

PROCESS COSTING

FIRST IN FIRST OUT METHOD

Key Topics to Know

- Differences and similarities between job order and process costing.
- Flow of product costs through the inventory accounts and into cost of goods sold.
- Each production department has a unique flow of costs and units of product and a separate work-in-process inventory account.
- Journal entries required in a Process Cost system.
- FIFO keeps units and costs from beginning inventory separate from units started and costs added in the period.
- FIFO assumes that the units from beginning inventory are always completed prior to completing units started during the period.
- Concept of Equivalent Units
- Equivalent units have three components:
 - Equivalent units to complete beginning work in process inventory
 - Equivalent units for production started and completed in the period
 - Equivalent units to start ending work in process
- Prepare the following schedules
 - Quantity Schedule
 - Equivalent Units
 - Cost per Equivalent Unit
 - Cost Reconciliation/Assignment
 - Note that these schedules taken together may be called a Production Report

Problems

Problem #1

C Company uses the FIFO method in its process costing system. The Assembly Department started the month with 6,000 units in its beginning work in process inventory that were 20% complete with respect to conversion costs. An additional 74,000 units were transferred in from the prior department during the month to begin processing in the Assembly Department. There were 8,000 units in the ending work in process inventory of the Assembly Department that were 60% complete with respect to conversion costs.

Required: What were the equivalent units for conversion costs in the Assembly Department for the month?

Problem #2

E Company uses the FIFO method in its process costing system. The first processing department, the Welding Department, started the month with 13,000 units in its beginning work in process inventory. The units were 10% complete with respect to conversion costs. The conversion cost in this beginning work in process inventory was \$12,610. An additional 89,000 units were started into production during the month. There were 22,000 units in the ending work in process inventory of the Welding Department that were 30% complete with respect to conversion costs. A total of \$806,085 in conversion costs were incurred in the department during the month.

Required: Determine the cost per equivalent unit for conversion costs.

Problem #3

In April, one of the processing departments at S Company had beginning work in process inventory of \$27,000 and ending work in process inventory of \$36,000. During the month, the cost of units transferred out from the department was \$261,000. The company uses the FIFO method in its process costing system.

Required: a) Determine the costs added to production in the department during the month.
 b) Determine the cost accounted for during the month.

Problem #4

W Company uses the FIFO method in its process costing system. The beginning work in process inventory in a particular department consisted of 10,000 units, 100% complete with respect to materials and 60% with respect to conversion costs. The total cost in the beginning work in process inventory was \$48,200. During the month, 25,000 units were transferred out of the department. The costs per equivalent unit were computed to be \$3.10 for materials and \$4.50 for conversion costs.

Required: Determine the total cost of the units completed and transferred out of the department.

Problem #5

N Company uses the FIFO method in its process costing system. Data concerning the first processing department for the most recent month are listed below:

Beginning work in process inventory:	
Units in beginning work in process inventory	300
Materials costs	\$6,100
Conversion costs	\$700
Percent complete with respect to materials	70%
Percent complete with respect to conversion	15%
Units started into production during the month	7,300
Units transferred to the next department during the month	6,600
Materials costs added during the month	\$187,900
Conversion costs added during the month	\$97,800
Ending work in process inventory:	
Units in ending work in process inventory	1,000
Percent complete with respect to materials	85%
Percent complete with respect to conversion	20%

Required:

- What are the equivalent units for the month in the first processing department?
- What are the costs per equivalent unit for the first department for the month?
- What is the journal entry to transfer the cost of completed units to the second department?

Multiple Choice Questions

1. G Company uses the FIFO method in its process costing system. The Grinding Department started the month with 18,000 units in its beginning work in process inventory that were 10% complete with respect to conversion costs. An additional 98,000 units were transferred in from the prior department during the month to begin processing in the Grinding Department. During the month 115,000 units were completed in the Grinding Department and transferred to the next processing department. There were 1,000 units in the ending work in process inventory of the Grinding Department that were 20% complete with respect to conversion costs. What were the equivalent units for conversion costs in the Grinding Department for the month?
 - a) 81,000
 - b) 115,200
 - c) 115,000
 - d) 113,400

2. L Company uses the FIFO method in its process costing system. Department A is the first stage of Laurie Corporation's production process. The following information is available for conversion costs for the month of May for Department A:

	<u>Units</u>
Work in process, beginning (25% complete with respect to conversion costs)	8,000
Started in May	40,000
Completed in May and transferred to Department B	38,000
Work in process, ending (60% complete with respect to conversion costs)	10,000

The equivalent units of production for conversion costs for the month are

- a) 42,000
- b) 38,000
- c) 44,000
- d) 36,000

3. Z Company uses the FIFO method in its process costing system. The first processing department, the Forming Department, started the month with 17,000 units in its beginning work in process inventory that were 10% complete with respect to conversion costs. The conversion cost in this beginning work in process inventory was \$9,010. An additional 76,000 units were started into production during the month and 83,000 units were completed and transferred to the next processing department. There were 10,000 units in the ending work in process inventory of the Forming Department that were 70% complete with respect to conversion costs. A total of \$445,915 in conversion costs were incurred in the department during the month. The cost per equivalent unit for conversion costs for the month is closest to:
- \$5.050
 - \$5.300
 - \$5.867
 - \$5.150
4. O Company uses the FIFO method in its process costing system. In the Cutting Department in June, units were 80% complete with respect to conversion in the beginning work in process inventory and 25% complete with respect to conversion in the ending work in process inventory. Other data for the department for June follow:

	<u>Units</u>	<u>Conversion Cost</u>
Beginning work in process inventory	20,000	\$40,000
Units started into production, and costs incurred during the month	150,000	\$186,000
Units completed and transferred out	130,000	

The cost per equivalent unit for conversion cost is closest to:

- \$1.48
- \$1.50
- \$1.16
- \$1.82

5. W Company uses the FIFO method in its process costing system. The beginning work in process inventory in a particular department consisted of 10,000 units, 100% complete with respect to materials and 60% with respect to conversion costs. The total cost in the beginning work in process inventory was \$48,200. During the month, 25,000 units were transferred out of the department. The costs per equivalent unit were computed to be \$3.10 for materials and \$4.50 for conversion costs. The total cost of the units completed and transferred out of the department was:
- \$190,000
 - \$189,200
 - \$180,200
 - \$132,000
6. T Company uses the FIFO method in its process costing system. Operating data for the Curing Department for March appear below:

	<u>Units</u>	<u>Percent Complete with Respect to Conversion</u>
Beginning work in process inventory	9,000	10%
Transferred in from the prior department during March	57,000	
Completed and transferred to the next department during March	65,000	
Ending work in process inventory	1,000	70%

According to the company's records, the conversion cost in beginning work in process inventory was \$7,470 at the beginning of March. The cost per equivalent unit for conversion costs for March was \$8.20. How much conversion cost would be assigned to the units completed and transferred out of the department during March?

- \$525,530
- \$592,040
- \$533,090
- \$533,000

7. In November, one of the processing departments at G Company had beginning work in process inventory of \$36,000 and ending work in process inventory of \$35,000. During the month, \$427,000 of costs were added to production and the cost of units transferred out from the department was \$428,000. The company uses the FIFO method in its process costing system. In the department's cost reconciliation report for November, the total cost to be accounted for would be:
- \$890,000
 - \$71,000
 - \$463,000
 - \$926,000
8. H Company uses a process costing system. The following data are available for one department for October:

	<u>Percent Complete</u>		
	<u>Units</u>	<u>Materials</u>	<u>Conversion</u>
Work in process, beginning	10,000	60%	30%
Work in process, ending	5,000	80%	70%

The department started 45,000 units into production during the month and completed and transferred 50,000 units to the next department. Assuming the FIFO method is used, the equivalent units for material for October would be:

- 55,000
- 46,500
- 44,500
- 48,000

The next 7 questions refer to the following information.

M Company uses the FIFO method in its process costing system. Data concerning the first processing department for the most recent month are listed below:

Beginning work in process inventory:	
Units in beginning work in process inventory	300
Materials costs	\$5,900
Conversion costs	\$3,000
Percent complete with respect to materials	85%
Percent complete with respect to conversion	20%
Units started into production in the month	5,300
Units transferred to the next department in the month	4,800
Materials costs added during the month	\$105,900
Conversion costs added during the month	\$225,200
Ending work in process inventory:	
Units in ending work in process inventory	800
Percent complete with respect to materials	50%
Percent complete with respect to conversion	40%

9. The equivalent units for conversion costs for the first department for the month are closest to:
 - a) 5,060
 - b) 5,360
 - c) 5,660
 - d) 4,760

10. The cost per equivalent unit for conversion costs for the first department for the month is closest to:
 - a) \$44.51
 - b) \$50.00
 - c) \$46.92
 - d) \$46.74

11. The cost of ending work in process inventory in the first processing department according to the company's cost system is closest to:
 - a) \$26,369
 - b) \$22,808
 - c) \$52,738
 - d) \$21,095

12. The total cost transferred from the first processing department to the next processing department during the month is closest to:
- a) \$369,163
 - b) \$317,192
 - c) \$331,100
 - d) \$340,000
13. What are the equivalent units for materials for the month in the first processing department?
- a) 4,500
 - b) 4,800
 - c) 400
 - d) 4,945
14. The cost of a completed unit transferred out of the department is closest to:
- a) \$69.88
 - b) \$75.56
 - c) \$60.71
 - d) \$65.92
15. The cost per equivalent unit for materials for the month in the first processing department is:
- a) \$23.14
 - b) \$18.91
 - c) \$21.42
 - d) \$22.06

Solutions to Problems

Problem #1

Conversion: 6,000 units (100% – 20%)	4,800
Units started and completed 74,000 – 8,000	66,000
Ending work in process:	
Conversion: 8,000 units @ 60%	<u>4,800</u>
Equivalent units of production	<u>75,600</u>

Problem #2

Conversion: 13,000 units (100% – 10%)	11,700
Units started and completed 89,000 – 22,000	67,000
Ending work in process:	
Conversion: 22,000 units @ 30%	<u>6,600</u>
Equivalent units of production	<u>85,300</u>

Conversion costs incurred	\$806,085
Equivalent units	85,300
Cost per equivalent unit	\$9.45

Problem #3

a)	
Ending work in process	\$36,000
Costs transferred out	261,000
Beginning work in process	<u>27,000</u>
Costs added during the month	\$270,000
b)	
Costs transferred out	\$261,000
Costs assigned to ending work in process	<u>36,000</u>
	\$297,000

Problem #4

	Materials	Conversion
Materials: 10,000 units (100% – 100%)	0	
Conversion: 10,000 units (100% – 60%)		4,000
Units started and completed (25,000 – 10,000)	15,000	15,000

	<u>Materials</u>	<u>Conversion</u>	<u>Total</u>
<u>Units transferred out:</u>			
Cost in beginning work in process inventory			\$48,200
Cost to complete beginning work in process inventory:			
Equivalent units of production required to complete beginning inventory	0	4,000	
Cost per equivalent unit	<u>\$3.10</u>	<u>\$4.50</u>	
Cost to complete the units in beginning inventory	\$0	\$18,000	18,000
<u>Cost of units started and completed this period:</u>			
Units started and completed this period	15,000	15,000	
Cost per equivalent unit	<u>\$3.10</u>	<u>\$4.50</u>	
Cost of units started and completed this period	\$46,500	\$67,500	<u>114,000</u>
Cost of units transferred out			<u>\$180,200</u>

Problem #5

a)

	<u>Materials</u>	<u>Conversion</u>
To complete beginning work in process:		
Materials: 300 units (100% – 70%)	90	
Conversion: 300 units (100% – 15%)		255
Units started and completed (6,600 – 300)	6,300	6,300
Ending work in process:		
Materials: 1,000 units 85%	<u>850</u>	
Conversion: 1,000 units 20%		<u>200</u>
Equivalent units of production	7,240	6,755

b)

	<u>Materials</u>	<u>Conversion</u>
- Cost added during the period	\$187,900	\$97,800
Equivalent units of production	7,240	6,755
Cost per equivalent unit	\$25.95	\$14.48

c)

	<u>Materials</u>	<u>Conversion</u>
- Cost per equivalent unit	\$25.95	\$14.48
Units started, completed and transferred	<u>6,390</u>	<u>6,555</u>
	\$165,820	\$94,916
Costs from beginning of month	<u>6,100</u>	<u>700</u>
Total costs transferred out	\$171,920	\$95,616
WIP second department	267,536	
WIP first department		267,536

Solutions to Multiple Choice Questions

- 1. D
- 2. A
- 3. A
- 4. B
- 5. C
- 6. C
- 7. C
- 8. D
- 9. A
- 10. A
- 11. B
- 12. B
- 13. D
- 14. D
- 15. C