department B
For the Month Ended May 31, 20--

UNITS	Whole Units	Equivalent Units: Direct Materials	Equivalent Units: Conversion
Units charged to production:			
Inventory in process, May 1	12,000		
Received from Department A	55,000		
Total units accounted for by Dept. B	67,000		
Units to be assigned costs:			
Inventory in process, May 1 (2/5 completed)	12,000	0	7,200
Started and completed in May	49,000	49,000	49,000
Transferred to finished goods in May	61,000	49,000	56,200
Inventory in process, May 31 (3/4 complete)	6,000	6,000	4,500
Total units to be assigned costs	67,000	55,000	60,700

COSTS	Costs: Direct Materials	Costs: Conversion	Total Costs
Units costs:			
Total costs for May in Dept. B	$115,500	$512,915	
Total equivalent units	÷ 55,000	÷ 60,700	
Cost per equivalent unit	$ 2.10	$ 8.45	
Costs charged to production:			
Inventory in process, May 1			$ 62,400
Costs incurred in May			628,415
Total costs accounted for by Department B			$690,815
Costs allocated to completed and partially completed units:			
Inventory in process, May 1, bal			$ 62,400
To complete inventory in process, May 1	$ 0	$ 60,840	60,840
Started and completed in May	102,900	414,050	516,950
Transferred to finished goods in May			640,190
Inventory in process, May 31	12,600	38,025	50,625
Total costs assigned by Dept. B			$690,815

DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

3. Jones Co. manufactures a product called Zens in a three-process series. All materials are introduced at the beginning of the first process. Jones uses the first-in, first-out method of inventory costing. Unit and cost data for the first process (Department A) for the month of October 2007 follow:

Conversion	Units	Completion	Cost
Work in process inventory:			
October 1	12,000	60%	$140,400
October 31	5,000	40%	?
Started in October	14,000		
Direct materials cost			106,400
Conversion cost			70,310
Completed in October	21,000		?

Prepare Jones' Department A cost of production report for October.

ANS:

Jones Company
Cost of Production Report—Department A
For the Month Ended October 31, 2007

		Equivalent Units	
UNITS	Whole Units	Direct Materials	Conversion
Units charged to production:			
Inventory in process, October 1	12,000		
Received from materials store area	14,000		
Total units accounted for by Department A	26,000		
Less completed and transferred	21,000		
Department A ending inventory	5,000		
Units to be assigned costs:			
Inventory in process, October 1 (70% completed)	12,000	0	4,800
Started and completed in October	9,000	9,000	9,000
Transferred to Department B in October	21,000	9,000	13,800
Inventory in process, October 31 (40% complete)	5,000	5,000	2,000
Total units to be assigned costs	26,000	14,000	15,800

COSTS	Costs: Direct Materials	Costs: Conversion	Total Costs
Units costs:			
Total costs for October in Department A	$106,400	$70,310	
Total equivalent units	÷14,000	÷15,800	
Cost per equivalent unit	$ 7.60	$ 4.45	
Costs charged to production:			
Inventory in process, October 1			$140,400
Costs incurred in October			176,710
Total costs accounted for by Department A			$317,110
Costs allocated to completed and partially completed units:			
Inventory in process, October 1 balance			$140,400
To complete inventory in process, October 1	$ 0	$21,360	21,360
Started and completed in October	68,400	40,050	108,450
Transferred to finished goods in October			270,210
Inventory in process, October 31	38,000	8,900	46,900
Total costs assigned by Department A			$317,110

DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

4. The inventory at April 1, 2007, and the costs charged to Work in Process--Department B during April for Tanzer Company are as follows:

1,200 units, 40% completed	$ 47,800
From Department A, 26,000 units	845,000
Direct labor	312,000
Factory overhead	176,770

During April, all direct materials are transferred from Department A, the units in process at April 1 were completed, and of the 26,000 units entering the department, all were completed except 1,000 units which were 70% completed as to conversion costs. Inventories are costed by the first-in, first-out method.

Prepare a cost of production report for April.

ANS:

Tanzer Company
Cost of Production Report--Department B
For the Month Ended April 30, 2007

		Equivalent Units	
UNITS	Whole Units	Direct Materials	Conversion
Units charged to production:			
Inventory in process, April 1	1,200		
Received from Department A	26,000		
Total units accounted for by Dept. B	27,200		
Units to be assigned costs:			
Inventory in process, April 1 (40% completed)	1,200	0	720
Started and completed in April	25,000	25,000	25,000
Transferred to finished goods in April	26,200	25,000	25,720
Inventory in process, April 30 (70% complete)	1,000	1,000	700
Total units to be assigned costs	27,200	26,000	26,420

	Costs		
COSTS	Direct Materials	Conversion	Total Costs
Units costs:			
Total costs for April in Dept. B	$845,000	$488,770	
Total equivalent units	÷ 26,000	÷ 26,420	
Cost per equivalent unit	$ 32.50	$ 18.50	
Costs charged to production:			
Inventory in process, April 1			$ 47,800
Costs incurred in April			1,333,770
Total costs accounted for by Department B			$1,381,570
Costs allocated to completed and partially completed units:			
Inventory in process, April 1, bal.			$ 47,800
To complete inventory in process, April 1	$ 0	$ 13,320	13,320
Started and completed in April	812,500	462,500	1,275,000
Transferred to finished goods in April			1,336,120
Inventory in process, April 30	32,500	12,950	45,450
Total costs assigned by Dept. B			$1,381,570

DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

5. The inventory at April 1, 2007, and the costs charged to Work in Process--Department B during April for Barley Company are as follows:

500 units, 60% completed	$ 3,460
From Department A, 10,000 units	36,300
Direct labor	7,960
Factory overhead	12,500

During April, all direct materials are transferred from Department A, the units in process at April 1 were completed, and of the 10,000 units entering the department, all were completed except 1,200 units which were 25% completed as to conversion costs. Inventories are costed by the first-in, first-out method.

Prepare a cost of production report for April.

ANS:

Barley Company
Cost of Production Report--Department B
For the Month Ended April 30, 2007

		Equivalent Units	
UNITS	Whole Units	Direct Materials	Conversion
Units charged to production:			
Inventory in process, April 1	500		
Received from Department A	10,000		
Total units accounted for by Dept. B	10,500		
Units to be assigned costs:			
Inventory in process, April 1 (60% completed)	500	0	200
Started and completed in April	8,800	8,800	8,800
Transferred to finished goods in April	9,300	8,800	9,000
Inventory in process, April 30 (25% complete)	1,200	1,200	300
Total units to be assigned costs	10,500	10,000	9,300

	Costs		
COSTS	Direct Materials	Conversion	Total Costs
Units costs:			
Total costs for April in Dept. B	$36,300	$20,460	
Total equivalent units	÷ 10,000	÷ 9,300	
Cost per equivalent unit	$ 3.63	$ 2.20	
Costs charged to production:			
Inventory in process, April 1			$ 3,460
Costs incurred in April			56,760
Total costs accounted for by Department B			$60,220
Costs allocated to completed and partially completed units:			
Inventory in process, April 1, bal.			$ 3,460
To complete inventory in process, April 1	$ 0	$ 440	440
Started and completed in April	31,944	19,360	51,304
Transferred to finished goods in April			55,204
Inventory in process, April 30	4,356	660	5,016
Total costs assigned by Dept. B			$60,220

DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

6. Information for the Grantlee Manufacturing Company for the month of July 2006 is as follows:

Beginning work in process: Cost of Inventory at process, July 1 $5,010
Units - 800
Direct materials = 100% complete
Conversion costs = 70% complete

Units started in July = 14,000
Ending work in process inventory:
Units = 1500
Direct materials = 100% complete
Conversion costs = 30% complete

Costs charged to Work in Process during July:
Direct materials costs = $57,400
Direct labor costs = 20,049
Factory overhead costs = 30,073

Prepare a cost of production report for the month of July.

ANS:

Grantlee Manufacturing Company
Cost of Production Report
For the Month Ended July 31, 2006

		Equivalent Units	
	Units	Material Equivalent Units	Conversion Equivalent Units
Beginning work in process (70% complete)	800	-0-	240
Units started & completed (14,000 started - 1,500 ending)	12,500	12,500	12,500
Ending work in process (30% complete)	1,500	1,500	450
	14,800	14,000	13,190

	Costs		
COSTS	Direct Materials	Conversion	Total Costs
Units costs;			
Total cost for July	$ 57,400	$50,122*	
Total Equivalent units (from above)	14,000	13,190	
Costs per equivalent unit	$ 4.10	$ 3.80	$7.90
Costs charged to production:			
Inventory in process, July 1			$ 5,010
Cost incurred in July			107,522
Total costs accounted for in July			$112,532

* ($20,049 + $30,073)

	Direct Materials	Conversion	Total Costs
Costs allocated to completed and partially completed units:			
Inventory in process, July 1 - balance			$ 5,010
To complete inventory in process, July 1	$ 0	$ 912 (a)	912
Started and completed in July	51,250 (b)	47,500 (c)	98,750
Transferred to finished goods in July			$104,672
Inventory in process July 31	6,150 (d)	1,710 (e)	7,860
Total costs accounted for in July			$112,532

(a) 240 × $3.80 (b) 12,500 × $4.10 (c) 12,500 × $3.80 (d) 1,500 × $4.10
(e) 450 × $3.80

DIF: Difficult OBJ: 18(3)-02
NAT: AACSB Analytic | IMA-Cost Management

7. Prine Co. manufactures bentwood chairs and tables. Wood for both products is steam-bent in the same process, but different types of wood are used for each product. Thus, materials cost is identified separately to each product. One production cycle uses 20 board feet. Labor cost is identified to the process as a whole, as is overhead cost. Data for the month of July follow:

	Chairs	Tables
Direct material cost per board foot	$ 3.60	$ 4.20
Number of parts formed per production cycle (20 board feet)	10	8
Actual operating hours in July	120	380
Parts produced during July	4,000	9,000

Budgeted annual conversion cost:	
Labor	$150,000
Utilities	125,000
Depreciation	65,000
Other overhead	50,000
Total	$390,000
Budgeted annual operating hours for steam-bending	5,200

(a) Compute July's predetermined rate for the steam-bending process.
(b) Compute July's direct material costs for chairs and tables.
(c) Compute conversion costs to be applied to chairs and tables in July.
(d) Journalize the following entries:
  (1) Assignment of direct materials to chairs and tables.
  (2) Application of conversion costs to chairs and tables.
  (3) The transfer of completed chairs and tables to the Finishing Department. All of July's production was completed in July.

ANS:

(a) Steam-bending conversion cost per hour = $390,000/5,200 hrs.
= $75 per hour

(b) Direct material cost per unit:	Chairs	Tables
($3.60/ft. × 20 ft. per cycle)		
10 parts per cycle	$7.20	
($4.20/ft. × 20 ft. per cycle)		
8 parts per cycle		$10.50
Total direct materials cost:		
(4,000 units × $7.20/u.)	$28,800	
(9,000 units × $10.50/u.)		$94,500

(c)	Conversion cost per unit:			
	($75/hr. × 120 hrs./mo.)			
	4,000 units		2.25	
	($75/hr. × 380 hrs./mo.)			
	9,000 units			3.17
				(rounded)
	Total conversion cost:			
	(4,000 units ×$2.25/u.)		$ 9,000	
	(9,000 units × $3.17/u.)			$28,530
(d)	(1)	Work in Process--Chairs	28,800	
		Work in Process--Tables	94,500	
		Materials		123,300
	(2)	Work in Process--Chairs	9,000	
		Work in Process--Tables	28,530	
		Conversion Costs Applied		37,530
	(3)	Finished Goods--Chairs	37,800	
		Finished Goods--Tables	123,030	
		Work in Process--Chairs		37,800
		Work in Process--Tables		123,030

DIF: Moderate OBJ: 18(3)-02 | 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

8. Skewed Hardware purchases raw materials and processes those purchases through a receiving/inspection process prior to stocking for production. Skewed places 3 purchase orders for materials for production and receives the goods that day. The first PO is for 2,500 1/2"× 96" milling blanks at $2.75 each. The second is for 4,000 pieces of 48" × 96" × 1" sheet steel at $15.55 each. The third PO is for five 55 gallon drums of Milling Lubrication Oil at $475.00 per barrel.

   The receiving/inspection process is completed and the goods are transferred from Receiving Inventory to Raw Materials. The Receiving/Inspection Department assigns manufacturing overhead of $55.00 per purchase order as well as $2.75 per piece on metal goods and $35.00 per container on fluids. All labor is allocated through overhead.

   (a) Write the journal entry to purchase and receive these items to Receiving Inventory on account.

   (b) Assign overhead to the metal goods.

   (c) Assign overhead to the fluid goods.

   (d) Transfer all goods to Raw Materials Inventory.

ANS:

(a) Receiving Inventory	71,450.00	
Accounts Payable		71,450.00
PO 1 - 2,500 pieces × $2.75 each =	$6,875.00	
PO 2 - 4,000 pieces × $15.50 each =	62,200.00	
PO 3 - 5 pieces × $475.00 each =	2,375.00	
Total	$71,450.00	
(b) Assign overhead to the metal goods.		
Receiving Inventory	17,985.00	
Mfg Overhead		17,985.00
PO 1 - 2,500 pieces × $2.75 each =	$6,875.00	
PO 1 - PO overhead	55.00	
PO 2 - 4,000 pieces × $2.75 each =	11,000.00	
PO 2 - PO overhead	55.00	
Total	$17,985.00	
(c) Assign overhead to the fluid goods.		
Receiving Inventory	230.00	
Mfg Overhead		230.00
PO 3 - 5 pieces × $35.00 each =	$175.00	
PO 3 - PO overhead	55.00	
Total	$230.00	
(d) Transfer all goods to Raw Materials Inventory.		
Raw Material Inventory	89,665.00	
Receiving Inventory		89,665.00

DIF: Difficult OBJ: 18(3)-02 | 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

9. The Glass Works is in the process of determining manufacturing overhead. Each event below needs to be journalized to Manufacturing Overhead, Miscellaneous Expense, or allocated between the two as appropriate. All items were paid in cash at the time of acquisition.

   (a) Glass Works purchases an insurance policy for $1,000.00. It is computed that 70% of the value of the policy protects production the balance protects the administrative offices.

   (b) The electric bill is received showing an amount due of $1,200.00. This meter is utilized only by production as the office spaces have their own meter.

   (c) Payroll reports that the sales manager's salary for the period is $2,500.00 and that production supervisors wages for the period are $4,500.00.

   (d) The stockroom reports that $975.00 in materials were purchased for the production maintenance department.

   (e) If the driver for the application of overhead is drop-forge strokes and there are expected to be 1,000 strokes in this period, what is the rate per stroke?

   (f) Assuming that there are 975 drop-forge strokes in this period, apply manufacturing overhead to Work In Process.

ANS:

(a) Manufacturing Overhead	700.00	($1,000.00 × 70%)	
Miscellaneous Expense	300.00	($1,000.00 × 30%)	
Cash			1,000.00
(b) Manufacturing Overhead	1,200.00		
Cash			1,200.00
(c) Miscellaneous Expense	2,500.00		
Manufacturing Overhead	4,500.00		
Cash			7,000.00
(d) Manufacturing Overhead	975.00		
Cash			975.00
(e) Manufacturing Overhead	$700.00		
Manufacturing Overhead	1,200.00		
Manufacturing Overhead	4,500.00		
Manufacturing Overhead	975.00		
Total			$7,375.00

Drop-forge stroke rate = $7,375.00 / 1,000 strokes = $7.375 per stroke.

(f) Work In Process	7,190.63	
Manufacturing Overhead		7,190.63

DIF: Difficult OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

10. The estimated total factory overhead cost and total machine hours for Department 40 for the current year are $225,000 and 56,250 respectively. During January, the first month of the current year, actual machine hours used totaled 5,100 and factory overhead cost incurred totaled $19,800.

    (a) Determine the factory overhead rate based on machine hours.

    (b) Present the entry to apply factory overhead to production in Department 40 for January.

    (c) What is the balance of Factory Overhead - Department 40 at January 31?

    (d) Does the balance of Factory Overhead - Department 40 at January 31 represent overapplied or underapplied factory overhead?

ANS:

(a) $225,000/56,250 = $4.00 per machine hour

(b)

Work in Process--Department 40		
($5,100 \times $4)	20,400	
Factory Overhead--Department 40		20,400

(c) $600 credit

(d) overapplied factory overhead

DIF: Moderate OBJ: 18(3)-03
NAT: AACSB Analytic | IMA-Cost Management

11. A firm produces its products by a continuous process involving three production departments, 1 through 3. Present entries to record the following selected transactions related to production during August:

    (a) Materials purchased on account, $130,000.
    (b) Material requisitioned for use in Department 1, $125,700, of which $124,200 entered directly into the product.
    (c) Labor cost incurred in Department 1, $195,400, of which $174,000 was used directly in the manufacture of the product.
    (d) Factory overhead costs for Department 1 incurred on account, $52,700.
    (e) Depreciation on machinery in Department 1, $29,200.
    (f) Expiration of prepaid insurance chargeable to Department 1, $7,000.
    (g) Factory overhead applied to production, $105,300.
    (h) Output of Department 1 transferred to Department 2, $362,700.

ANS:

(a)	Materials	130,000	
	Accounts Payable		130,000
(b)	Factory Overhead--Department 1	1,500	
	Work in Process--Department 1	124,200	
	Materials		125,700

(c)	Factory Overhead--Department 1	21,400	
	Work in Process--Department 1	174,000	
	Wages Payable		195,400
(d)	Factory Overhead--Department 1	52,700	
	Accounts Payable		52,700
(e)	Factory Overhead--Department 1	29,200	
	Accumulated Depreciation--Machinery		29,200
(f)	Factory Overhead--Department 1	7,000	
	Prepaid Insurance		7,000
(g)	Work in Process--Department 1	105,300	
	Factory Overhead		105,300
(h)	Work in Process--Department 2	362,700	
	Work in Process--Department 1		362,700

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12. Easy-Flow Paints produces mixer base paint through a two stage process, Mixing and Packaging. The following events depict the movement of value into and out of production. Journalize each event if appropriate, if not, provide a short narrative reason as to why you choose not to journalize that action.

    Keith, the Production Manager, accepts an order to continue processing the current run of mixer base paint.

    (a) $27,000.00 worth of materials are withdrawn from Raw Materials inventory. Of this amount, $25,500.00 will be issued to the Mixing Department and the balance will be issued to the Maintenance Department to be used on production line machines.

    (b) Keith calculates that labor for the period is $12,500.00. Of this value all but $1,750.00 is directly associated with mixing. The balance is maintenance and indirect labor.

    (c) Keith, who is paid a salary but earns about $35.00 / hour, spends 1 hour inspecting the production line.

    (d) The manufacturing overhead drivers for Mixing are (1) hours of mixer time at $575.00 per hour, and material movements from Raw Materials at $125.00 per movement. An inspection of the machine timers reveals that a total of 8 hours has been consumed in making this product. An inspection of "Stocking Orders" indicates that only one material movement was utilized to "load" the raw materials. (Note: All values have been journalized to Mfg Overhead, you need only apply it to the production run.)

    (e) Within Easy-Flo items are transferred between departments at a standard cost or value. This production run has created 4,015 gallons of mixer base paint. This paint is transferred to Packaging at a standard cost of $10.05 per gallon.

    (f) Packaging draws $755.00 in raw materials for packaging of this production run.

    (g) Packaging documents that 12 hours of direct labor at $10.25 per hour were consumed in the packaging of this production run.

    (h) Packaging uses a driver of direct labor hours to allocate manufacturing overhead at the rate of $25.00 per hour.

    (i) Packaging transfers these 1,005 gallons of packaged goods to Finished Goods Inventory at a standard cost of $10.25 per gallon.

ANS:

(a)	Work In Process - Mixing	25,500.00	
	Factory Overhead	1,500.00	
	Raw Materials		27,000.00
(b)	Work In Process - Mixing	10,750.00	
	Factory Overhead	1,750.00	
	Wages Payable		12,500.00

(c) Keith's inspection of the assembly line is not directly chargeable to production. As a manager of a production unit it will be incorporated in the cost of production through the allocation of overhead.

(d) Work In Process - Mixing	4,725.00	
Mfg Overhead		4,725.00
(e) Work In Process - Packaging	40,350.75	
Work In Process - Mixing		40,350.75
(f) Work In Process - Packaging	755.00	
Raw Materials		755.00
(g) Work In Process - Packaging	123.00	
Wages Payable		123.00
(h) Work In Process - Packaging	300.00	
Mfg Overhead		300.00
(i) Finished Goods Inventory	10,301.25	
Work In Process - Packaging		10,301.25

DIF: Difficult OBJ: 18(3)-03
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13. Chang Co. manufacturers its products in a continuous process involving two departments, Machining and Assembly. Present entries to record the following selected transactions related to production during June:

    (a) Materials purchased on account, $225,000.
    (b) Materials requisitioned by: Machining, $73,000 direct and $9,000 indirect materials; Assembly, $4,900 indirect materials.
    (c) Direct labor used by Machining, $23,000, Assembly, $47,000.
    (d) Depreciation expenses: Machining, $2,000; Assembly, $8,000.
    (e) Factory overhead applied: Machining, $9,700; Assembly, $11,300.
    (f) Machining Department transferred $98,300 to Assembly Department; Assembly Department transferred $83,400 to finished goods.
    (g) Cost of goods sold, $72,000.

ANS:

(a)	Materials	225,000	
	Accounts Payable		225,000
(b)	Work in Process--Machining	73,000	
	Factory Overhead--Machining	9,000	
	Factory Overhead--Assembly	4,900	
	Materials		86,900
(c)	Work in Process--Machining	23,000	
	Work in Process--Assembly	47,000	
	Wages Payable		70,000
(d)	Factory Overhead--Machining	2,000	
	Factory Overhead--Assembly	8,000	
	Accumulated Depreciation		10,000

(e)	Work in Process--Machining	9,700	
	Work in Process--Assembly	11,300	
	Factory Overhead--Machining		9,700
	Factory Overhead-Assembly		11,300
(f)	Work in Process--Assembly	98,300	
	Work in Process--Machining		98,300
	Finished Goods	83,400	
	Work in Process--Assembly		83,400
(g)	Cost of Goods Sold	72,000	
	Finished Goods		72,000

DIF: Moderate OBJ: 18(3)-04
NAT: AACSB Analytic | IMA-Cost Management

14. The inventory at June 1 and costs charged to Work in Process - Department 60 during June are as follows:

3,800 units, 80% completed ($25,000 Materials, $35,400 conversion)	$ 60,400
Direct materials, 32,000 units	368,000
Direct labor	244,000
Factory overhead	188,000
Total cost to be accounted for	$860,400

During June, 32,000 units were placed into production and 31,200 units were completed, including those in inventory on June 1. On June 30, the inventory of work in process consisted of 4,600 units which were 40% completed. Inventories are costed by the average cost method and all materials are added at the beginning of the process.

Determine the following, presenting your computations:

(a) equivalent units of production for conversion cost
(b) conversion cost per equivalent unit and material cost per equivalent unit.
(c) total and unit cost of finished goods completed in the current period
(d) total cost of work in process inventory at June 30

ANS:
(a) Equivalent units of production:

Transferred out	31,200
To process units in inventory on June 30:	
4,600 × 40% =	1,840
Equivalent units of production for conversion cost	33,040

(b)	Conversion cost per equivalent unit of production:	
	Conversion costs: from beginning inventory	$ 35,400
	Direct labor	$244,000
	Factory overhead	188,000
		$467,400
	Unit conversion cost, $467,400 ÷ 33,040	$ 14.15
	Material cost per equivalent unit:	
	From beginning inventory	$25,000
	Added during the period	368,000
	Total	393,000
	Units (3,800+32,000)	35,800
	Material cost per unit	$10.98
(c)	Total and unit cost of finished goods completed in the current period	
	Unit cost of finished goods completed:	
	Material costs per unit	$ 10.98
	Conversion costs per unit	14.15
	Total cost per unit	$ 25.13
	Total costs of goods completed during the period:	
	31,200 × $25.13	784,056
(d)	Cost of work in process inventory at June 30:	
	Direct materials, 4,600 units at $10.98	$50,508
	Conversion costs, 1,840 units at $14.15	26,036
	Total cost	$76,544

DIF: Difficult OBJ: 18(3)-App
NAT: AACSB Analytic | IMA-Cost Management