CHAPTER 3

Process Costing

Learning Objectives

1. Discuss the uses of a process cost system and how it compares to a job order cost system.
2. Explain the flow of costs in a process cost system and the journal entries to assign manufacturing costs.
3. Compute equivalent units of production.
4. Complete the four steps to prepare a production cost report.

*5. Compute equivalent units using the FIFO method.

*__Note:__ All **asterisked** Brief Exercises, Exercises, and Problems relate to material contained in the appendix to the chapter.

ANSWERS TO QUESTIONS

1. (a) Process cost.
(b) Process cost.
(c) Job order.
(d) Job order.

LO 1 BT: K Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

2. The primary focus of job order cost accounting is on the individual job. In process cost accounting, the primary focus is on the processes involved in producing homogeneous products.

LO 1 BT: K Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

3. The similarities are: (1) all three manufacturing cost elements—direct materials, direct labor, and overhead—are tracked the same; (2) the accumulation of the costs of materials, labor, and overhead is the same; and (3) the flow of costs is the same.

LO 1 BT: K Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

4. The features of process cost accounting are: (1) separate work in process accounts are maintained for each process, (2) production cost reports are produced periodically (typically monthly), (3) product costs are computed for each accounting period, and (4) unit costs are computed based on total manufacturing costs.

LO 1 BT: C Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

5. Sam is correct. The flow of costs is the same in process cost accounting as in job order cost accounting. The method of assigning costs, however, is significantly different.

LO 1 BT: C Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

6. (a) (1) Materials are charged to production on the basis of materials requisition slips.
(2) Labor is usually charged to production on the basis of the payroll register or departmental payroll summaries.
(b) The criterion used in assigning overhead to processes is to identify the activity that "drives" or causes the cost. In many companies this activity is machine time, not direct labor.

LO 2 BT: K Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

7. The entry to assign overhead to production is:

July 31	Work in Process—Machining	15,000	
	Work in Process—Assembly	12,000	
	Manufacturing Overhead		27,000

LO 2 BT: AP Difficulty: Easy TOT: 2 min. AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

8. To prepare a production cost report, four steps are followed: (a) compute the physical unit flow, (b) compute equivalent units of production, (c) compute unit production costs, and (d) prepare a cost reconciliation schedule.

LO 4 BT: K Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

9. Physical units to be accounted for consist of units in process at the beginning of the period plus units started (or transferred-in) into production during the period. Units accounted for consist of units completed and transferred out during the period plus units in process at the end of the period.

LO 4 BT: C Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

10. Equivalent units of production measure the work done during the period, expressed in fully completed units.

LO 3 BT: K Difficulty: Easy TOT: 1 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

Questions Chapter 3 (Continued)

11. Equivalent units of production are the sum of: (1) units completed and transferred out and (2) equivalent units of ending work in process.

LO 3 BT: K Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

12. Units started into production were 9,600, or (9,000 + 600).

LO 3 BT: AP Difficulty: Easy TOT: 2 min. AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

13.

	Equivalent Units	
	Materials	Conversion Costs
Units transferred out	12,000	12,000
Work in process		
500 X 100%	500	
500 X 20%		100
Total equivalent units	12,500	12,100

LO 3 BT: AP Difficulty: Easy TOT: 4 min. AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

[(Mat: 12,000 + 500 = 12,500); (CC: 12,000 + 100 = 12,100)]

[(Mat.: Units transferred out + (units in end. WIP x % complete) = Equiv. units); (CC: Units transferred out + (units in end. WIP x % complete) = Equiv. units)]

14. Units transferred out were 3,200*

Units to be accounted for	
Work in process (beginning)	500
Started into production	3,000
Total units to be accounted for	3,500
Units accounted for	
Completed and transferred out	3,200*
Work in process (ending)	300
Total units accounted for	3,500

*3,500 – 300

LO 4 BT: AP Difficulty: Easy TOT: 4 min. AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

[(500 + 3,000 = 3,500); (3,500 – 300 = 3,200)]

[(Beg. WIP units + Units started into production = Tot. units acct'd. for); (Tot. units acct'd. for – End. WIP units = Units transferred out)]

15. (a) The cost of the units transferred out is $112,000, or (14,000 X $8).

(b) The cost of the units in ending inventory is $8,500, or [(2,000 X $3) + (500 X $5)].

[(2,000 x $3) + ((2,000 x 25%) x $5) = $8,500]

[(DM equiv. units x Cost/unit) + ((CC units in end. WIP x % complete) x Cost/unit) = Cost of end WIP]

LO 4 BT: AP Difficulty: Easy TOT: 4 min. AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

16. (a) Ann is incorrect. The report is an internal report for management.

(b) There are four sections in a production cost report: (1) physical unit flow, (2) equivalent units of production, (3) unit production costs, and (4) cost reconciliation schedule.

LO 4 BT: K Difficulty: Easy TOT: 3 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

17. The production cost report provides the basis for evaluating: (1) the productivity of a department, (2) whether unit and total costs are reasonable, and (3) whether current performance is meeting planned objectives.

LO 4 BT: K Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

Questions Chapter 3 (Continued)

18. The per unit conversion cost is $11.25. [Conversion costs = $6,000 – $2,400 = $3,600. Equivalent units for conversion costs are 320 (800 X 40%); $3,600 ÷ 320 = $11.25.]

LO 4 BT: AP Difficulty: Easy TOT: 4 min. AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management
[($6,000 – (800 x $3) = $3,600); (800 x 40% = 320); ($3,600 ÷ 320 = $11.25)]
[(Tot. assigned cost – (Units in end. WIP x DM cost/unit) = CC); (Units in end. WIP x % completed = Equiv. units); (CC ÷ Equiv. units = CC/equiv. unit)]

19. Operations costing is similar to process costing in that standardized methods are used to manufacture the product. At the same time, the product may have some customized individual features that require the use of a job order cost system.

LO 4 BT: K Difficulty: Easy TOT: 2 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

20. In deciding which system to use, a cost-benefit tradeoff occurs. In a job order system, detailed information related to the cost of the product is involved. The cost of implementing this system is often expensive. In a process cost system, an average cost of the product will suffice and therefore the cost to implement is less. In summary, the cost of implementing the system must be balanced against the benefits provided from the additional information.

LO 1 BT: C Difficulty: Easy TOT: 4 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

***21.** Units transferred out were 2,800 (2,000 + 800).

LO 5 BT: AP Difficulty: Easy TOT: 1 AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management
(2,000 + 800 = 2,800)
(Units started & compltd. + Units in beg. WIP = Units trans. Out)

***22.** (a) The cost of the units transferred out is $120,000 (12,000 X ($3 + $7)).

[12,000 x ($3 + $7) = $120,000]
[Units transferred out x (DM cost/unit + CC/unit) = Cost of units transferred out]

(b) The cost of the units in ending inventory is $9,500 [(2,000 X $3) + (500 X $7)].

[(2,000 x $3) + ((2,000 x 25%) x $7) = $9,500]
[Equiv. units in end. WIP x DM/unit) + ((Units in end. WIP x % complete) x CC/unit) = Cost of units in end. WIP]
LO 5 BT: AP Difficulty: Easy TOT: 3 AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

SOLUTIONS TO EXERCISES

EXERCISE 3.1

1. **True.**
2. **True.**
3. **False. Companies that produce soft drinks and computer chips would use process cost accounting. Companies that produce movies would use a job order cost system.**
4. **False. In a *job order* cost system, costs are tracked by individual jobs.**
5. **False. Job order costing and process costing track *the same three* manufacturing cost components.**
6. **True.**
7. **True.**
8. **False. In a process cost system, *multiple* work in process accounts *are* used.**
9. **False. In a process cost system, costs are summarized in *a production cost report for each department*.**
10. **True.**

LO 1 BT: C Difficulty: Easy TOT: 8 min. AACSB: None AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

EXERCISE 3.2

April 30		**Work in Process—Cooking**	**21,000**	
		Work in Process—Canning	**9,000**	
		Raw Materials Inventory		**30,000**
	30	**Work in Process—Cooking**	**8,500**	
		Work in Process—Canning	**7,000**	
		Factory Labor		**15,500**
	30	**Work in Process—Cooking**	**31,500**	
		Work in Process—Canning	**25,800**	
		Manufacturing Overhead		**57,300**
	30	**Work in Process—Canning**	**53,000**	
		Work in Process—Cooking		**53,000**

LO 2 BT: AP Difficulty: Easy TOT: 8 min. AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

EXERCISE 3.3

(a)	**Work in process, May 1**	**400**
	Started into production	**1,600**
	Total units to be accounted for	**2,000**
	Less: Completed and transferred out	**1,700**
	Work in process, May 31	**300**

[(400 + 1,600) – 1,700 = 300]
[(Beg. WIP + Started into production) – Transferred out = End. WIP]

(b) and (c)

	Equivalent Units	
	Materials	**Conversion Costs**
Units completed and transferred out	**1,700**	**1,700**
Work in process, May 31	**300**	
300 X 100%		**120**
300 X 40%	**2,000**	**1,820**

	Direct Materials	Conversion Costs
Work in process, May 1	**$2,040**	**$1,550**
Costs added	**5,160**	**3,910***
Total costs	**(a) $7,200**	**$5,460**
Equivalent units	**(b) 2,000**	**1,820**
Unit costs [(a) ÷ (b)]	**$3.60**	**$3.00**

***$2,530 + $1,380**

[(DM: ($2,040 + $5,160) ÷ (1,700 + 300) = $3.60); (CC: ($1,550 + ($2,530 + $1,380)) ÷ (1,700 + (300 x 40%)) = $3.00)]
[(DM: (Beg. WIP costs + DM costs added) ÷ (Units transferred out + Units in end. WIP) = DM cost/unit); (CC: (Beg. WIP costs + (DL + OH costs added)) ÷ (Units transferred out + Equiv. units in end. WIP) = CC/unit)]

(d)	**Completed and transferred out (1,700 X $6.60)**	**$11,220**

(e)	**Work in process**	
	Materials (300 X $3.60)	**$ 1,080**
	Conversion costs (120 X $3.00)	**360**
		$ 1,440

LO 2, 3, 4 BT: AP Difficulty: Easy TOT: 12 min. AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

EXERCISE 3.4

1.	**Raw Materials Inventory**	**62,500**	
	Accounts Payable		**62,500**
2.	**Factory Labor**	**60,000**	
	Wages Payable		**60,000**
3.	**Manufacturing Overhead**	**70,000**	
	Cash		**40,000**
	Accounts Payable		**30,000**
4.	**Work in Process—Cutting**	**15,700**	
	Work in Process—Assembly	**8,900**	
	Raw Materials Inventory		**24,600**
5.	**Work in Process—Cutting**	**33,000**	
	Work in Process—Assembly	**27,000**	
	Factory Labor		**60,000**
6.	**Work in Process—Cutting (1,680 X $18)**	**30,240**	
	Work in Process—Assembly (1,720 X $18)	**30,960**	
	Manufacturing Overhead		**61,200**
7.	**Work in Process—Assembly**	**67,600**	
	Work in Process—Cutting		**67,600**
8.	**Finished Goods Inventory**	**134,900**	
	Work in Process—Assembly		**134,900**
9.	**Cost of Goods Sold**	**150,000**	
	Finished Goods Inventory		**150,000**
	Accounts Receivable	**200,000**	
	Sales Revenue		**200,000**

LO 2 BT: AP Difficulty: Easy TOT: 15 min. AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

EXERCISE 3.5

(a)	January	May
Units to be accounted for		
Beginning work in process	0	0
Started into production	13,000	21,000
Total units	13,000	21,000
Units accounted for		
Transferred out	11,000	14,000
Ending work in process	2,000	7,000
Total units	13,000	21,000

[(Jan: (0 + 13,000) = (11,000 + (13,000 – 11,000)); (May: (0 + 21,000) = (14,000 + (21,000 – 14,000)]
[(Jan: (Beg. WIP + Started into production) = (Transferred out + (Tot. units – Transferred out); (May: (Beg. WIP + Started into production) = (Transferred out + (Tot. units – Transferred out)]

(b)	(1) Materials	(2) Conversion Costs
January	13,000 (11,000 + 2,000)	12,200 (11,000 + 1,200)
March	15,000 (12,000 + 3,000)	12,900 (12,000 + 900)
May	21,000 (14,000 + 7,000)	19,600 (14,000 + 5,600)
July	11,500 (10,000 + 1,500)	10,600 (10,000 + 600)

[Jan. (DM: 11,000 + (2,000 x 100%) = 13,000); (CC: 11,000 + (2,000 x 60%) = 12,200)]
[Jan. (DM: Units transferred out + (Units in end. WIP x % complete) = Equiv. units); (CC: Units transferred out + (Units in end. WIP x % complete) = Equiv. units)]

LO 3, 4 BT: AP Difficulty: Easy TOT: 8 min. AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

EXERCISE 3.6

(a)	(1) Materials	(2) Conversion Costs
Units completed and transferred out	12,000	12,000
Work in process, July 31		
3,000 X 100%	3,000	
3,000 X 60%		1,800
T otal equivalent units	15,000	13,800

(b) Materials: $45,000 ÷ 15,000 = $3.00
Conversion costs: ($16,200 + $18,300) ÷ 13,800 = $2.50

[(DM: $45,000 ÷ (12,000 + 3,000) = $3.00); (CC: ($16,200 + $18,300) ÷ (12,000 + (3,000 x 60%)) = $2.50)]
[(DM: DM costs ÷ (Units transferred out + Units in end. WIP) = DM cost/unit); (CC: (DL + OH costs) ÷ (Units transferred out + (Units in end. WIP x % complete) = CC/unit)]

EXERCISE 3.6 (Continued)

Costs accounted for		
Completed andTransferred out (12,000 X $5.50)		**$66,000**
Work in process, July 31		
Materials (3,000 X $3.00)	**$9,000**	
Conversion costs (1,800 X $2.50)	**4,500**	**13,500**
Total costs		**$79,500**

LO 3, 4 BT: AP Difficulty: Easy TOT: 8 min. AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

EXERCISE 3.7

QUIK FURNITURE COMPANY
Sanding Department
Production Cost Report
For the Month Ended March 31, 2022

Quantities	Physical Units	Equivalent Units: Materials	Equivalent Units: Conversion Costs	
Units to be accounted for				
Work in process, March 1	0			
Started into production	10,000			
Total units	10,000			
Units accounted for				
Completed and Transferred out	7,000	7,000	7,000	
Work in process, March 31	3,000	3,000	600	(3,000 X 20%)
Total units	10,000	10,000	7,600	

Unit costs		Materials	Conversion Costs	Total
Unit costs				
Total cost	(a)	$33,000	$57,000*	$90,000
Equivalent units	(b)	10,000	7,600	
Unit costs [(a) ÷ (b)]		$3.30	$7.50	$10.80

Cost Reconciliation Schedule		
Costs to be accounted for		
Work in process, March 1		$ 0
Started into production		90,000
Total costs		$90,000
Costs accounted for		
Completed and transferred out (7,000 X $10.80)		$75,600
Work in process, March 31	$9,900	
Materials (3,000 X $3.30)	4,500	
Conversion costs (600 X $7.50)		14,400
Total costs		$90,000

***$21,000 + $36,000**

LO 3, 4 BT: AP Difficulty: Easy TOT: 12 min. AACSB: Analytic AICPA FC: Reporting IMA: Cost Management, Reporting

[(DM: $33,000 ÷ (7,000 + 3,000) = $3.30); (CC: ($21,000 + $36,000) ÷ (7,000 + (3,000 x 20%)) = $7.50)]

[(DM: DM costs ÷ (Units transferred out + Units in end. WIP) = DM cost/unit); (CC: (DL + OH costs) ÷ (Units transferred out + (Units in end. WIP x % complete) = CC/unit)]

EXERCISE 3.8

(a)

	(1) Materials	(2) Conversion Costs
Units completed and transferred out	17,000	17,000
Work in process, April 30		
1,000 X 100%	1,000	
1,000 X 40%		400
Equivalent units of production	18,000	17,400

(b)

	Materials	Conversion Costs	Total
Total cost	$900,000[(1)]	$435,000[(2)]	$1,335,000
Equivalent units	18,000	17,400	
Unit costs	$ 50	$ 25	$ 75

[(1)]$100,000 + $800,000
[(2)]$ 70,000 + $365,000

[(DM: ($100,000 + $800,000) ÷ (17,000 + 1,000) = $50); (CC: ($70,000 + $365,000) ÷ (17,000 + (1,000 x 40%)) = $25)]
[(DM: (DM costs in beg. WIP + DM costs added) ÷ (Units transferred out + (Units in end. WIP x % complete)) = DM cost/unit); (CC: CC in beg. WIP + CC costs added) ÷ (Units transferred out + (Units in end. WIP x % complete)) = CC cost/unit)]

(c)

Completed and transferred out (17,000 X $75)		$1,275,000
Work in process	$50,000	
Materials (1,000 X $50)	10,000	
Conversion costs (400 X $25)		60,000
Total costs		$1,335,000

LO 3, 4 BT: AP Difficulty: Easy TOT: 12 min. AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

EXERCISE 3.9

(a) Materials: 30,000* + 6,000 = 36,000
Conversion costs: 30,000* + (6,000 X 40%) = 32,400
*36,000 – 6,000

(b) Materials: $72,000/36,000 = $2.00
Conversion costs: ($61,000 + $101,000)/32,400 = $5.00

[(DM: $72,000 ÷ (30,000 + 6,000) = $2); (CC: ($61,000 + $101,000) ÷ (30,000 + (6,000 x 40%)) = $5)]

[(DM: DM costs ÷ (Units transferred out + (Units in end. WIP x % complete)) = DM cost/unit); (CC: (DL + OH costs) ÷ (Units transferred out + (Units in end. WIP x % complete)) = CC cost/unit)]

EXERCISE 3.9 (Continued)

(c) Completed and
ransferred out: 30,000 X ($5.00 + $2.00) = $210,000
Ending work in process:

Materials (6,000 X $2.00)	**=**	**$12,000**
Conversion costs (2,400 X $5.00)	**=**	**12,000**
Total		**$24,000**

LO 3, 4 BT: AP Difficulty: Easy TOT: 8 min. AACSB: Analytic AICPA FC: Measurement Analysis and Interpretation IMA: Cost Management

EXERCISE 3.10

(a)

	Physical Units	Equivalent Units		
			Conversion	
		Materials	Costs	
Beginning work in process	**20,000**			
Units started into production	**164,000**			
Units to account for	**184,000**			
Units completed and transferred out	**160,000***	**160,000**	**160,000**	
Ending work in process	**24,000**	**24,000**	**14,400**	**(60% X 24,000)**
Units accounted for	**184,000**	**184,000**	**174,400**	

***(20,000 + 164,000) – 24,000**

(b)

	Materials	Conversion Costs	Total
Costs incurred	**$101,200**	**$348,800**	**$450,000**
Equivalent units	**184,000**	**174,400**	
Unit costs	**$0.55**	**$2.00**	**$2.55**

[(DM: $101,200 ÷ (160,000 + 24,000) = $0.55); (CC: ($164,800 + $184,000) ÷ (160,000 + (24,000 x 60%)) = $2.00)]
[(DM: DM costs ÷ (Units transferred out + (Units in end. WIP x % complete)) = DM cost/unit); (CC: (DL + OH costs) ÷ (Units transferred out + (Units in end. WIP x % complete)) = CC cost/unit)]

(c) Assignment of costs:

Completed and Transferred out (160,000 X $2.55)		**$408,000**
Ending work in process		
Materials (24,000 X $0.55)	**$13,200**	
Conversion costs (14,400 X $2.00)	**28,800**	**42,000**
Total costs		**$450,000**

LO 3, 4 BT: AP Difficulty: Easy TOT: 12 min. AACSB: Analytic AICPA FC: Reporting IMA: Cost Management, Reporting

EXERCISE 3.13

HEALTHY COMPANY
Welding Department
Production Cost Report
For the Month Ended February 28, 2022

Quantities	Physical Units	Equivalent Units: Materials	Equivalent Units: Conversion Costs	
	(Step 1)	(Step 2)		
Units to be accounted for				
Work in process, February 1	15,000			
Started into production	51,000			
Total units	66,000			
Units accounted for				
Completed and transferred out	55,000	55,000	55,000	
Work in process, February 28	11,000	11,000	2,200	(11,000 X 20%)
Total units	66,000	66,000	57,200	

Costs		Materials	Conversion Costs	Total
Unit costs (Step 3)				
Total cost	(a)	$198,000[1]	$143,000[2]	$341,000
Equivalent units	(b)	66,000	57,200	
Unit costs (a) ÷ (b)		$3.00	$2.50	$5.50
Costs to be accounted for				
Work in process, February 1				$ 32,175
Started into production[3]				308,825
Total costs				$341,000

Cost Reconciliation Schedule (Step 4)

Costs accounted for		
Complted and Transferred out (55,000 X $5.50)		$302,500
Work in process, February 28	$33,000	
Materials (11,000 X $3.00)	5,500	
Conversion costs (2,200 X $2.50)		38,500
Total costs		$341,000

[1] $18,000 + $180,000
[2] $14,175 + $67,380 + $61,445
[3] $180,000 + $67,380 + $61,445

LO 3, 4 BT: AP Difficulty: Easy TOT: 12 min. AACSB: Analytic AICPA FC: Reporting IMA: Cost Management, Reporting
[(DM: ($18,000 + $180,000) ÷ (55,000 + 11,000) = $3.00); (CC: ($14,175 + $67,380 + $61,445) ÷ (55,000 + (11,000 x 20%)) = $2.50)]

[(DM: (DM costs in beg. WIP + DM costs added) ÷ (Units transferred out + (Units in end. WIP x % complete)) = DM cost/unit); (CC: (CC in beg. WIP + (DL + OH costs added)) ÷ (Units transferred out + (Units in end. WIP x % complete)) = CC cost/unit)]

SOLUTIONS TO PROBLEMS

PROBLEM 3.2

(a) Physical units

Units to be accounted for	
Work in process, June 1	**0**
Started into production	**22,000**
Total units	**22,000**
Units accounted for	
Completed & transferred out	
Work in process, June 30	**20,000**
Total units	**2,000**
	22,000

(b) Equivalent units

	Materials	Conversion Costs
Units transferred out	**20,000**	**20,000**
Work in process, June 30		
2,000 X 100%	**2,000**	
2,000 X 40%		**800**
Total equivalent units	**22,000**	**20,800**

[(Mat.: 20,000 + (2,000 x 100%) = 22,000); (CC: 20,000 + (2,000 x 40%) = 20,800)]
[(Mat.: Units transfrd. out + (End. WIP units x % compltd.) = Tot. equiv. units); (CC: Units transfrd. out + (End. WIP units x % compltd.) = Tot. equiv. units)]

(c)

	Unit Costs
Materials	**$9.00 ($198,000 ÷ 22,000)**
Conversion costs	**$8.00 ($166,400* ÷ 20,800)**
Total unit cost	**$17.00 ($9.00 + $8.00)**

***$53,600 + $112,800**

[(Mat.: $198,000 ÷ 22,000 = $9); (CC: ($53,600 + $112,800) ÷ 20,800 = $8); ($9 + $8 = $17)]
[(Mat.: Mat. costs ÷ Mat. equiv. units = Mat. cost/unit); (CC: (Labor + OH costs) ÷ CC equiv. units = CC/unit); (DM. cost/unit + CC/unit = Cost/compltd. unit)]

(d) Costs accounted for

Completed & transferred out (20,000 X $17.00)		**$340,000**
Work in process, June 30		
Materials (2,000 X $9.00)	**$18,000**	
Conversion costs (800 X $8.00)	**6,400**	**24,400**

Total costs	**$364,400**

[(20,000 x $17) + ((2,000 x $9) + (800 x $8)) = $364,400]
[(Units transfrd. out x Cost/compltd. unit) + ((Mat. equiv. units x Mat. cost/unit) + (CC equiv. units x CC/unit)) = Tot. costs acctd. for]

PROBLEM 3.2 (Continued)

(e)

ROSENTHAL COMPANY
Molding Department
Production Cost Report
For the Month Ended June 30, 2022

Quantities	Physical Units	Equivalent Units: Materials	Equivalent Units: Conversion Costs	
	(Step 1)	(Step 2)		
Units to be accounted for				
Work in process, June 1	0			
Started into production	22,000			
Total units	22,000			
Units accounted for				
Completed & transferred out	20,000	20,000	20,000	
Work in process, June 30	2,000	2,000	800	(2,000 X 40%)
Total units	22,000	22,000	20,800	

Costs		Materials	Conversion Costs	Total
Unit costs (Step 3)				
Total cost	(a)	$198,000	$166,400	$364,400
Equivalent units	(b)	22,000	20,800	
Unit costs (a) ÷ (b)		$9.00	$8.00	$17.00
Cost Reconciliation Schedule (Step 4)				
Costs to be accounted for				$ 0
Work in process, June 1				364,400
Started into production				$364,400
Total costs				
Costs accounted for				
Completed & transferred out				
(20,000 X $17.00)				$340,000
Work in process, June 30			$18,000	
Materials (2,000 X $9.00)			6,400	
Conversion costs (800 X $8.00)				24,400
Total costs				$364,400

LO 3, 4 BT: AP Difficulty: Simple TOT: 40 min. AACSB: Analytic AICPA FC: Reporting IMA: Cost Management, Reporting

PROBLEM 3.3

(a) (1) Physical units

	T12 Tables
Units to be accounted for	
Work in process, July 1	**0**
Started into production	**20,000**
Total units	**20,000**
Units accounted for	
Completed & transferred out	**17,000**
Work in process, July 31	**3,000**
Total units	**20,000**

(2) Equivalent units

	T12 Tables	
	Materials	**Conversion Costs**
Units completed & transferred out	**17,000**	**17,000**
Work in process, July 31		
(3,000 X 100%)	**3,000**	
(3,000 X 60%)		**1,800**
Total equivalent units	**20,000**	**18,800**

[(Mat.: 17,000 + (3,000 x 100%) = 20,000); (CC: 17,000 + (3,000 x 60%) = 18,800)]
[(Mat.: Units transfrd. out + (End. WIP units x % compltd. = Mat. equiv. units); (CC: Units transfrd. out + (End. WIP units x % compltd. = CC equiv. units)]

(3) Unit costs

	T12 Tables
Materials ($380,000 ÷ 20,000)	**$19**
Conversion costs ($338,400(*) ÷ 18,800)	**18**
Total	**$37**

(*)$234,400 + $104,000

[T12: (Mat.: $380,000 ÷ 20,000 = $19) + (CC: ($234,400 + $104,000) ÷ 18,800 = $18); ($19 + $18 = $37)]
[T12: (Mat.: Mat. costs ÷ Mat. equiv. units = Mat. cost/unit) + (CC: (Labor + OH costs) ÷ CC equiv. units = CC/unit); (Mat. cost/unit + CC/unit = Cost/ compltd. unit)]

PROBLEM 3.3 (Continued)

(4) **T12 Tables**

Costs accounted for		
Completed & transferred out (17,000 X $37)		**$629,000**
Work in process		
Materials (3,000 X $19)	**$57,000**	
Conversion costs (1,800 X $18)	**32,400**	**89,400**
Total costs		**$718,400**

[T12: (17,000 x $37) + ((3,000 x $19) + (1,800 x $18)) = $718,400]
[T12: (Units transfrd. out x Cost/compltd. unit) + ((Mat. end. WIP units x Mat. cost/unit) + (CC end. WIP units x CC/unit)) = Tot. costs acctd. for]

(b)

THAKIN INDUSTRIES INC.
Cutting Department
Production Cost Report
For the Month Ended July 31, 2022

		Equivalent Units		
Quantities	**Physical Units**	**Materials**	**Conversion Costs**	
	(Step 1)	**(Step 2)**		
Units to be accounted for				
Work in process, July 1	**0**			
Started into production	**20,000**			
Total units	**20,000**			
Units accounted fot				
Completed & Transferred out	**17,000**	**17,000**	**17,000**	
Work in process, July 31	**3,000**	**3,000**	**1,800**	**(3,000 X 60%)**
Total units	**20,000**	**20,000**	**18,800**	

Costs		**Materials**	**Conversion Costs**	**Total**
Unit costs (Step 3)				
Total cost	**(a)**	**$380,000**	**$338,400**	**$718,400**
Equivalent units	**(b)**	**20,000**	**18,800**	
Unit costs (a) ÷ (b)		**$ 19**	**$ 18**	**$ 37**

Cost Reconciliation Schedule (Step 4)	
Costs to be accounted for	**$ 0**
Work in process, July 1	**718,400**
Started into production	**$718,400**
Total costs	

PROBLEM 3.3 (Continued)

Costs accounted for		
Completed and Transferred out (17,000 X $37)		**$629,000**
Work in process, July 31	**$57,000**	
Materials (3,000 X $19)	**32,400**	
Conversion costs (1,800 X $18)		**89,400**
Total costs		**$718,400**

LO 3, 4 BT: AP Difficulty: Simple TOT: 40 min. AACSB: Analytic AICPA FC: Reporting IMA: Cost Management, Reporting

PROBLEM 3.6

(a) Computation of equivalent units:

	Physical Units	Equivalent Units: Materials	Equivalent Units: Conversion Costs
Units accounted for			
Completed & transferred out	120,000	120,000	120,000
Work in process, October 31 (60% materials, 40% conversion costs)	50,000	30,000	20,000
Total units accounted for	170,000	150,000	140,000

[(Mat.: 120,000 + (50,000 x 60%) = 150,000); (CC: 120,000 + (50,000 x 40%) = 140,000)]
[(Mat.: Units transfrd. out + (Units in end. WIP x % compltd.) = Tot. equiv. units); (CC: Units transfrd. out + (Units in end. WIP x % compltd.) = Tot. CC equiv. units)]

Computation of October unit costs

Materials: $240,000 ÷ 150,000 equivalent units =	$1.60
Conversion cost: $105,000 ÷ 140,000 equivalent units =	.75
Total unit cost, October	$2.35

[(Mat.: $240,000 ÷ 150,000 = $1.60); (CC: $105,000 ÷ 140,000 = $.75); ($1.60 + $.75 = $2.35)]
[(Mat.: Mat. costs ÷ Mat. equiv. units = Mat. cost/unit); (CC: CC ÷ CC equiv. units = CC/unit); (Mat. cost/unit + CC/unit = Tot. cost/compltd. unit)]

(b) Cost Reconciliation Schedule

Costs accounted for		
Completed and transferred out (120,000 X $2.35)		$282,000
Work in process, October 31		
Materials (30,000 X $1.60)	$48,000	
Conversion costs (20,000 X $0.75)	15,000	63,000
Total costs		$345,000

LO 3, 4 BT: AP Difficulty: Moderate TOT: 15 min. AACSB: Analytic AICPA FC: Reporting IMA: Cost Management, Reporting

*PROBLEM 3.7

(a) Bicycles

(1) Equivalent units—Materials

	Physical Units		Materials Added This Period	Equivalent Units
Work in process, March 1	200		0%*	0
Started and completed	700	(1,000 – 300)	100%	700
Work in process, March 31	300		100%	300
Total	1,200			1,000

***All materials are added at the beginning of the production process.**

[(200 x 0%) + (700 x 100%) + (300 x 100%) = 1,000]
[(Beg. WIP units x % mat. added) + (Units started and compltd. x % mat. added) + (End. WIP units x % mat. added) = Tot. mat. equiv. units]

Equivalent units—Conversion costs

	Physical Units		Conversion Added This Period		Equivalent Units
Work in process, March 1	200		20%	(1 – .8)	40
Started and completed	700	(1,000 – 300)	100%		700
Work in process, March 31	300		40%		120
Total	1,200				860

[(200 x 20%) + (700 x 100%) + (300 x 40%) = 860]
[(Beg. WIP units x % CC added) + (Units started and compltd. x % CC added) + (End. WIP units x % CC added) = Tot. CC equiv. units]

(2) Unit costs

	Materials	Conversion Costs
Costs in March (a)	$50,000	$55,900**
Equivalent units (b)	1,000	860
Unit costs (a) ÷ (b)	$ 50	$ 65

****Direct Labor $25,900 + Manufacturing Overhead $30,000**

[(Mat.: $50,000 ÷ 1,000 = $50); (CC: ($25,900 + $30,000) ÷ 860 = $65)]
[(Mat.: Mat. costs ÷ Mat. equiv. units = Mat. cost/unit); (CC: (DL + OH costs) ÷ CC equiv. units = CC/unit)]

*PROBLEM 3.7 (Continued)

(3) Assignment of costs to units transferred out and in process

Costs to Be Assigned	Assignment of Costs	Equivalent Units	Unit Cost		Total Costs Assigned
Total mfg. costs	Transferred out				
	Work in process, March 1			$19,280	
$125,180***	Conversion	40	$ 65	2,600	
	Started and completed	700	$115	80,500	
	Total costs completed & transferred out				$102,380
	Work in process, March 31				
	Materials	300	$50	15,000	
	Conversion costs	120	$65	7,800	22,800
	Total costs				$125,180

***Work in process, March 1, $19,280 + Materials $50,000 + Labor $25,900 + Overhead $30,000

($19,280 + $50,000 + $25,900 + $30,000 = $125,180); (Beg. WIP + Mat. + Labor + OH = Tot. mfg. costs to be assigned)

[($19,280 + (40 x $65) + (700 x $115)) + ((300 x $50) + (120 x $65)) = $125,180]

[(Beg. WIP + (CC equiv. units x CC/unit) + (Started & complted. units x Cost/compltd. unit)) + ((End. WIP mat. units x Mat. cost/unit) + (End. WIP CC units x CC/unit)) = Tot. costs assigned]

Tricycles

(1) Equivalent units—Materials

	Physical Units		Materials Added This Period	Equivalent Units
Work in process, March 1	100		0%*	0
Started and completed	940	(1,000 – 60)	100%	940
Work in process, March 31	60		100%	60
Total	1,100			1,000

*All materials are added at the beginning of the production process.

Equivalent units—Conversion costs

	Physical Units		Conversion Added This Period		Equivalent Units
Work in process, March 1	100		25%	(1 – .75)	25
Started and completed	940	(1,000 – 60)	100%		940
Work in process, March 31	60		25%		15
Total	1,100				980

*PROBLEM 3.7 (Continued)

(2) Unit costs

	Materials	Conversion Costs
Costs in March (a)	$30,000	$34,300**
Equivalent units (b)	1,000	980
Unit costs [(a) ÷ (b)]	$ 30	$ 35

**Direct Labor $14,300 + Manufacturing Overhead $20,000

(3) Assignment of costs to units transferred out and in process

Costs to Be Assigned	Assignment of Costs	Equivalent Units	Unit Cost		Total Costs Assigned
Total mfg. costs	Transferred out				
	Work in process, March 1			$ 6,125	
$70,425***	Conversion	25	$35	875	
	Started and completed	940	$65	61,100	
	Total costs completed and transferred out				$68,100
	Work in process, March 31				
	Materials	60	$30	1,800	
	Conversion costs	15	$35	525	2,325
	Total costs				$70,425

***Work in process, March 1, $6,125 + Materials $30,000 + Labor $14,300 + Overhead $20,000

***PROBLEM 3.7 (Continued)**

(b)

OWEN COMPANY
Production Cost Report—Bicycles
For the Month Ended March 31

Quantities	Physical Units	Equivalent Units: Materials	Equivalent Units: Conversion Costs
	(Step 1)	(Step 2)	
Units to be accounted for			
Work in process, March 1	200		
Started into production	1,000		
Total units	1,200		
Units accounted for			
Completed and transferred out			
Work in process, March 1	200	0	40
Started and completed	700	700	700
Work In process, March 31	300	300	120
Total units	1,200	1,000	860

Costs	Materials	Conversion Costs	Total
Unit costs (Step 3)			
Costs in March (a)	$50,000	$ 55,900	$105,900
Equivalent units (b)	1,000	860	
Unit costs [(a) ÷ (b)]	$ 50	$ 65	$ 115
Cost Reconciliation Schedule (Step 4)			
Costs to be accounted for		$ 19,280	
Work in process, March 1		105,900*	
Started into production		$125,180	
Total costs			
Costs accounted for			
Transferred out			
Work in process, March 1	$19,280		
Conversion costs to complete beginning inventory (40 X $65)	2,600		
Started and completed (700 X $115)	80,500	$102,380	
Work in process, March 31			
Materials (300 X $50)	15,000		
Conversion costs (120 X $65)	7,800	22,800	
Total costs		$125,180	

***($50,000 + $25,900 + $30,000)**

LO 5 BT: AP Difficulty: Moderate TOT: 40 min. AACSB: Analytic AICPA FC: Reporting IMA: Cost Management, Reporting
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