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Chapter4: Systems Design: Process Costing

Guidance Answers to Decision Maker and You Decide

Cost Analyst (p. 171)

The new production facility will convert a raw material (wood chips) into a homogeneous product (newsprint) produced in a continuous process. Therefore, a process costing system should be used.

Writing Term Papers (p. 178)

Each complete paper is five pages long and, by assumption, each page requires the same time and effort to write. Therefore, the time and effort that went into writing one incomplete two-page paper and one incomplete three-page paper could have been used to write one complete five-page paper. Added to the two complete papers that were turned in, this would have resulted in three complete papers.

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Chapter4: Systems Design: Process Costing

Guidance Answers to Concept Checks

1. **Choice d.** Material equivalent units are 2,200 units completed and transferred to the next department + 100 equivalent units in ending work in process inventory (200 units × 50%). Conversion equivalent units are 2,200 units completed and transferred to the next department plus 80 equivalent units in ending work in process inventory (200 units × 40%).

2. **Choice a.** ($189,980 ÷ 2,300 equivalent units) + ($424,080 ÷ 2,280 equivalent units) = $268.60.

Chapter4: Systems Design: Process Costing

Review Problem: Process Cost Flows and Costing Units

Luxguard Home Paint Company produces exterior latex paint, which it sells in one-gallon containers. The company has two processing departments—Base Fab and Finishing. White paint, which is used as a base for all the company's paints, is mixed from raw ingredients in the Base Fab Department. Pigments are then added to the basic white paint, the pigmented paint is squirted under pressure into one-gallon containers, and the containers are labeled and packed for shipping in the Finishing Department. Information relating to the company's operations for April follows:

a. Issued raw materials for use in production: Base Fab Department, $851,000; and Finishing Department, $629,000.

b. Incurred direct labor costs: Base Fab Department, $330,000; and Finishing Department, $270,000.

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c. Applied manufacturing overhead cost: Base Fab Department, $665,000; and Finishing Department, $405,000.

d. Transferred basic white paint from the Base Fab Department to the Finishing Department, $1,850,000.

e. Transferred paint that had been prepared for shipping from the Finishing Department to Finished Goods, $3,200,000.

Required:

1. Prepare journal entries to record items (a) through (e) above.

2. Post the journal entries from (1) above to T-accounts. The balance in the Base Fab Department's Work in Process account on April 1 was $150,000; the balance in the Finishing Department's Work in Process account was $70,000. After posting entries to the T-accounts, find the ending balance in each department's Work in Process account.

3. Determine the cost of ending work in process inventories and of units transferred out of the Base Fab Department in April. The following additional information is available regarding production in the Base Fab Department during April:

Production data:	
Units (gallons) in process, April 1: materials 100% complete, labor and overhead 60% complete	30,000

labor and overhead 60% complete	30,000
Units (gallons) started into production during April	420,000
Units (gallons) completed and transferred to the Finishing Department	370,000
Units (gallons) in process, April 30: materials 50% complete, labor and overhead 25% complete	80,000
Cost data:	
Work in process inventory, April 1:	
Materials	$ 92,000
Labor	21,000
Overhead	37,000
Total cost of work in process	$ 150,000
Cost added during April:	
Materials	$ 851,000
Labor	330,000
Overhead	665,000
Total cost added during April	$1,846,000

4. Prepare a cost reconciliation report for April.

Solution to Review Problem

1.

a.	Work in Process—Base Fab Department	851,000		
	Work in Process—Finishing Department	629,000		
	Raw Materials			1,480,000
b.	Work in Process—Base Fab Department	330,000		
	Work in Process—Finishing Department	270,000		
	Salaries and Wages Payable			600,000
c.	Work in Process—Base Fab Department	665,000		
	Work in Process—Finishing Department	405,000		
	Manufacturing Overhead			1,070,000
d.	Work in Process—Finishing Department	1,850,000		
	Work in Process—Base Fab Department			1,850,000
e.	Finished Goods	3,200,000		
	Work in Process—Finishing Department			3,200,000

2.

Raw Materials

Bal.	XXX	(a)	1,480,000

Salaries and Wages Payable

		(b)	600,000

Work in Process—Base Fab Department

Bal.	150,000	(d)	1,850,000
(a)	851,000		
(b)	330,000		
(c)	665,000		
Bal.	146,000		

Manufacturing Overhead

(Various actual costs)		(c)	1,070,000

Work in Process—Finishing Department

Bal.	70,000	(e)	3,200,000
(a)	629,000		
(b)	270,000		

Finished Goods

Bal.	XXX		
(e)	3,200,000		

(b)	270,000
(c)	405,000
(d)	1,850,000
Bal.	24,000

3. First, we must compute the equivalent units of production for each cost category:

Base Fab Department
Equivalent Units of Production

	Materials	Labor	Overhead
Units transferred to the next department	370,000	370,000	370,000
Ending work in process inventory (materials: 80,000 units × 50% complete; labor: 80,000 units × 25% complete; overhead: 80,000 units × 25% complete)	40,000	20,000	20,000
Equivalent units of production	410,000	390,000	390,000

Then we must compute the cost per equivalent unit for each cost category:

Base Fab Department
Costs per Equivalent Unit

	Materials	Labor	Overhead
Costs:			
Cost of beginning work in process inventory	$ 92,000	$ 21,000	$ 37,000
Costs added during the period	851,000	330,000	665,000
Total cost (a)	$943,000	$351,000	$702,000
Equivalent units of production (b)	410,000	390,000	390,000
Cost per equivalent unit (a) ÷ (b)	$2.30	$0.90	$1.80

The costs per equivalent unit can then be applied to the units in ending work in process inventory and the units transferred out as follows:

Base Fab Department
Costs of Ending Work in Process Inventory and the Units Transferred Out

	Materials	Labor	Overhead	Total
Ending work in process inventory:				
Equivalent units of production	40,000	20,000	20,000	
Cost per equivalent unit	$2.30	$0.90	$1.80	
Cost of ending work in process inventory	$92,000	$18,000	$36,000	$146,000
Units completed and transferred out:				
Units transferred to the next department	370,000	370,000	370,000	
Cost per equivalent unit	$2.30	$0.90	$1.80	
Cost of units completed and transferred out	$851,000	$333,000	$666,000	$1,850,000

4.

Base Fab Department
Cost Reconciliation

Costs to be accounted for:	
Cost of beginning work in process inventory	$ 150,000
Costs added to production during the period	1,846,000

Costs added to production during the period	1,846,000
Total cost to be accounted for	$1,996,000
Costs accounted for as follows:	
Cost of ending work in process inventory	$ 146,000
Cost of units transferred out	1,850,000
Total cost accounted for	$1,996,000

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Chapter4: Systems Design: Process Costing

Glossary

Conversion cost

Equivalent units

Equivalent units of production (weighted-average method)

FIFO method

Process costing

Processing department

Weighted-average method

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Chapter4: Systems Design: Process Costing

Questions

4-1 Under what conditions would it be appropriate to use a process costing system?

4-2 In what ways are job-order and process costing similar?

4-3 Why is cost accumulation simpler in a process costing system than it is in a job-order costing system?

4-4 How many Work in Process accounts are maintained in a company that uses process costing?

p. 186 **4-5** Assume that a company has two processing departments—Mixing and Firing. Prepare a journal entry to show a transfer of work in process from the Mixing Department to the Firing Department.

4-6 Assume that a company has two processing departments—Mixing followed by Firing. Explain what costs might be added to the Firing Department's Work in Process account during a period.

4-7 What is meant by the term *equivalent units of production* when the weighted-average method is used?

4-8 Watkins Trophies, Inc., produces thousands of medallions made of bronze, silver, and gold. The medallions are identical except for the materials used in their manufacture. What costing system would you advise the company to use?

Multiple choice questions are provided on the text website at www.mhhe.com/brewer5e

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Chapter4: Systems Design: Process Costing

Brief Exercises

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BRIEF EXERCISE 4-1 Process Costing Journal Entries [LO1]

Quality Brick Company produces bricks in two processing departments—Molding and Firing. Information relating to the company's operations in March follows:

a. Raw materials were issued for use in production: Molding Department, $23,000; and Firing Department, $8,000.

b. Direct labor costs were incurred: Molding Department, $12,000; and Firing Department, $7,000.

c. Manufacturing overhead was applied: Molding Department, $25,000; and Firing Department, $37,000.

d. Unfired, molded bricks were transferred from the Molding Department to the Firing Department. According to the company's process costing system, the cost of the unfired, molded bricks was $57,000.

e. Finished bricks were transferred from the Firing Department to the finished goods warehouse. According to the company's process costing system, the cost of the finished bricks was $103,000.

f. Finished bricks were sold to customers. According to the company's process costing system, the cost of the finished bricks sold was $101,000.

Required:

Prepare journal entries to record items (a) through (f) above.

BRIEF EXERCISE 4-2 Computation of Equivalent Units—Weighted-Average Method [LO2]

Clonex Labs, Inc., uses a process costing system. The following data are available for one department for October:

		Percent Completed	
	Units	Materials	Conversion
Work in process, October 1	30,000	65%	30%

Work in process, October 1	30,000	65%	30%
Work in process, October 31	15,000	80%	40%

The department started 175,000 units into production during the month and transferred 190,000 completed units to the next department.

Required:

Compute the equivalent units of production for October assuming that the company uses the weighted-average method of accounting for units and costs.

BRIEF EXERCISE 4-3 Cost per Equivalent Unit—Weighted-Average Method [LO3]

Superior Micro Products uses the weighted-average method in its process costing system. Data for the Assembly Department for May appear below:

	Materials	Labor	Overhead
Work in process, May 1	$18,000	$5,500	$27,500
Cost added during May	$238,900	$80,300	$401,500
Equivalent units of production	35,000	33,000	33,000

Required:

1. Compute the cost per equivalent unit for materials, for labor, and for overhead.

2. Compute the total cost per equivalent whole unit.

BRIEF EXERCISE 4-4 Applying Costs to Units—Weighted-Average Method [LO4]

Data concerning a recent period's activity in the Prep Department, the first processing department in a company that uses process costing, appear below:

	Materials	Conversion
Equivalent units of production in ending work in process	2,000	800
Cost per equivalent unit	$13.86	$4.43

A total of 20,100 units were completed and transferred to the next processing department during the period.

Required:

Compute the cost of the units transferred to the next department during the period and the cost of ending work in process inventory.

BRIEF EXERCISE 4-5 Cost Reconciliation Report—Weighted-Average Method [LO5]

Maria Am Corporation uses a process costing system. The Baking Department is one of the processing departments in its strudel manufacturing facility. In June in the Baking Department, the cost of beginning work in process inventory was $3,570, the cost of ending work in process inventory was $2,860, and

the cost added to production was $43,120.

Required:

Prepare a cost reconciliation report for the Baking Department for June.

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Exercises

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EXERCISE 4-6 Process Costing Journal Entries [LO1]

Chocolaterie de Geneve, SA, is located in a French-speaking canton in Switzerland. The company makes chocolate truffles that are sold in popular embossed tins. The company has two processing departments—Cooking and Molding. In the Cooking Department, the raw ingredients for the truffles are mixed and then cooked in special candy-making vats. In the Molding Department, the melted chocolate and other ingredients from the Cooking Department are carefully poured into molds and decorative flourishes are applied by hand. After cooling, the truffles are packed for sale. The company uses a process costing system. The T-accounts below show the flow of costs through the two departments in April (all amounts are in Swiss francs):

Work in Process—Cooking

Balance 4/1	8,000	Transferred out	160,000
Direct materials	42,000		
Direct labor	50,000		
Overhead	75,000		

Work in Process—Molding

Balance 4/1	4,000	Transferred out	240,000
Transferred in	160,000		
Direct labor	36,000		
Overhead	45,000		

Required:

Prepare journal entries showing the flow of costs through the two processing departments during April.

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EXERCISE 4-7 Equivalent Units—Weighted-Average Method [LO2]

Hielta Oy, a Finnish company, processes wood pulp for various manufacturers of paper products. Data relating to tons of pulp processed during June are provided below:

	Tons of Pulp	Percent Completed	
		Materials	Labor and Overhead
Work in process, June 1	20,000	90%	80%
Work in process, June 30	30,000	60%	40%
Started into production during June	190,000		

Required:

1. Compute the number of tons of pulp completed and transferred out during June.

2. Compute the equivalent units of production for materials and for labor and overhead for June.

EXERCISE 4-8 Equivalent Units and Cost per Equivalent Unit—Weighted-Average Method [LO2, LO3]

Pureform, Inc., manufactures a product that passes through two departments. Data for a recent month for the first department follow:

	Units	Materials	Labor	Overhead
Work in process, beginning	5,000	$4,320	$1,040	$1,790
Units started in process	45,000			
Units transferred out	42,000			
Work in process, ending	8,000			
Cost added during the month		$52,800	$21,500	$32,250

The beginning work in process inventory was 80% complete with respect to materials and 60% complete with respect to labor and overhead. The ending work in process inventory was 75% complete with respect to materials and 50% complete with respect to labor and overhead.

Required:

Assume that the company uses the weighted-average method of accounting for units and costs.

1. Compute the equivalent units for the month for the first department.

2. Determine the costs per equivalent unit for the month.

EXERCISE 4-9 Equivalent Units and Cost per Equivalent Unit—Weighted-Average Method [LO2, LO3, LO4]

Helix Corporation produces prefabricated flooring in a series of steps carried out in production departments. All of the material that is used in the first production department is added at the beginning of processing in that department. Data for May for the first production department follow:

	Units	Percent Completed	
		Materials	Conversion
Work in process inventory, May 1	5,000	100%	40%
Work in process inventory, May 31	10,000	100%	30%

Work in process inventory, May 31	10,000	100%	30%
Materials cost in work in process inventory, May 1		$1,500	
Conversion cost in work in process inventory, May 1		$4,000	
Units started into production		180,000	
Units transferred to the next production department		175,000	
Materials cost added during May		$54,000	
Conversion cost added during May		$352,000	

Required:

1. Assume that the company uses the weighted-average method of accounting for units and costs. Determine the equivalent units for May for the first process.

2. Compute the costs per equivalent unit for May for the first process.

3. Determine the total cost of ending work in process inventory and the total cost of units transferred to the next process in May.

EXERCISE 4-10 Comprehensive Exercise; Second Production Department—Weighted-Average Method [LO2, LO3, LO4, LO5]

Scribners Corporation produces fine papers in three production departments—Pulping, Drying, and Finishing. In the Pulping Department, raw materials such as wood fiber and rag cotton are mechanically and chemically treated to separate their fibers. The result is a thick slurry of fibers. In the Drying Department, the wet fibers transferred from the Pulping Department are laid down on porous webs, pressed to remove excess liquid, and dried in ovens. In the Finishing Department, the dried paper is coated, cut, and spooled onto reels. The company uses the weighted-average method in its process costing system. Data for March for the Drying Department follow:

		Percent Completed	
	Units	Pulping	Conversion
Work in process inventory, March 1	5,000	100%	20%
Work in process inventory, March 31	8,000	100%	25%
Pulping cost in work in process inventory, March 1		$4,800	
Conversion cost in work in process inventory, March 1		$500	
Units transferred to the next production department		157,000	
Pulping cost added during March		$102,450	
Conversion cost added during March		$31,300	

No materials are added in the Drying Department. Pulping cost represents the costs of the wet fibers transferred in from the Pulping Department. Wet fiber is processed in the Drying Department in batches; each unit in the above table is a batch and one batch of wet fibers produces a set amount of dried paper that is passed on to the Finishing Department.

Required:

1. Determine the equivalent units for March for pulping and conversion.

2. Compute the costs per equivalent unit for March for pulping and conversion.

3. Determine the total cost of ending work in process inventory and the total cost of units transferred to the Finishing Department in March.

4. Prepare a cost reconciliation report for the Drying Department for March.

EXERCISE 4-11 Cost Assignment; Cost Reconciliation—Weighted-Average Method [LO2, LO4, LO5]

Superior Micro Products uses the weighted-average method in its process costing system. During January, the Delta Assembly Department completed its processing of 25,000 units and transferred them to the next department. The cost of beginning inventory and the costs added during January amounted to $599,780 in total. The ending inventory in January consisted of 3,000 units, which were 80% complete with respect to materials and 60% complete with respect to labor and overhead. The costs per equivalent unit for the month were as follows:

	Materials	Labor	Overhead
Cost per equivalent unit	$12.50	$3.20	$6.40

Required:

1. Compute the equivalent units of materials, labor, and overhead in the ending inventory for the month.

2. Compute the cost of ending inventory and of the units transferred to the next department for January.

3. Prepare a cost reconciliation for January. (Note: You will not be able to break the cost to be accounted for into the cost of beginning inventory and costs added during the month.)

EXERCISE 4-12 Equivalent Units—Weighted-Average Method [LO2]

Alaskan Fisheries, Inc., processes salmon for various distributors. Two departments are involved —Cleaning and Packing. Data relating to pounds of salmon processed in the Cleaning Department during July are presented below:

		Percent Completed	
	Pounds of Salmon	Materials	Labor and Overhead
Work in process, July 1	20,000	100%	30%
Work in process, July 31	25,000	100%	60%

A total of 380,000 pounds of salmon were started into processing during July. All materials are added at the beginning of processing in the Cleaning Department.

Required:

Compute the equivalent units for July for both materials and labor and overhead assuming that the

company uses the weighted-average method of accounting for units.

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Problems

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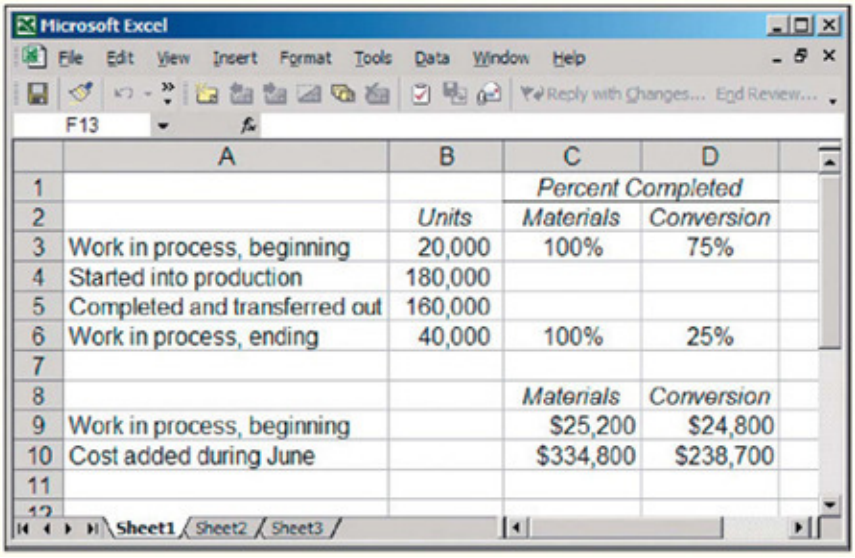
Alternate problem set is available on the text website.

PROBLEM 4-13A Comprehensive Problem—Weighted-Average Method [LO2, LO3, LO4, LO5]

CHECK FIGURE (3) Ending work in process: $87,500

Sunspot Beverages, Ltd., of Fiji makes blended tropical fruit drinks in two stages. Fruit juices are extracted from fresh fruits and then blended in the Blending Department. The blended juices are then bottled and packed for shipping in the Bottling Department. The following information pertains to the operations of the Blending Department for June. (The currency in Fiji is the Fijian dollar.)



	A	B	C	D
1			*Percent Completed*	
2		*Units*	*Materials*	*Conversion*
3	Work in process, beginning	20,000	100%	75%
4	Started into production	180,000		
5	Completed and transferred out	160,000		
6	Work in process, ending	40,000	100%	25%
7				
8			*Materials*	*Conversion*
9	Work in process, beginning		$25,200	$24,800
10	Cost added during June		$334,800	$238,700
11				

Required:

Assume that the company uses the weighted-average method.

1. Determine the equivalent units for June for the Blending Department.
2. Compute the costs per equivalent unit for the Blending Department.
3. Determine the total cost of ending work in process inventory and the total cost of units transferred to the Bottling Department.

4. Prepare a cost reconciliation report for the Blending Department for June.

PROBLEM 4-14A Comprehensive Problem—Weighted-Average Method [LO2, LO3, LO4, LO5]

CHECK FIGURE (3) Ending work in process: $16,500

Builder Products, Inc., manufactures a caulking compound that goes through three processing stages prior to completion. Information on work in the first department, Cooking, for May follows:

Production data:	
Pounds in process, May 1; materials 100% complete; conversion 80% complete	10,000
Pounds started into production during May	100,000
Pounds completed and transferred out	?
Pounds in process, May 31; materials 60% complete; conversion 20% complete	15,000
Cost data:	
Work in process inventory, May 1:	
Materials cost	$1,500
Conversion cost	$7,200
Cost added during May:	
Materials cost	$154,500
Conversion cost	$90,800

The company uses the weighted-average method.

Required:

1. Compute the equivalent units of production.
2. Compute the costs per equivalent unit for the month.
3. Determine the cost of ending work in process inventory and of the units transferred out to the next department.
4. Prepare a cost reconciliation report for the month.

PROBLEM 4-15A Comprehensive Problem; Second Production Department—Weighted-Average Method [LO2, LO3, LO4, LO5]

CHECK FIGURE (3) Ending work in process: $2,321

Old Country Links Inc. produces sausages in three production departments—Mixing, Casing and Curing, and Packaging. In the Mixing Department, meats are prepared and ground and then mixed with spices. The spiced meat mixture is then transferred to the Casing and Curing Department, where the mixture is force-fed into casings and then hung and cured in climate-controlled smoking chambers. In the Packaging Department, the cured sausages are sorted, packed, and labeled. The company uses the weighted-average method in its process costing system. Data for September for the Casing and Curing Department follow:

		Percent Completed		
	Units	Mixing	Materials	Conversion
Work in process inventory, September 1	1	100%	90%	80%
Work in process inventory, September 30	1	100%	80%	70%

	Mixing	Materials	Conversion

	Mixing	Materials	Conversion
Work in process inventory, September 1	$1,670	$90	$605
Cost added during September	$81,460	$6,006	$42,490

Mixing cost represents the costs of the spiced meat mixture transferred in from the Mixing Department. The spiced meat mixture is processed in the Casing and Curing Department in batches; each unit in the above table is a batch and one batch of spiced meat mixture produces a set amount of sausages that are passed on to the Packaging Department. During September, 50 batches (i.e., units) were completed and transferred to the Packaging Department.

Required:

1. Determine the equivalent units for September for mixing, materials, and conversion. Do not round off your computations.
2. Compute the costs per equivalent unit for September for mixing, materials, and conversion.
3. Determine the total cost of ending work in process inventory and the total cost of units transferred to the Packaging Department in September.
4. Prepare a cost reconciliation report for the Casing and Curing Department for September.

PROBLEM 4-16A Interpreting a Report—Weighted-Average Method [LO2, LO3, LO4]

CHECK FIGURE (1) Materials: 220,000 equivalent units; (2) Conversion: $1.30 per equivalent unit; (3) 160,000 units

Cooperative San José of southern Sonora state in Mexico makes a unique syrup using cane sugar and local herbs. The syrup is sold in small bottles and is prized as a flavoring for drinks and for use in desserts. The bottles are sold for $12 each. (The Mexican currency is the peso and is denoted by $.) The first stage in the production process is carried out in the Mixing Department, which removes foreign matter from the raw materials and mixes them in the proper proportions in large vats. The company uses the weighted-average method in its process costing system.

A hastily prepared report for the Mixing Department for April appears below:

Units to be accounted for:	
Work in process, April 1 (materials 90% complete; conversion 80% complete)	30,000
Started into production	200,000
Total units to be accounted for	230,000
Units accounted for as follows:	
Transferred to next department	190,000
Work in process, April 30 (materials 75% complete; conversion 60% complete)	40,000
Total units accounted for	230,000
Cost Reconciliation	
Cost to be accounted for:	
Work in process, April 1	$ 98,000
Cost added during the month	827,000
Total cost to be accounted for	$925,000
Cost accounted for as follows:	
Work in process, April 30	$119,400
Transferred to next department	805,600
Total cost accounted for	$925,000

Management would like some additional information about Cooperative San José's operations.

Required:

1. What were the equivalent units for the month?
2. What were the costs per equivalent unit for the month? The beginning inventory consisted of the following costs: materials, $67,800; and conversion cost, $30,200. The costs added during the month consisted of: materials, $579,000; and conversion cost, $248,000.
3. How many of the units transferred to the next department were started and completed during the month?
4. The manager of the Mixing Department stated, "Materials prices jumped from about $2.50 per unit in March to $3 per unit in April, but due to good cost control I was able to hold our materials cost to less than $3 per unit for the month." Should this manager be rewarded for good cost control? Explain.

PROBLEM 4-17A Analysis of Work in Process T-account—Weighted-Average Method [LO1, LO2, LO3, LO4]

CHECK FIGURE
(3) Ending work in process: $23,700

Weston Products manufactures an industrial cleaning compound that goes through three processing departments—Grinding, Mixing, and Cooking. All raw materials are introduced at the start of work in the Grinding Department. The Work in Process T-account for the Grinding Department for May follows:

Work in Process—Grinding Department

Inventory, May 1	21,800	Completed and transferred to the Mixing Department	?
Materials	133,400		
Conversion	225,500		
Inventory, May 31	?		

The May 1 work in process inventory consisted of 18,000 pounds with $14,600 in materials cost and $7,200 in conversion cost. The May 1 work in process inventory was 100% complete with respect to materials and 30% complete with respect to conversion. During May, 167,000 pounds were started into production. The May 31 inventory consisted of 15,000 pounds that were 100% complete with respect to materials and 60% complete with respect to conversion. The company uses the weighted-average method to account for units and costs.

Required:

1. Determine the equivalent units of production for May.
2. Determine the costs per equivalent unit for May.
3. Determine the cost of the units completed and transferred to the Mixing Department during May.

PROBLEM 4-18A Cost Flows [LO1]

CHECK FIGURE (2) Manufacturing overhead: $2,000 debit

Lubricants, Inc., produces a special kind of grease that is widely used by race car drivers. The grease is produced in two processing departments: Refining and Blending. Raw materials are introduced at various points in the Refining Department.

The following incomplete Work in Process account is available for the Refining Department

for March: balance

Work in Process—Refining Department			
March 1 balance	38,000	Completed and transferred to Blending	?
Materials	495,000		
Direct labor	72,000		
Overhead	181,000		
March 31 balance	?		

The March 1 work in process inventory in the Refining Department consists of the following elements: materials, $25,000; direct labor, $4,000; and overhead, $9,000.

Costs incurred during March in the Blending Department were: materials used, $115,000; direct labor, $18,000; and overhead cost applied to production, $42,000.

Required:

1. Prepare journal entries to record the costs incurred in both the Refining Department and Blending Department during March. Key your entries to the items (a) through (g) below.

   a. Raw materials were issued for use in production.

   b. Direct labor costs were incurred.

   c. Manufacturing overhead costs for the entire factory were incurred, $225,000. (Credit Accounts Payable.)

   d. Manufacturing overhead cost was applied to production using a predetermined overhead rate.

   e. Units that were complete with respect to processing in the Refining Department were transferred to the Blending Department, $740,000.

   f. Units that were complete with respect to processing in the Blending Department were transferred to Finished Goods, $950,000.

   g. Completed units were sold on account, $1,500,000. The Cost of Goods Sold was $900,000.

2. Post the journal entries from (1) above to T-accounts. The following account balances existed at the beginning of March. (The beginning balance in the Refining Department's Work in Process account is given on the prior page.)

Raw Materials	$618,000
Work in Process—Blending Department	$65,000
Finished Goods	$20,000

After posting the entries to the T-accounts, find the ending balance in the inventory accounts and the manufacturing overhead account.

Chapter4: Systems Design: Process Costing

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ANALYTICAL THINKING [LO2, LO3, LO4]

CHECK FIGURE
(1) Ending work in process: $7,182

"I think we goofed when we hired that new assistant controller," said Ruth Scarpino, president of Provost Industries. "Just look at this report that he prepared for last month for the Finishing Department. I can't make heads or tails out of it."

Finishing Department costs:	
Work in process inventory, April 1, 450 units; materials 100% complete; conversion 60% complete	$ 8,208*
Costs transferred in during the month from the preceding department, 1,950 units	17,940
Materials cost added during the month	6,210
Conversion costs incurred during the month	13,920
Total departmental costs	$46,278
Finishing Department costs assigned to:	
Units completed and transferred to finished goods, 1,800 units at $25.71 per unit	$46,278
Work in process inventory, April 30, 600 units; materials 0% complete; conversion 35% complete	0
Total departmental costs assigned	$46,278

*Consists of cost transferred in, $4,068; materials cost, $1,980; and conversion cost, $2,160.

"He's struggling to learn our system," replied Frank Harrop, the operations manager. "The problem is that he's been away from process costing for a long time, and it's coming back slowly."

"It's not just the format of his report that I'm concerned about. Look at that $25.71 unit cost that he's

come up with for April. Doesn't that seem high to you?" said Ms. Scarpino.

"Yes, it does seem high; but on the other hand, I know we had an increase in materials prices during April, and that may be the explanation," replied Mr. Harrop. "I'll get someone else to redo this report and then we may be able to see what's going on."

Provost Industries manufactures a ceramic product that goes through two processing departments —Molding and Finishing. The company uses the weighted-average method in its process costing.

Required:

1. Prepare a report for the Finishing Department showing how much cost should have been assigned to the units completed and transferred to finished goods, and how much cost should have been assigned to ending work in process inventory in the Finishing Department.
2. Explain to the president why the unit cost on the new assistant controller's report is so high.

ETHICS CASE [LO2, LO3, LO4]

CHECK FIGURE
(3) 50% completion

Gary Stevens and Mary James are production managers in the Consumer Electronics Division of General Electronics Company, which has several dozen plants scattered in locations throughout the world. Mary manages the plant located in Des Moines, Iowa, while Gary manages the plant in El Segundo, California. Production managers are paid a salary and get an additional bonus equal to 5% of their base salary if the entire division meets or exceeds its target profits for the year. The bonus is determined in March after the company's annual report has been prepared and issued to stockholders.

Shortly after the beginning of the new year, Mary received a phone call from Gary that went like this:

Gary: How's it going, Mary?

Mary: Fine, Gary. How's it going with you?

Gary: Great! I just got the preliminary profit figures for the division for last year and we are within $200,000 of making the year's target profits. All we have to do is pull a few strings, and we'll be over the top!

Mary: What do you mean?

Gary: Well, one thing that would be easy to change is your estimate of the percentage completion of your ending work in process inventories.

Mary: I don't know if I can do that, Gary. Those percentage completion figures are supplied by Tom Winthrop, my lead supervisor, who I have always trusted to provide us with good estimates. Besides, I have already sent the percentage completion figures to corporate headquarters.

Gary: You can always tell them there was a mistake. Think about it, Mary. All of us managers are doing as much as we can to pull this bonus out of the hat. You may not want the bonus check, but the rest of us sure could use it.

The final processing department in Mary's production facility began the year with no work in process inventories. During the year, 210,000 units were transferred in from the prior processing department and 200,000 units were completed and sold. Costs transferred in from the prior department totaled $39,375,000. No materials are added in the final processing department. A total of $20,807,500 of conversion cost was incurred in the final processing department during the year.

Required:

1. Tom Winthrop estimated that the units in ending inventory in the final processing department were 30% complete with respect to the conversion costs of the final processing department. If this estimate of the percentage completion is used, what would be the Cost of Goods Sold for the year?

2. Does Gary Stevens want the estimated percentage completion to be increased or decreased? Explain why.

3. What percentage completion would result in increasing reported net operating income by $200,000 over the net operating income that would be reported if the 30% figure were used?

4. Do you think Mary James should go along with the request to alter estimates of the percentage completion? Why or why not?