

Chapter 4

Systems Design: Process Costing

Solutions to Questions

4-1 A process costing system is appropriate in situations where a homogeneous product is produced on a continuous basis.

4-2

1. Job-order costing and process costing have the same basic purposes—to assign materials, labor, and overhead cost to products and to provide a mechanism for computing unit costs.
2. Both systems use the same basic manufacturing accounts.
3. Costs flow through the accounts in basically the same way in both systems.

4-3 Costs are accumulated by department in a process costing system.

4-4 First, the activity performed in a department must be performed uniformly on all units moving through it. Second, the output of the department must be homogeneous.

4-5 Cost accumulation is simpler under process costing because costs only need to be identified by department—not by separate job. A company usually has a small number of processing departments, whereas there can be hundreds or even thousands of jobs in a job-order costing system.

4-6 A Work in Process account is maintained for each separate processing department.

4-7 The journal entry would be:
Work in Process, Firing..... XXXX
 Work in Process, Mixing XXXX

4-8 The costs that might be added in the Firing Department would include: (1) costs transferred in from the Mixing Department, (2)

materials costs added in the Firing Department, (3) labor costs added in the Firing Department, and (4) overhead costs added in the Firing Department.

4-9 Under the weighted-average method, the equivalent units consist of units transferred to the next department (or to finished goods) during the period plus the equivalent units in the department's ending work in process inventory.

4-10 A quantity schedule shows the physical flow of units through a department during a period. It serves several purposes. First, it provides the manager with information about activity in his or her department and also shows the manager the stage of completion of any in-process units. Second, it provides data for computing the equivalent units and for preparing the other parts of the production report.

4-11 A unit of product accumulates cost in each department that it passes through, with the costs of one department added to the costs of the preceding department in a snowballing fashion.

4-12 The company should use operation costing, because it will want to distinguish between the costs of the metals used to make the medallions, but at the same time it will want to produce the medallions in large batches and employ process costing in accounting for labor and overhead. Thus, operation costing is ideally suited for the company's needs.

4-13 Any company that manufactures products that have some common characteristics and some individual characteristics may want to use operation

costing. Examples include textiles, shoes, electronic parts, and clothing.

4-14 Under the FIFO method, units transferred out are divided into two parts. One part consists of the units in the beginning inventory. Only the work needed *to complete* these units is shown as part of the equivalent units for the current period. The other part of the units transferred out is the units *started and completed* during the current period; these units are shown as a separate figure in the equivalent units computation under the FIFO method.

4-15 Under the FIFO method, units transferred out are divided into two groups. The

first group consists of units from the beginning work in process inventory. The second group consists of units started and completed during the period.

4-16 The FIFO method is superior because current performance should be measured in relation to costs of the current period only, and the weighted-average method mixes these costs in with costs of the prior period. Thus, under the weighted-average method, the manager's apparent performance in the current period is influenced to some extent by what happened in a prior period.

Exercise 4-1 (10 minutes)

Work in Process—Mixing	330,000	
Raw Materials Inventory		330,000
Work in Process—Mixing	260,000	
Work in Process—Baking	120,000	
Wages Payable		380,000
Work in Process—Mixing	190,000	
Work in Process—Baking	90,000	
Manufacturing Overhead		280,000
Work in Process—Baking	760,000	
Work in Process—Mixing		760,000
Finished Goods	980,000	
Work in Process—Baking		980,000

Exercise 4-2 (10 minutes)

Weighted-Average Method

	<i>Equivalent Units</i>	
	<i>Materials</i>	<i>Conversion</i>
Units transferred to the next department	410,000	410,000
Work in process, October 31:		
30,000 units × 70%	21,000	
30,000 units × 50%		<u>15,000</u>
Equivalent units	<u>431,000</u>	<u>425,000</u>

Exercise 4-3 (10 minutes)

FIFO Method

	<i>Equivalent Units</i>	
	<i>Materials</i>	<i>Conversion</i>
Work in process, October 1:		
50,000 units × 10%*	5,000	
50,000 units × 40%*		20,000
Started and completed during October**	360,000	360,000
Work in process, October 31:		
30,000 units × 70%	21,000	
30,000 units × 50%		<u>15,000</u>
Equivalent units	<u>386,000</u>	<u>395,000</u>

* Work needed to complete these units.

** 390,000 units started into production – 30,000 units in ending
work in process = 360,000 units started and completed

Exercise 4-4 (15 minutes)

Weighted-Average Method

1. Work in process, May 1	80,000
Started into production during May	<u>300,000</u>
Total kilograms in process	380,000
Deduct work in process, May 31	<u>50,000</u>
Completed and transferred out during May	<u>330,000</u>
2. Kilograms to be accounted for:	
Work in process, May 1 (materials 80% complete; conversion 20% complete)	80,000
Started into production during the month.....	<u>300,000</u>
Total kilograms to be accounted for	<u>380,000</u>
Kilograms accounted for as follows:	
Transferred out during the month.....	330,000
Work in process, May 31 (materials 40% complete; conversion 10% complete)	<u>50,000</u>
Total kilograms accounted for	<u>380,000</u>

Exercise 4-5 (15 minutes)

FIFO Method

1. The number of kilograms completed and transferred out during the month would be the same regardless of the process costing method used. Thus, as in Exercise 4-4, 330,000 kilograms would have been completed and transferred out. However, under the FIFO method we must break this figure down between kilograms started and completed during the current period. The breakdown is shown in Part 2 below:

2. Kilograms to be accounted for:

Work in process, May 1 (materials 80% complete; conversion 20% complete).....	80,000
Started into production during the month.....	<u>300,000</u>
Total kilograms to be accounted for	<u>380,000</u>

Kilograms accounted for as follows:

Transferred out during the month:

From beginning inventory	80,000
Started and completed during the month.....	250,000 *
Work in process, May 31 (materials 40% complete; conversion 10% complete).....	<u>50,000</u>
Total kilograms accounted for	<u>380,000</u>

- * 300,000 started – 50,000 ending work in process =
250,000 started and completed

Exercise 4-6 (15 minutes)

Weighted-Average Method

*Quantity
Schedule*

Pounds to be accounted for:

Work in process, May 1 (materials 100% complete, labor and overhead 55% complete)	30,000
Started into production during May	<u>480,000</u>
Total pounds to be accounted for	<u>510,000</u>

Equivalent Units

	<i>Materials</i>	<i>Labor & Overhead</i>
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Pounds accounted for as follows:

Transferred to Packing Department during May*	490,000	490,000	490,000
Work in process, May 31 (materials 100% complete, labor and overhead 90% complete)	<u>20,000</u>	<u>20,000</u>	<u>18,000</u>
Total pounds accounted for	<u>510,000</u>	<u>510,000</u>	<u>508,000</u>

*30,000 + 480,000 – 20,000 = 490,000.

Exercise 4-7 (15 minutes)

FIFO Method

*Quantity
Schedule*

Pounds to be accounted for:

Work in process, May 1 (materials 100% complete, labor and overhead 55% complete)	30,000
Started into production during May ...	<u>480,000</u>
Total pounds to be accounted for	<u>510,000</u>

<i>Equivalent Units</i>	
<i>Materials</i>	<i>Labor & Overhead</i>

Pounds accounted for as follows:

Transferred to Packing Department:			
From the beginning inventory	30,000	—	13,500 *
Started and completed this month**	460,000	460,000	460,000
Work in process, May 31 (materials 100% complete, labor and overhead 90% complete)	<u>20,000</u>	<u>20,000</u>	<u>18,000</u>
Total pounds accounted for	<u>510,000</u>	<u>480,000</u>	<u>491,500</u>

*Work required to complete these units: 100% – 55% = 45%.

45% × 30,000 pounds = 13,500 pounds

**480,000 pounds started – 20,000 pounds in ending work in process
= 460,000 pounds started and completed this month

Exercise 4-8 (20 minutes)

Weighted-Average Method

1. *Quantity
Schedule*

Gallons to be accounted for:

Work in process, May 1 (materials 80% complete, labor and overhead 75% complete)	80,000
Started into production	<u>760,000</u>
Total gallons accounted for ...	<u>840,000</u>

	<i>Equivalent Units</i>			
	<i>Materials</i>	<i>Labor</i>	<i>Overhead</i>	
Gallons accounted for as follows:				
Transferred to the next department.....	790,000	790,000	790,000	790,000
Work in process, May 31 (materials 60% complete, labor and overhead 20% complete)	<u>50,000</u>	<u>30,000</u>	<u>10,000</u>	<u>10,000</u>
Total gallons accounted for ...	<u>840,000</u>	<u>820,000</u>	<u>800,000</u>	<u>800,000</u>

Exercise 4-8 (continued)

2.

	<i>Total Costs</i>	<i>Materials</i>	<i>Labor</i>	<i>Overhead</i>	<i>Whole Unit</i>
Cost to be accounted for:					
Work in process, May 1	\$ 146,600	\$ 68,600	\$ 30,000	\$ 48,000	
Cost added during the month	<u>1,869,200</u>	<u>907,200</u>	<u>370,000</u>	<u>592,000</u>	
Total cost to be accounted for (a)	<u>\$2,015,800</u>	<u>\$975,800</u>	<u>\$400,000</u>	<u>\$640,000</u>	
Equivalent units (b)	—	820,000	800,000	800,000	
Cost per equivalent unit (a) ÷ (b)		\$1.19 +	\$0.50 +	\$0.80 =	\$2.49

Exercise 4-9 (20 minutes)

FIFO Method

1. *Quantity
Schedule*

Gallons to be accounted for:

Work in process, May 1 (materials 80% complete, labor and overhead 75% complete).....	80,000
Started into production	<u>760,000</u>
Total gallons accounted for....	<u>840,000</u>

	<i>Equivalent Units</i>			
	<i>Materials</i>	<i>Labor</i>	<i>Overhead</i>	
Gallons accounted for as follows:				
Transferred to the next department:				
From the beginning inventory	80,000	16,000*	20,000*	20,000*
Started and completed this month**.....	710,000	710,000	710,000	710,000
Work in process, May 31 (materials 60% complete, labor and overhead 20% complete).....	<u>50,000</u>	<u>30,000</u>	<u>10,000</u>	<u>10,000</u>
Total gallons accounted for....	<u>840,000</u>	<u>756,000</u>	<u>740,000</u>	<u>740,000</u>

* Work required to complete the beginning inventory.

** 760,000 gallons started – 50,000 gallons in ending work in process
= 710,000 gallons started and completed.

Exercise 4-9 (continued)

2.

	<i>Total Costs</i>	<i>Materials</i>	<i>Labor</i>	<i>Overhead</i>	<i>Whole Unit</i>
Cost to be accounted for:					
Work in process, May 31 ...	\$ 146,600				
Cost added during the month (a)	<u>1,869,200</u>	\$907,200	\$370,000	\$592,000	
Total cost to be accounted for	<u>\$2,015,800</u>				
Equivalent units (b)		756,000	740,000	740,000	
Cost per equivalent unit (a) ÷ (b)		\$1.20	+ \$0.50	+ \$0.80	= \$2.50

Exercise 4-10 (20 minutes)

Weighted-Average Method

1. For the sake of brevity, only the portion of the quantity schedule from which the equivalent units are computed is shown below.

	<i>Quantity Schedule</i>	<i>Equivalent Units (EU)</i>	
		<i>Materials</i>	<i>Conversion</i>
Units accounted for as follows:			
Transferred to the next process	300,000	300,000	300,000
Work in process, June 30 (materials 50% complete, conversion 25% complete)	<u>40,000</u>	<u>20,000</u>	<u>10,000</u>
Total units accounted for	<u>340,000</u>	<u>320,000</u>	<u>310,000</u>

	<i>Total Cost</i>	<i>Materials</i>	<i>Conversion</i>	<i>Whole Unit</i>
Cost to be accounted for:				
Work in process, June 1	\$ 71,500	\$ 56,600	\$ 14,900	
Cost added by the department	<u>599,500</u>	<u>385,000</u>	<u>214,500</u>	
Total cost to be accounted for (a)	<u>\$671,000</u>	<u>\$441,600</u>	<u>\$229,400</u>	
Equivalent units (b)		320,000	310,000	
Cost per equivalent unit (a) ÷ (b)		\$1.38 +	\$0.74 =	\$2.12

Exercise 4-11 (15 minutes)

Weighted-Average Method

	<i>Total Cost</i>	<i>Equivalent Units (EU)</i>	
		<i>Materials</i>	<i>Conversion</i>
Cost accounted for as follows:			
Transferred to the next process:			
300,000 units at \$2.12 each	\$636,000	300,000	300,000
Work in process, June 30:			
Materials, at \$1.38 per EU	27,600	20,000	
Conversion, at \$0.74 per EU	<u>7,400</u>		10,000
Total work in process	<u>35,000</u>		
Total cost accounted for	<u>\$671,000</u>		

Exercise 4-12 (20 minutes)

FIFO Method

1. *Quantity
Schedule*

Units to be accounted for:

Work in process, June 1 (materials 75% complete, conversion cost 40% complete).....	60,000
Started into production	<u>280,000</u>
Total units to be accounted for	<u>340,000</u>

<i>Equivalent Units (EU)</i>	
<i>Materials</i>	<i>Conversion</i>

Units accounted for as follows:

Transferred to the next process:			
From the beginning inventory ...	60,000	15,000 *	36,000 *
Started and completed this month**	240,000	240,000	240,000
Work in process, June 30 (materials 50% complete, conversion 25% complete)	<u>40,000</u>	<u>20,000</u>	<u>10,000</u>
Total units accounted for	<u>340,000</u>	<u>275,000</u>	<u>286,000</u>

* Work needed to complete the units in the beginning inventory.

** 280,000 units started – 40,000 units in ending inventory =
240,000 started and completed.2. *Whole
Unit*

Cost added by the department

	<i>Materials</i>	<i>Conversion</i>		
(a)	\$385,000	\$214,500		
Equivalent units (b)	275,000	286,000		
Cost per equivalent unit				
(a) ÷ (b)	\$1.40	+	\$0.75	= \$2.15

Exercise 4-13 (20 minutes)

FIFO Method

	<i>Total Cost</i>	<i>Equivalent Units (EU)</i>	
		<i>Materials</i>	<i>Conversion</i>
Cost accounted for as follows:			
Transferred to the next process:			
From the beginning inventory:			
Cost in the beginning inventory.....	\$ 71,500		
Cost to complete these units:			
Materials, at \$1.40 per EU.....	21,000	15,000	
Conversion, at \$0.75 per EU.....	<u>27,000</u>		36,000
Total cost from beginning inventory..	119,500		
Units started and completed this month: 240,000 units × \$2.15 per unit			
	<u>516,000</u>	240,000	240,000
Total cost transferred to the next process	<u>635,500</u>		
Work in process, June 30:			
Materials, at \$1.40 per EU.....	28,000	20,000	
Conversion, at \$0.75 per EU.....	<u>7,500</u>		10,000
Total work in process, June 30.....	<u>35,500</u>		
Total cost accounted for.....	<u>\$671,000</u>		

Problem 4-14 (20 minutes)

Weighted-Average Method

1. The computation of equivalent units would be:

	<i>Quantity</i>	<i>Equivalent Units (EU)</i>		
	<i>Schedule</i>	<i>Materials</i>	<i>Labor</i>	<i>Overhead</i>
Units accounted for as follows:				
Transferred to the next department.....	95,000	95,000	95,000	95,000
Work in process, July 31 (materials 60% complete, labor and overhead 20% complete)	<u>15,000</u>	<u>9,000</u>	<u>3,000</u>	<u>3,000</u>
Total units accounted for	<u>110,000</u>	<u>104,000</u>	<u>98,000</u>	<u>98,000</u>

2. The cost reconciliation follows.

	<i>Total</i> <i>Cost</i>	<i>Equivalent Units (EU)</i>		
		<i>Materials</i>	<i>Labor</i>	<i>Overhead</i>
Cost accounted for as follows:				
Transferred to the next department: 95,000 units × \$2.50 per unit	<u>\$237,500</u>	95,000	95,000	95,000
Work in process, July 31:				
Materials, at \$1.50 per EU.....	13,500	9,000		
Labor, at \$0.25 per EU	750		3,000	
Overhead, at \$0.75 per EU	<u>2,250</u>			3,000
Total work in process	<u>16,500</u>			
Total cost accounted for	<u>\$254,000</u>			

Problem 4-15 (45 minutes)

Weighted-Average Method

Quantity Schedule and Equivalent Units

	<i>Quantity Schedule</i>	<i>Equivalent Units (EU)</i>	
		<i>Materials</i>	<i>Conversion</i>
Units to be accounted for:			
Work in process, June 1 (materials 5/7 complete, conversion 3/7 complete)	70,000		
Started into production.....	<u>460,000</u>		
Total units accounted for.....	<u><u>530,000</u></u>		
Units accounted for as follows:			
Transferred to the next department	450,000	450,000	450,000
Work in process, June 30 (materials 3/4 complete, conversion 5/8 complete)	<u>80,000</u>	<u>60,000</u>	<u>50,000</u>
Total units accounted for.....	<u><u>530,000</u></u>	<u><u>510,000</u></u>	<u><u>500,000</u></u>

Problem 4-15 (continued)*Costs per Equivalent Unit*

	<i>Total</i>	<i>Materials</i>	<i>Conversion</i>	<i>Whole Unit</i>
Costs to be accounted for:				
Work in process, June 1	\$ 55,400	\$ 37,400	\$ 18,000	
Cost added during the month.....	<u>673,000</u>	<u>391,000</u>	<u>282,000</u>	
Total cost to be accounted for (a).....	<u>\$728,400</u>	<u>\$428,400</u>	<u>\$300,000</u>	
Equivalent units (b)		510,000	500,000	
Cost per equivalent unit (a) ÷ (b)		\$0.84 +	\$0.60 =	\$1.44

Problem 4-15 (continued)*Cost Reconciliation*

	<i>Costs</i>	<u><i>Equivalent Units (EU)</i></u>	
		<i>Materials</i>	<i>Conversion</i>
Cost accounted for as follows:			
Transferred to the next department: 450,000 units × \$1.44 per unit	<u>\$648,000</u> *	450,000	450,000
Work in process, June 30:			
Materials, at \$0.84 per EU.....	50,400	60,000	
Conversion, at \$0.60 per EU.....	<u>30,000</u>		50,000
Total work in process, June 30.....	<u>80,400</u>		
Total cost accounted for.....	<u>\$728,400</u>		

Problem 4-16 (45 minutes)

FIFO Method

Quantity Schedule and Equivalent Units

	<i>Quantity Schedule</i>			<i>Equivalent Units (EU)</i>	
				<i>Materials</i>	<i>Conversion</i>
Units to be accounted for:					
Work in process, June 1 (materials					
5/7 complete, conversion 3/7					
complete)	70,000				
Started into production	<u>460,000</u>				
Total units to be accounted for	<u>530,000</u>				
Units accounted for as follows:					
Transferred to the next department:					
From the beginning inventory*	70,000	20,000	40,000		
Started and completed this month [§] ...	380,000	380,000	380,000		
Work in process, June 30 (materials					
3/4 complete, conversion 5/8					
complete)	<u>80,000</u>	<u>60,000</u>	<u>50,000</u>		
Total units accounted for	<u>530,000</u>	<u>460,000</u>	<u>470,000</u>		

* Work needed to complete the units in the beginning inventory.

$$(1 - 5/7) \times 70,000 = 20,000; (1 - 3/7) \times 70,000 = 40,000$$

§ 460,000 units started – 80,000 units in ending work in process =
380,000 units started and completed

Problem 4-16 (continued)*Costs per Equivalent Unit*

	<i>Total Cost</i>	<i>Materials</i>	<i>Conversion</i>	<i>Whole Unit</i>
Cost to be accounted for:				
Work in process, June 1	\$ 55,400			
Cost added during the month (a)	<u>673,000</u>	\$391,000	\$282,000	
Total cost to be accounted for	<u>\$728,400</u>			
Equivalent units (b)		460,000	470,000	
Cost per equivalent unit (a) ÷ (b)		\$0.85 +	\$0.60 =	\$1.45

Problem 4-16 (continued)*Cost Reconciliation*

	<i>Total Cost</i>	<i>Equivalent Units (EU)</i>	
		<i>Materials</i>	<i>Conversion</i>
Cost accounted for as follows:			
Transferred to next department:			
From the beginning inventory:			
Cost in the beginning inventory....	\$ 55,400		
Cost to complete these units:			
Materials, at \$0.85 per EU.....	17,000	20,000	
Conversion, at \$0.60 per EU.....	<u>24,000</u>		40,000
Total cost from beginning inventory	96,400		
Units started and completed this month: 380,000 units × \$1.45 per unit	<u>551,000</u>	380,000	380,000
Total cost transferred to next department	<u>647,400</u>		
Work in process, June 30:			
Materials, at \$0.85 per EU.....	51,000	60,000	
Conversion, at \$0.60 per EU.....	<u>30,000</u>		50,000
Total work in process, June 30.....	<u>81,000</u>		
Total cost accounted for	<u>\$728,400</u>		

Problem 4-17 (45 minutes)

Weighted-Average Method

1., 2., and 3.

Quantity Schedule and Equivalent Units

	<i>Quantity Schedule</i>	<i>Equivalent Units (EU)</i>	
		<i>Materials</i>	<i>Conversion</i>
Pounds to be accounted for:			
Work in process, May 1 (materials 100% complete, conversion 90% complete).....	70,000		
Started into production.....	<u>350,000</u>		
Total pounds to be accounted for ..	<u>420,000</u>		
Pounds accounted for as follows:			
Transferred to Molding*	380,000	380,000	380,000
Work in process, May 31 (materials 75% complete, conversion 25% complete).....	<u>40,000</u>	<u>30,000</u>	<u>10,000</u>
Total pounds accounted for	<u>420,000</u>	<u>410,000</u>	<u>390,000</u>

*70,000 + 350,000 – 40,000 = 380,000.

Costs per Equivalent Unit

	<i>Total Cost</i>	<i>Materials</i>	<i>Conversion</i>	<i>Whole Unit</i>
Costs to be accounted for:				
Work in process, May 1	\$122,000	\$ 86,000	\$ 36,000	
Cost added during the month.....	<u>645,000</u>	<u>447,000</u>	<u>198,000</u>	
Total cost to be accounted for (a)	<u>\$767,000</u>	<u>\$533,000</u>	<u>\$234,000</u>	
Equivalent units (b)		410,000	390,000	
Cost per equivalent unit (a) ÷ (b).....		\$1.30 +	\$0.60	= \$1.90

Problem 4-17 (continued)*Cost Reconciliation*

	<i>Costs</i>	<u><i>Equivalent Units (EU)</i></u>	
		<i>Materials</i>	<i>Conversion</i>
Cost accounted for as follows:			
Transferred to Molding:			
380,000 units × \$1.90 per unit.....	<u>\$722,000</u>	380,000	380,000
Work in process, May 31:			
Materials, at \$1.30 per EU.....	39,000	30,000	
Conversion, at \$0.60 per EU.....	<u>6,000</u>		10,000
Total work in process	<u>45,000</u>		
Total cost accounted for.....	<u>\$767,000</u>		

Problem 4-18 (45 minutes)

FIFO Method

1., 2., and 3.

Quantity Schedule and Equivalent Units

	<i>Quantity Schedule</i>		
Units to be accounted for:			
Work in process, July 1 (materials 60% complete, conversion 30% complete)	60,000		
Started into production.....	<u>510,000</u>		
Total units to be accounted for	<u>570,000</u>		
		<i>Equivalent Units (EU)</i>	
		<i>Materials</i>	<i>Conversion</i>
Units accounted for as follows:			
Transferred to Wiring:			
From the beginning inventory*	60,000	24,000	42,000
Started and completed this month**	440,000	440,000	440,000
Work in process, July 31 (materials 80% complete, conversion 40% complete)	<u>70,000</u>	<u>56,000</u>	<u>28,000</u>
Total units accounted for.....	<u>570,000</u>	<u>520,000</u>	<u>510,000</u>
*(100% – 60%)×60,000=24,000; (100% – 30%)×60,000=42,000			
**510,000 units started – 70,000 units in ending work in process = 440,000 units started and completed this month			

Problem 4-18 (continued)*Costs per Equivalent Unit*

	<i>Total Cost</i>	<i>Materials</i>	<i>Conversion</i>	<i>Whole Unit</i>
Costs to be accounted for:				
Work in process, July 1.....	\$ 40,000			
Cost added during the month (a)	<u>825,000</u>	\$468,000	\$357,000	
Total cost to be accounted for	<u>\$865,000</u>			
Equivalent units (b)		520,000	510,000	
Cost per equivalent unit (a) ÷ (b)		\$0.90 +	\$0.70 =	\$1.60

Problem 4-18 (continued)*Cost Reconciliation*

	<i>Total Cost</i>	<i>Equivalent Units (EU)</i>	
		<i>Materials</i>	<i>Conversion</i>
Cost accounted for as follows:			
Transferred to Wiring:			
From the beginning inventory:			
Cost in the beginning inventory.....	\$ 40,000		
Cost to complete these units:			
Materials, at \$0.90 per EU	21,600	24,000	
Conversion, at \$0.70 per EU	<u>29,400</u>		42,000
Total cost from beginning inventory....	91,000		
Units started and completed this			
month: 440,000 units × \$1.60 per			
unit.....			
	<u>704,000</u>	440,000	440,000
Total cost transferred to Wiring.....	<u>795,000</u>		
Work in process, July 31:			
Materials, at \$0.90 per EU	50,400	56,000	
Conversion, at \$0.70 per EU	<u>19,600</u>		28,000
Total work in process, July 31	<u>70,000</u>		
Total cost accounted for.....	<u>\$865,000</u>		

Problem 4-19 (45 minutes)

Weighted-Average Method

1. Total units transferred to the next department.....	30,000
Less units in the May 1 inventory	<u>5,000</u>
Units started and completed in May.....	<u>25,000</u>

2. The equivalent units were:

	<i>Quantity Schedule</i>	<i>Equivalent Units (EU)</i>	
		<i>Materials</i>	<i>Conversion</i>
Units accounted for as follows:			
Transferred to next department..	30,000	30,000	30,000
Work in process, May 31*	<u>4,000</u>	<u>3,000</u>	<u>2,000</u>
Total units accounted for	<u>34,000</u>	<u>33,000</u>	<u>32,000</u>

* Materials: 4,000 units \times 75% = 3,000 equivalent units;

Conversion: 4,000 units \times 50% = 2,000 equivalent units

Problem 4-19 (continued)

3. The unit costs were:

	<i>Total Cost</i>	<i>Materials</i>	<i>Conversion</i>	<i>Whole Unit</i>
Cost to be accounted for:				
Work in process, May 1	£ 13,400	£ 9,000	£ 4,400	
Cost added in the department	<u>87,800</u>	<u>57,000</u>	<u>30,800</u>	
Total cost to be accounted for (a) ..	<u>£101,200</u>	<u>£66,000</u>	<u>£35,200</u>	
Equivalent units (above) (b)		33,000	32,000	
Cost per equivalent unit (a) ÷ (b)...		£2.00 +	£1.10	= £3.10

4. The ending work in process figure is verified as follows:

Materials, 3,000 equivalent units × £2.00 per unit.....	£6,000
Conversion, 2,000 equivalent units × £1.10 per unit....	<u>2,200</u>
Total work in process.....	<u>£8,200</u>

5. Multiplying the unit cost figure of £3.10 per unit by 1,000 units does *not* provide a valid estimate of the incremental cost of processing an additional 1,000 units through the department. If there is sufficient idle capacity to process an additional 1,000 units, the incremental cost per unit is almost certainly less than £3.10 per unit since the conversion costs are likely to include fixed costs.

Problem 4-20 (45 minutes)

Weighted-Average Method

1. *Quantity Schedule and Equivalent Units*

	<i>Quantity Schedule</i>		
Pounds to be accounted for:			
Work in process, May 1 (materials all complete, labor and overhead ⁴ / ₅ complete)	35,000		
Started into production.....	<u>280,000</u>		
Total pounds to be accounted for	<u>315,000</u>		
		<i>Equivalent Units (EU)</i>	
		<i>Materials</i>	<i>Labor & Overhead</i>
Pounds accounted for as follows:			
Transferred to Blending*	270,000	270,000	270,000
Work in process, May 31 (materials all complete, labor and overhead ² / ₃ complete)	<u>45,000</u>	<u>45,000</u>	<u>30,000</u>
Total pounds accounted for.....	<u>315,000</u>	<u>315,000</u>	<u>300,000</u>
*35,000 + 280,000 – 45,000 = 270,000.			

Problem 4-20 (continued)*Costs per Equivalent Unit*

	<i>Total</i>	<i>Materials</i>	<i>Labor & Overhead</i>	<i>Whole Unit</i>
Cost to be accounted for:				
Work in process, May 1	\$ 63,700	\$ 43,400	\$ 20,300	
Cost added during the month	<u>587,300</u>	<u>397,600</u>	<u>189,700</u>	
Total cost to be accounted for (a)	<u>\$651,000</u>	<u>\$441,000</u>	<u>\$210,000</u>	
Equivalent units (b)		315,000	300,000	
Cost per equivalent unit (a) ÷ (b)		\$1.40 +	\$0.70 =	\$2.10

Problem 4-20 (continued)*Cost Reconciliation*

	<i>Total Cost</i>	<i>Equivalent Units (EU)</i>	
		<i>Materials</i>	<i>Conversion</i>
Cost accounted for as follows:			
Transferred to Blending: 270,000 pounds × \$2.10 per pound	<u>\$567,000</u>	270,000	270,000
Work in process, May 31:			
Materials, at \$1.40 per EU.....	63,000	45,000	
Labor and overhead, at \$0.70 per EU	<u>21,000</u>		30,000
Total work in process, May 31	<u>84,000</u>		
Total cost accounted for	<u>\$651,000</u>		

2. In computing unit costs, the weighted-average method mixes costs of the prior period with current period costs. Thus, under the weighted-average method, unit costs are influenced to some extent by what happened in a prior period. This problem becomes particularly significant when attempting to measure performance in the current period. Good (or bad) cost control in the current period might be concealed to some degree by the costs that have been brought forward in the beginning inventory.

Problem 4-21 (45 minutes)

FIFO Method

Quantity Schedule and Equivalent Units

	<i>Quantity Schedule</i>	<i>Equivalent Units (EU)</i>	
		<i>Materials</i>	<i>Labor & Overhead</i>
Pounds to be accounted for:			
Work in process, July 1 (materials 100% complete, labor and overhead 30% complete)	10,000		
Started into production	<u>170,000</u>		
Total pounds to be accounted for	<u>180,000</u>		
Pounds accounted for as follows:			
Transferred to Forming:			
From the beginning inventory*	10,000	—	7,000
Started and completed this month**	150,000	150,000	150,000
Work in process, July 31 (materials 100% complete, labor and overhead 40% complete)	<u>20,000</u>	<u>20,000</u>	<u>8,000</u>
Total pounds accounted for	<u>180,000</u>	<u>170,000</u>	<u>165,000</u>

*(100% – 30%) × 10,000 pounds = 7,000 pounds

**170,000 pounds started into production – 20,000 pounds in ending work in process = 150,000 pounds started and completed this month.

Problem 4-21 (continued)*Costs per Equivalent Unit*

	<i>Total Cost</i>	<i>Materials</i>	<i>Labor & Overhead</i>	<i>Whole Unit</i>
Cost to be accounted for:				
Work in process, July 1.....	\$ 13,400			
Cost added during the month (a)	<u>383,600</u>	\$139,400	\$244,200	
Total cost to be accounted for	<u>\$397,000</u>			
Equivalent units (b)		170,000	165,000	
Cost per equivalent unit (a) ÷ (b)		\$0.82	+ \$1.48	= \$2.30

Problem 4-21 (continued)*Cost Reconciliation*

	<i>Total Cost</i>	<i>Equivalent Units (EU)</i>	
		<i>Materials</i>	<i>Conversion</i>
Cost accounted for as follows:			
Transferred to Forming:			
From the beginning inventory:			
Cost in the beginning inventory.....	\$ 13,400		
Cost to complete these units:			
Labor & overhead, at \$1.48 per			
EU	<u>10,360</u>		7,000
Total cost from beginning inventory..	23,760		
Units started and completed this			
month: 150,000 pounds × \$2.30			
per pound.....	<u>345,000</u>	150,000	150,000
Total cost transferred to Forming	<u>368,760</u>		
Work in process, July 31:			
Materials, at \$0.82 per EU.....	16,400	20,000	
Labor and overhead, at \$1.48 per			
EU.....	<u>11,840</u>		8,000
Total work in process, July 31	<u>28,240</u>		
Total cost accounted for.....	<u>\$397,000</u>		

Problem 4-22 (60 minutes)

Weighted-Average Method

1. The equivalent units would be:

	<i>Materials</i>	<i>Conversion</i>
Units completed during the year.....	790,000	790,000
Work in process, Dec. 31:		
30,000 units × 100%	30,000	
30,000 units × 50%		<u>15,000</u>
Total equivalent units (a)	<u>820,000</u>	<u>805,000</u>

The costs per equivalent unit would be:

	<i>Total Cost</i>	<i>Materials</i>	<i>Conversion</i>	<i>Whole Unit</i>
Work in process,				
Jan. 1.....	\$ 70,000	\$ 22,000	\$ 48,000	
Cost added during				
the year	<u>3,247,000</u>	<u>880,000</u>	<u>2,367,000</u>	
Total costs (b).....	<u>\$3,317,000</u>	<u>\$902,000</u>	<u>\$2,415,000</u>	
Cost per equivalent				
unit (b) ÷ (a).....		\$1.10 +	\$3.00 =	\$4.10

2. The amount of cost that should be assigned to the ending inventories is:

	<i>Work in Process</i>	<i>Finished Goods</i>	<i>Total</i>
Work in process:			
Materials:			
30,000 EU × \$1.10 per EU	\$33,000		\$ 33,000
Conversion:			
15,000 EU × \$3.00 per EU	45,000		45,000
Finished goods:			
50,000 EU × \$4.10 per EU		<u>\$205,000</u>	<u>205,000</u>
Total cost to assign to inventories	<u>\$78,000</u>	<u>\$205,000</u>	<u>\$283,000</u>

Problem 4-22 (continued)

3. The necessary adjustments would be:

	<i>Work in Process</i>	<i>Finished Goods</i>	<i>Total</i>
Total cost that should be assigned to inventories (see above)	\$ 78,000	\$205,000	\$283,000
Year-end balances in the accounts ..	<u>95,000</u>	<u>201,000</u>	<u>296,000</u>
Error.....	<u>\$(17,000)</u>	<u>\$ 4,000</u>	<u>\$(13,000)</u>
Finished Goods Inventory.....		4,000	
Cost of Goods Sold		13,000	
Work in Process Inventory			17,000

4. The simplest computation of the cost of goods sold would be:

Beginning finished goods inventory.....	0
Units completed during the year.....	<u>790,000</u>
Units available for sale.....	790,000
Less units in ending finished goods inventory.....	<u>50,000</u>
Units sold during the year	740,000
Cost per whole unit (from part 1. above)	<u>× \$4.10</u>
Cost of goods sold	<u>\$3,034,000</u>

Alternative Computation:

Total manufacturing cost incurred:

Materials (part 1. above)	\$ 902,000
Conversion (part 1. above)	<u>2,415,000</u>
Total manufacturing cost	3,317,000
Less cost assigned to inventories (part 2. above).....	<u>283,000</u>
Cost of goods sold	<u>\$3,034,000</u>

Problem 4-23 (90 minutes)

Weighted-Average Method

1. a.	Work in Process—Blending	147,600	
	Work in Process—Bottling	45,000	
	Raw Materials		192,600
b.	Work in Process—Blending	73,200	
	Work in Process—Bottling	17,000	
	Salaries and Wages Payable		90,200
c.	Manufacturing Overhead	596,000	
	Accounts Payable		596,000
d.	Work in Process—Blending	481,000	
	Manufacturing Overhead		481,000
	Work in Process—Bottling	108,000	
	Manufacturing Overhead		108,000
e.	Work in Process—Bottling	722,000	
	Work in Process—Blending		722,000
f.	Finished Goods	920,000	
	Work in Process—Bottling		920,000
g.	Accounts Receivable	1,400,000	
	Sales		1,400,000
	Cost of Goods Sold	890,000	
	Finished Goods		890,000

Problem 4-23 (continued)

2.

Work in Process—Bottling		
Bal.	49,000	920,000 (f)
(a)	45,000	
(b)	17,000	
(d)	108,000	
(e)	722,000	
Bal.	21,000	

Work in Process—Blending		
Bal.	32,800	722,000 (e)
(a)	147,600	
(b)	73,200	
(d)	481,000	
Bal.	12,600	

Manufacturing Overhead		
(c)	596,000	481,000 (d)
		108,000 (d)
Bal.	7,000	

Finished Goods		
Bal.	20,000	890,000 (g)
(f)	920,000	
Bal.	50,000	

Raw Materials		
Bal.	198,600	192,600 (a)
Bal.	6,000	

Accounts Payable		
		596,000 (c)

Salaries and Wages Payable		
		90,200 (b)

Sales		
		1,400,000 (g)

Accounts Receivable		
(g)	1,400,000	

Cost of Goods Sold		
(g)	890,000	

Problem 4-23 (continued)

3. The production report for the Blending Department follows:

Quantity Schedule and Equivalent Units

	<i>Quantity Schedule</i>
Units to be accounted for:	
Work in process, March 1	40,000
Started into production.....	<u>750,000</u> *
Total units to be accounted for.....	<u>790,000</u>

		<i>Equivalent Units (EU)</i>		
		<i>Materials</i>	<i>Labor</i>	<i>Overhead</i>
Units accounted for as follows:				
Transferred to Bottling	760,000	760,000	760,000	760,000
Work in process, March 31....	<u>30,000</u>	<u>18,000</u>	<u>12,000</u>	<u>12,000</u>
Total units accounted for.....	<u>790,000</u>	<u>778,000</u>	<u>772,000</u>	<u>772,000</u>

* 750,000 = 760,000 + 30,000 – 40,000

Problem 4-23 (continued)*Costs per Equivalent Unit*

	<i>Total Cost</i>	<i>Materials</i>	<i>Labor</i>	<i>Overhead</i>	<i>Whole Unit</i>
Cost to be accounted for:					
Work in process, March 1	\$ 32,800	\$ 8,000	\$ 4,000	\$ 20,800	
Cost added during May.....	<u>701,800</u>	<u>147,600</u>	<u>73,200</u>	<u>481,000</u>	
Total cost to be accounted for (a)....	<u>\$734,600</u>	<u>\$155,600</u>	<u>\$77,200</u>	<u>\$501,800</u>	
Equivalent units (above) (b)		778,000	772,000	772,000	
Cost per equivalent unit (a) ÷ (b)....		\$0.20 +	\$0.10 +	\$0.65 =	\$0.95

Problem 4-23 (continued)*Cost Reconciliation*

	<i>Total</i>	<i>Equivalent Units (EU)</i>		
	<i>Cost</i>	<i>Materials</i>	<i>Labor</i>	<i>Overhead</i>
Cost accounted for as follows:				
Transferred to Bottling	\$722,000	760,000	760,000	760,000
Work in process, March 31:				
Materials: 18,000 EU ×				
\$0.20 per EU	3,600	18,000		
Labor: 12,000 EU ×				
\$0.10 per EU	1,200		12,000	
Overhead: 12,000 EU ×				
\$0.65 per EU	<u>7,800</u>			12,000
Total work in process,				
March 31.....	<u>12,600</u>			
Total cost.....	<u>\$734,600</u>			

Problem 4-24 (90 minutes)

Weighted-Average Method

1. a.	Work in Process—Assembly	422,000	
	Work in Process—Testing & Packaging	23,000	
	Raw Materials		445,000
b.	Work in Process—Assembly	316,500	
	Work in Process—Testing & Packaging	57,000	
	Salaries and Wages Payable		373,500
c.	Manufacturing Overhead	254,000	
	Accounts Payable		254,000
d.	Work in Process—Assembly	200,000	
	Work in Process—Testing & Packaging	42,000	
	Manufacturing Overhead		242,000
e.	Work in Process—Testing & Packaging	945,000	
	Work in Process—Assembly		945,000
f.	Finished Goods	1,080,000	
	Work in Process—Testing & Packaging		1,080,000
g.	Accounts Receivable	1,630,000	
	Sales		1,630,000
	Cost of Goods Sold	1,070,000	
	Finished Goods		1,070,000

Problem 4-24 (continued)

2.

Raw Materials			Accounts Receivable		
Bal.	460,000	445,000 (a)	(g) 1,630,000		
Bal.	15,000				
Work in Process— Assembly			Work in Process— Testing and Packaging		
Bal.	49,000	945,000 (e)	Bal.	43,000	1,080,000 (f)
(a)	422,000		(a)	23,000	
(b)	316,500		(b)	57,000	
(d)	200,000		(d)	42,000	
			(e)	945,000	
Bal.	42,500		Bal.	30,000	
Manufacturing Overhead			Finished Goods		
(c)	254,000	242,000 (d)	Bal.	30,000	1,070,000 (g)
			(f)	1,080,000	
Bal.	12,000		Bal.	40,000	
Salaries and Wages Payable			Accounts Payable		
		373,500 (b)			254,000 (c)
Sales			Cost of Goods Sold		
		1,630,000 (g)	(g)	1,070,000	

Problem 4-24 (continued)

3. The production report for the Assembly Department follows:

Quantity Schedule and Equivalent Units

	<i>Quantity Schedule</i>	<i>Equivalent Units (EU)</i>		
		<i>Materials</i>	<i>Labor</i>	<i>Overhead</i>
Units to be accounted for:				
Work in process, May 1	8,000			
Started into production*	<u>39,000</u>			
Total units to be accounted for ...	<u>47,000</u>			
Units accounted for as follows:				
Transferred to Testing & Packaging	42,000	42,000	42,000	42,000
Work in process, May 31.....	<u>5,000</u>	<u>3,000</u>	<u>1,000</u>	<u>1,000</u>
Total units accounted for.....	<u>47,000</u>	<u>45,000</u>	<u>43,000</u>	<u>43,000</u>

* 39,000 = 42,000 + 5,000 – 8,000

Problem 4-24 (continued)*Costs per Equivalent Unit*

	<i>Total Cost</i>	<i>Materials</i>	<i>Labor</i>	<i>Overhead</i>	<i>Whole Unit</i>
Cost to be accounted for:					
Work in process, May 1	\$ 49,000	\$ 28,000	\$ 6,000	\$ 15,000	
Cost added during May.....	<u>938,500</u>	<u>422,000</u>	<u>316,500</u>	<u>200,000</u>	
Total cost to be accounted for (a)....	<u>\$987,500</u>	<u>\$450,000</u>	<u>\$322,500</u>	<u>\$215,000</u>	
Equivalent units (above) (b)		45,000	43,000	43,000	
Cost per equivalent unit (a) ÷ (b)....		\$10.00 +	\$7.50 +	\$5.00 =	\$22.50

Problem 4-24 (continued)*Cost Reconciliation*

	<i>Total Cost</i>	<i>Equivalent Units (EU)</i>		
		<i>Materials</i>	<i>Labor</i>	<i>Overhead</i>
Cost accounted for as follows:				
Transferred to Testing & Packaging	\$945,000	42,000	42,000	42,000
Work in process, May 31:				
Materials:				
3,000 EU × \$10.00 per EU...	30,000	3,000		
Labor:				
1,000 EU × \$7.50 per EU	7,500		1,000	
Overhead:				
1,000 EU × \$5.00 per EU	<u>5,000</u>			1,000
Total work in process, May 31	<u>42,500</u>			
Total cost.....	<u>\$987,500</u>			

Case 4-25 (90 minutes)

- This case is difficult—particularly part 3, which requires analytical skills.
- Since there are no beginning inventories, it makes no difference whether the weighted-average or FIFO method is used by the company. You may choose to assign the problem specifying that the FIFO method be used rather than the weighted-average method.

1. The computation of the cost of goods sold follows:

	<i>Transferred In</i>	<i>Conversion</i>
Estimated completion.....	100%	25%

Computation of equivalent units:

Completed and transferred out....	250,000	250,000
Work in process, ending:		
Transferred in,		
20,000 units × 100%	20,000	
Conversion,		
20,000 units × 25%		<u>5,000</u>
Total equivalent units.....	<u>270,000</u>	<u>255,000</u>

	<i>Transferred In</i>	<i>Conversion</i>	<i>Whole Unit</i>
Cost to be accounted for:			
Work in process	0	0	
Cost added during the month.....	<u>\$49,221,000</u>	<u>\$16,320,000</u>	
Total cost to be accounted for (a) ..	<u>\$49,221,000</u>	<u>\$16,320,000</u>	
Equivalent units (above) (b)	270,000	255,000	
Cost per equivalent unit (a) ÷ (b) ..	\$182.30	+ \$64.00	= \$246.30
Cost of goods sold = 250,000 units × \$246.30 per unit = \$61,575,000			

Case 4-25 (continued)

2. The estimate of the percentage completion of ending work in process inventories affects the unit costs of finished goods and therefore of the cost of goods sold. Thad Kostowski would like the estimated percentage completion figures to be increased for the ending work in process. The higher the percentage of completion of ending work in process, the higher the equivalent units for the period and the lower the unit costs.
3. Increasing the percentage of completion can increase net operating income by reducing the cost of goods sold. To increase net operating income by \$62,500, the cost of goods sold would have to be decreased by \$62,500 from \$61,575,000 down to \$61,512,500.

The percentage of completion, X, affects the cost of goods sold by its effect on the unit cost, which can be determined as follows:

$$\text{Unit cost} = \$182.30 + \frac{\$16,320,000}{250,000 + 20,000X}$$

And the cost of goods sold can be computed as follows:

$$\text{Cost of goods sold} = 250,000 \times \text{Unit cost}$$

Since cost of goods sold must be reduced down to \$61,512,500, the unit cost must be \$246.05 (\$61,512,500 ÷ 250,000 units). Thus, the required percentage completion, X, to obtain the \$62,500 reduction in cost of goods sold can be found by solving the following equation:

$$\$182.30 + \frac{\$16,320,000}{250,000 + 20,000X} = \$246.05$$

$$\frac{\$16,320,000}{250,000 + 20,000X} = \$246.05 - \$182.30$$

$$\frac{\$16,320,000}{250,000 + 20,000X} = \$63.75$$

$$\frac{250,000 + 20,000X}{\$16,320,000} = \frac{1}{\$63.75}$$

$$250,000 + 20,000X = \frac{\$16,320,000}{\$63.75}$$

Case 4-25 (continued)

$$250,000 + 20,000X = 256,000$$

$$20,000X = 256,000 - 250,000$$

$$20,000X = 6,000$$

$$X = \frac{6,000}{20,000} = 30\%$$

Thus, changing the percentage completion to 30% will decrease cost of goods sold and increase net operating income by \$62,500 as verified on the next page.

Case 4-25 (continued)

3. (continued)

	<i>Transferred In</i>	<i>Conversion</i>
Estimated completion	100%	30%

Computation of equivalent units:

Completed and transferred out.....	250,000	250,000
Work in process, ending:		
Transferred in, 20,000 units × 100%	20,000	
Conversion, 20,000 units × 30%		<u>6,000</u>
Total equivalent units.....	<u>270,000</u>	<u>256,000</u>

	<i>Transferred In</i>	<i>Conversion</i>	<i>Whole Unit</i>
Cost to be accounted for:			
Work in process	0	0	
Cost added during the month.....	<u>\$49,221,000</u>	<u>\$16,320,000</u>	
Total cost to be accounted for (a).....	<u>\$49,221,000</u>	<u>\$16,320,000</u>	
Equivalent units (above) (b)	270,000	256,000	
Cost per equivalent unit (a) ÷ (b)	\$182.30	+ \$63.75	= \$246.05

Cost of goods sold = 250,000 units × \$246.05 per unit = \$61,512,500

Case 4-25 (continued)

4. Carol is in a very difficult position. Collaborating with Thad Kostowski in subverting the integrity of the accounting system is unethical by almost any standard. To put the situation in its starkest light, Kostowski is suggesting that the production managers lie in order to get their bonus. Having said that, the peer pressure to go along in this situation may be intense. It is difficult on a personal level to ignore such peer pressure. Moreover, Carol probably prefers not to risk alienating people she might need to rely on in the future. On the other hand, Carol should be careful not to accept at face value Kostowski's assertion that all of the other managers are "doing as much as they can to pull this bonus out of the hat." Those who engage in unethical or illegal acts often rationalize their own behavior by exaggerating the extent to which others engage in the same kind of behavior. Other managers may actually be very uncomfortable "pulling strings" to make the target profit for the year.

From a broader perspective, if the net profit figures reported by the managers in a division cannot be trusted, then the company would be foolish to base bonuses on the net profit figures. A bonus system based on divisional net profits presupposes the integrity of the accounting system. However, the company should perhaps reconsider how it determines the bonus. It is quite common for companies to pay an "all or nothing" bonus contingent on making a particular target. This inevitably creates powerful incentives to bend the rules when the target has not quite been attained. It might be better to have a bonus without this "all or nothing" feature. For example, managers could be paid a bonus of $x\%$ of profits above target profits rather than a bonus that is a preset percentage of their base salary. Under such a policy, the effect of adding that last dollar of profits that just pushes the divisional net profits over the target profit will add a few pennies to the manager's compensation rather than thousands of dollars. Therefore, the incentives to misstate the net operating income are reduced. Why tempt people unnecessarily?

Case 4-26 (45 minutes)

Weighted-Average Method

1. The revised production report follows:

*Quantity Schedule and Equivalent Units**Quantity
Schedule*

Units to be accounted for:

Work in process, October 1 (material 100% complete, conversion ⁷ / ₈ complete)	8,000
Received from the preceding department*	<u>97,000</u>
Total units to be accounted for	<u>105,000</u>

Equivalent Units (EU)

<i>Transferred In</i>	<i>Materials</i>	<i>Conver- sion</i>
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Units accounted for as
follows:

Transferred to Stamping..	100,000	100,000	100,000	100,000
Work in process, October 31 (material 0% complete, conversion ² / ₅ complete)	<u>5,000</u>	<u>5,000</u>	<u>—</u>	<u>2,000</u>
Total units accounted for ...	<u>105,000</u>	<u>105,000</u>	<u>100,000</u>	<u>102,000</u>

$$*100,000 + 5,000 - 8,000 = 97,000.$$

Case 4-26 (continued)

<i>Costs per Equivalent Unit</i>		<i>Transferred</i>				<i>Whole</i>
	<i>Total Cost</i>	<i>In</i>		<i>Materials</i>	<i>Conversion</i>	<i>Unit</i>
Cost to be accounted for:						
Work in process, October 1	\$ 22,420	\$ 8,820		\$ 3,400	\$ 10,200	
Cost transferred in or added						
during the month	<u>205,980</u>	<u>81,480</u>		<u>27,600</u>	<u>96,900</u>	
Total cost to be accounted for (a) ..	<u>\$228,400</u>	<u>\$ 90,300</u>		<u>\$ 31,000</u>	<u>\$107,100</u>	
Equivalent units (b)		105,000		100,000	102,000	
Cost per equivalent unit (a) ÷ (b)....		\$0.86	+	\$0.31	+	\$1.05 = \$2.22

<i>Cost Reconciliation</i>	<i>Total Cost</i>	<i>Equivalent Units (EU)</i>		
		<i>Transferred In</i>	<i>Materials</i>	<i>Conversion</i>
Cost accounted for as follows:				
Transferred to Stamping:				
100,000 units × \$2.22 per unit	<u>\$222,000</u>	100,000	100,000	100,000
Work in process, October 31:				
Transferred in cost, at \$0.86 per EU	4,300	5,000		
Conversion, at \$1.05 per EU	<u>2,100</u>			2,000
Total work in process	<u>6,400</u>			
Total cost accounted for	<u>\$228,400</u>			

- The unit cost figure on the report prepared by the accountant is high because none of the cost incurred during the month was assigned to the units in the ending work in process inventory.

Case 4-27 (60 minutes)

FIFO Method

1. The production report follows:

Quantity Schedule and Equivalent Units

	<i>Quantity Schedule</i>
Units to be accounted for:	
Work in process, October 1 (materials 100% complete, conversion $7/8$ complete)	8,000
Received from the preceding department.....	<u>97,000</u>
Total units to be accounted for.....	<u>105,000</u>

		<i>Equivalent Units</i>		
		<i>Transferred In</i>	<i>Materials</i>	<i>Conver- sion</i>
Units accounted for as follows:				
Transferred to Stamping:				
From the beginning inventory*	8,000	—	—	1,000
Received and completed this month**	92,000	92,000	92,000	92,000
Work in process, October 31 (Transferred in, material 0% complete, conversion $2/5$ complete) ...	<u>5,000</u>	<u>5,000</u>	<u>—</u>	<u>2,000</u>
Total units accounted for.....	<u>105,000</u>	<u>97,000</u>	<u>92,000</u>	<u>95,000</u>

* $(1 - 7/8) \times 8,000 = 1,000$

** 97,000 units received – 5,000 units in ending inventory = 92,000
units received and completed

Case 4-27 (continued)*Costs per Equivalent Unit*

	<i>Total Cost</i>	<i>Transferred In</i>	<i>Materials</i>	<i>Conversion</i>	<i>Whole Unit</i>			
Cost to be accounted for:								
Work in process, October 1.....	\$ 22,420							
Cost transferred in or added during the month (a)	<u>205,980</u>	\$81,480	\$27,600	\$96,900				
Total cost to be accounted for	<u>\$228,400</u>							
Equivalent units (b)		97,000	92,000	95,000				
Cost per equivalent unit (a) ÷ (b)...		\$0.84	+	\$0.30	+	\$1.02	=	\$2.16

Case 4-27 (continued)

	<i>Total Cost</i>	<i>Transferred In</i>	<i>Materials</i>	<i>Conversion</i>
Cost accounted for as follows:				
Transferred to Stamping:				
From the beginning inventory:				
Cost in the beginning inventory.....	\$ 22,420			
Cost to complete these units:				
Conversion, at \$1.02 per EU	<u>1,020</u>			1,000
Total cost from beginning inventory..	23,440			
Units received and completed this month: 92,000 units × \$2.16 per unit	<u>198,720</u>	92,000	92,000	92,000
Total cost transferred to Stamping	<u>222,160</u>			
Work in process, October 31:				
Transferred in, at \$0.84 per EU	4,200	5,000		
Conversion, at \$1.02 per EU	<u>2,040</u>			2,000
Total work in process	<u>6,240</u>			
Total cost accounted for	<u>\$228,400</u>			

Case 4-27 (continued)

2. The effects of the cost-cutting will tend to show up more under the FIFO method. The reason is that the FIFO method keeps the costs of the current period separate from the costs of the prior period. Thus, under the FIFO method, the company will be able to compare unit costs of the current period to those of the prior period to see how effective the cost-cutting program has been. Under the weighted-average method, however, costs carried over from the prior period are averaged in with costs of the current period, which will tend to mask somewhat the effects of the cost-cutting effort.

Group Exercise 4-28

The answer to this exercise will depend on the industry that the students select to study.