GLOBAL EDITION

Managerial Accounting

FOURTH EDITION

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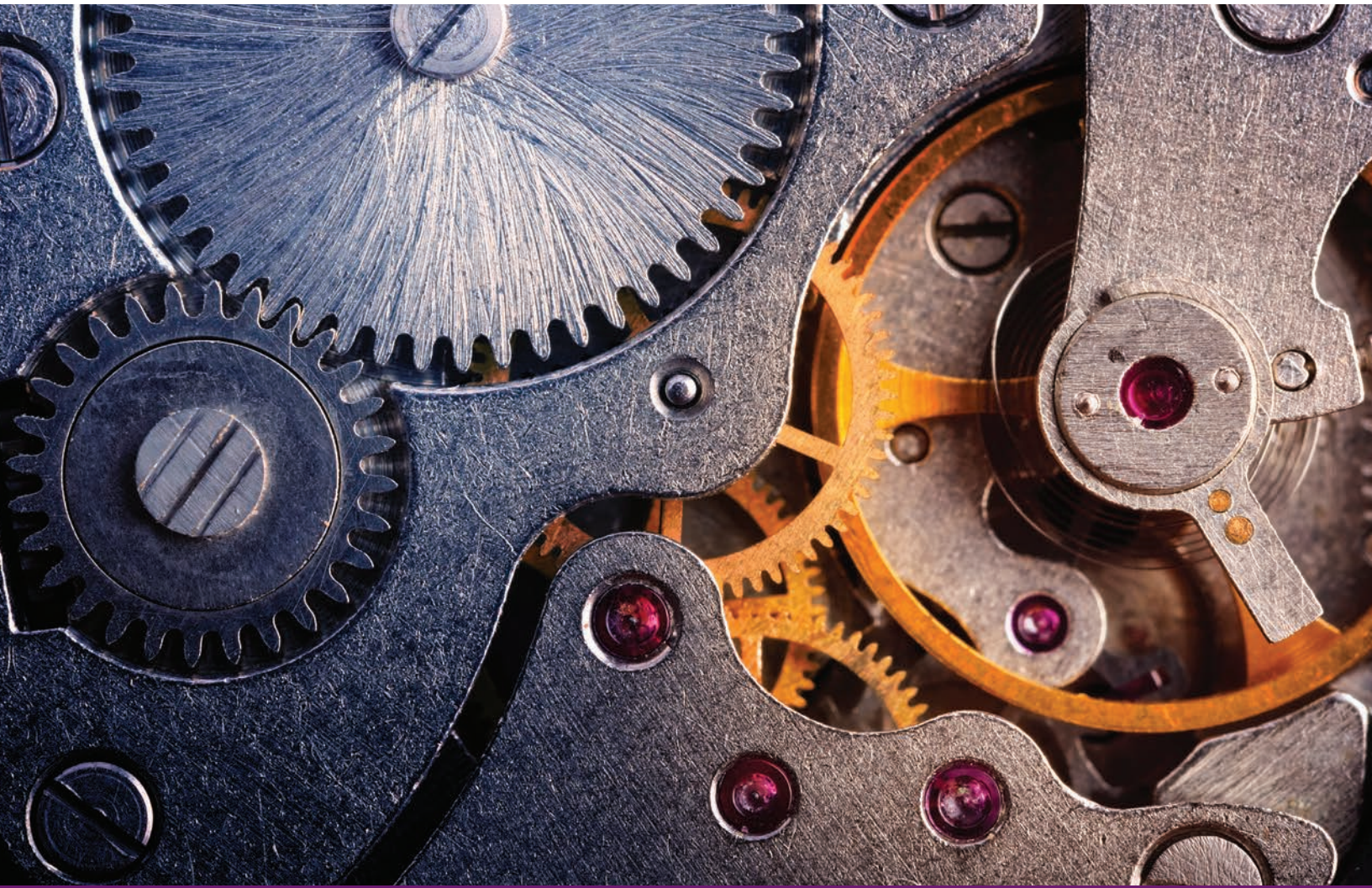

ALWAYS LEARNING

PEARSON

Managerial Accounting

Global Edition

Fourth Edition

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and 7,000 equivalent units still in ending inventory (7,000 physical units × 100%). Keep the following important rule of thumb in mind:

> *All physical units, whether completed and transferred out or still in ending work in process, are considered 100% complete with respect to transferred-in work and costs.*

The Insertion Department calculates equivalent units of direct material the same way as in the Shaping Department. However, in the Insertion Department, the direct materials (faceplates) are added at the *end* of the process rather than at the beginning of the process. The 38,000 masks completed and transferred out contain 100% of their direct materials. On the other hand, the 7,000 masks in ending work process inventory have *not* made it to the end of the process, so they *do not* contain faceplates. As we see in Exhibit 5-12, these unfinished masks have zero equivalent units of the Insertion Department's direct materials (7,000 physical units × 0%).

Now, consider the conversion costs. The 38,000 finished masks are 100% complete with respect to the Insertion Department's conversion costs. However, the 7,000 unfinished masks are only 30% converted (see Exhibits 5-10 and 5-11), so the equivalent units of conversion costs equal 2,100 (7,000 × 30%).

Finally, the equivalent units in each column are summed to find the *total* equivalent units for each of the three categories: transferred-in (45,000), direct materials (38,000), and conversion costs (40,100). We'll use these equivalent units in Step 4.

Steps 3 and 4: Summarize Total Costs to Account for and Compute the Cost per Equivalent Unit

Exhibit 5-13 accumulates the Insertion Department's total costs to account for based on the data in Exhibit 5-11.

EXHIBIT 5-13 Step 3: Summarize Total Costs to Account For
Step 4: Compute the Cost per Equivalent Unit

	A	B	C	D	E
1	**Sea View Insertion Department**				
2	**Month Ended October 31** **Steps 3 and 4**	**Transferred-in**	**Direct Materials**	**Conversion Costs**	**Total**
3	Beginning work in process, October 1 (Exhibit 5-11)	$ 22,000	$ 0	$ 1,100	$ 23,100
4	Plus: Costs added during October	176,000	19,000	12,935	207,935
5	**Total costs to account for**	$ 198,000	$ 19,000	$ 14,035	$ 231,035
6	Divided by: Total equivalent units (from Step 2)	45,000	38,000	40,100	
7	**Cost per equivalent unit**	$ 4.40	$ 0.50	$ 0.35	
8					

In addition to direct material and conversion costs, the Insertion Department must account for transferred-in costs. Recall that transferred-in costs are incurred in a previous process (the Shaping Department, in the SeaView example) and are carried forward as part of the product's cost when the physical product is transferred to the next process.

If the Insertion Department had bought these shaped masks from an outside supplier, it would have to account for the costs of purchasing the masks. However, the Insertion Department receives the masks from an *internal* supplier—the Shaping Department. Thus, the Insertion Department must account for the costs the Shaping Department incurred to provide the shaped masks as well as the Insertion Department's own direct materials (faceplates) and conversion costs (labor and overhead to insert the faceplates).

Exhibit 5-13 shows that the Insertion Department's total costs to account for ($231,035) consist of the costs associated with beginning work process inventory ($23,100) plus the costs added during the month ($207,935).

Exhibit 5-13 also shows Step 4: the calculation of cost per equivalent unit. For each category of cost, SeaView simply divides the total costs by the corresponding number of total equivalent units that were found in Step 2 (Exhibit 5-12).

Step 5: Assign Total Costs to Units Completed and to Units in Ending Work in Process Inventory

Exhibit 5-14 shows how SeaView finishes the five-step process by assigning costs to (1) units completed and transferred out to finished goods inventory and (2) units remaining in the Insertion Department's ending work process inventory. SeaView uses the same approach as it used for the Shaping Department in Exhibit 5-9. SeaView multiplies the number of equivalent units from Step 2 (Exhibit 5-12) by the cost per equivalent unit from Step 4 (Exhibit 5-13).

EXHIBIT 5-14 Step 5: Assign Total Costs to Units Completed and to Units in Ending Work Process Inventory

	A	B	C	D	E
1	**Sea View Insertion Department**				
2	**Month Ended October 31** **Step 5: Assigning Costs**	**Transferred-in**	**Direct Materials**	**Conversion Costs**	**Total**
3	**Completed and transferred out:**				
4	Equivalent units completed and transferred out (from Step 2)	38,000	38,000	38,000	
5	Multiplied by: Cost per equivalent unit (from Step 4)	$ 4.40	$ 0.50	$ 0.35	
6	Cost assigned to units completed and transferred out	$ 167,200	$ 19,000	$ 13,300	$ 199,500
7					
8	**Ending work in process:**				
9	Equivalent units in ending WIP (from Step 2)	7,000	0	2,100	
10	Multiplied by: Cost per equivalent unit (from Step 4)	$ 4.40	$ 0.50	$ 0.35	
11	Cost assigned to units in ending WIP	$ 30,800	$ 0	$ 735	$ 31,535
12					
13	**Total costs accounted for**				$ 231,035
14					

Unit Costs and Gross Profit

SeaView's managers can now compute the cost of manufacturing one swim mask, from start to finish. Step 5 shows that $199,500 should be transferred to the Finished Goods Inventory account for the 38,000 masks completed during the month. Therefore, SeaView's cost of making one completed mask is $5.25 ($199,500 ÷ 38,000 finished masks). Exhibit 5-14 shows that this cost includes the costs from both processing departments:

- $4.40 from the Shaping Department[6]
- $0.85 from the Insertion Department ($0.50 for direct materials and $0.35 for conversion costs)

[6]This is the same $4.40 per unit we saw the Shaping Department transfer out to the Insertion Department in the first half of the chapter. Notice how the transferred-in cost carries through from one department to the next. The weighted-average method of process costing *combines* the current period's costs ($176,000) with any costs in beginning inventory ($23,100) to yield a weighted-average cost per unit ($4.40). Therefore, the weighted average cost could be different than $4.40 if the beginning inventory had cost more or less than $4.40 per unit to make in September.

SeaView's managers use this information to help control costs, set prices, and assess the profitability of the swim masks. Let's assume SeaView is able to charge customers $10 for each mask. If so, the gross profit on the sale of each of these masks will be as follows:

Sales Revenue (per mask)	$10.00
Less: Cost of Goods Sold (per mask)	5.25
Gross Profit (per mask)	$ 4.75

For SeaView to be profitable, the total gross profit (gross profit per mask × number of masks sold) will need to be high enough to cover all of SeaView's operating expenses, such as marketing and distribution expenses, incurred in non-manufacturing elements of the value chain. In addition to using the unit cost for valuing Cost of Goods Sold, SeaView will also use it to value Finished Goods Inventory ($5.25 for each mask still in finished goods inventory at the end of October).

Try It!

Dairymaid's yogurt goes through two sequential processes in two departments: Fermenting and Packaging. Assume that in the Packaging Department, Step 4 of the process costing procedure indicated the following costs per equivalent unit (cases of yogurt):

	Transferred-in	Direct Materials	Conversion Costs
Cost per equivalent unit	$6.50	$1.15	$1.25

a. How much did each case of yogurt cost to make, from start to finish?

b. If each case sells for $20, what is the gross profit per case?

Please see page 326 for solutions.

Production Cost Reports

Most companies prepare a **production cost report**, which summarizes the entire five-step process on one schedule. Notice how the production cost report for the Insertion Department shown in Exhibit 5-15 simply brings together all of the steps that we showed separately in Exhibits 5-12, 5-13, and 5-14. The top half of the schedule focuses on units (Steps 1 and 2), while the bottom half of the schedule focuses on costs (Steps 3, 4, and 5). Each processing department prepares its own production cost report each month. The transferred-in costs, direct materials cost, and conversion costs assigned to the units in *ending* work process inventory become the *beginning* work process inventory balances on the next month's cost report.

EXHIBIT 5-15 Production Cost Report

	A	B	C	D	E	F
1	Sea View Insertion Department	Step1	Step 2: Equivalent Units			
2	Month Ended October 31 Flow of Production	Flow of Physical Units	Transferred-in	Direct Materials	Conversion Costs	
3	**Units to account for:**					
4	Beginning work in process, October 1	5,000				
5	Plus: Transferred in during October	40,000				
6	Total physical units to account for	45,000				
7						
8	**Units accounted for:**					
9	Completed and transferred out during October	38,000	38,000	38,000	38,000	
10	Plus: Ending work in process, October 31	7,000	7,000	0	2,100	
11	Total physical units accounted for	45,000				
12	**Total equivalent units**		45,000	38,000	40,100	
13						
14						
15	**Total Costs to account for and Cost per Equivalent Unit: Steps 3 and 4**		**Transferred-in**	**Direct Materials**	**Conversion Costs**	**Total**
16	Beginning work in process, October 1		$ 22,000	$ 0	$ 1,100	$ 23,100
17	Plus: Costs added during October		176,000	19,000	12,935	207,935
18	**Total costs to account for**		$ 198,000	$ 19,000	$ 14,035	$ 231,035
19	Divided by: Total equivalent units (from Step 2)		45,000	38,000	40,100	
20	**Cost per equivalent unit**		$ 4.40	$ 0.50	$ 0.35	
21						
22	**Assignment of total costs: Step 5**					
23	**Completed and transferred out:**					
24	Equivalent units completed and transferred out (from Step 2)		38,000	38,000	38,000	
25	Multiplied by: Cost per equivalent unit (from Step 4)		$ 4.40	$ 0.50	$ 0.35	
26	Cost assigned to units completed and transferred out		$ 167,200	$ 19,000	$ 13,300	$ 199,500
27						
28	**Ending work in process:**					
29	Equivalent units in ending WIP (from Step 2)		7,000	0	2,100	
30	Multiplied by: Cost per equivalent unit (from Step 4)		$ 4.40	$ 0.50	$ 0.35	
31	Cost assigned to units in ending WIP		$ 30,800	$ 0	$ 735	$ 31,535
32						
33	**Total costs accounted for**					$ 231,035
34						

SeaView's managers monitor the production costs found on this report by comparing the actual direct materials and conversion costs—particularly the equivalent-unit costs—with expected amounts. If actual costs are higher than expected, managers will try to uncover the reason for the increase, and look for ways to cut costs in the future without sacrificing quality.

Journal Entries in a Second Processing Department

The Insertion Department's journal entries are similar to those of the Shaping Department.

The following summary entry records the manufacturing costs incurred in the Insertion Department during the month of October (data from Exhibit 5-11):

	Work Process Inventory—Insertion	31,935	
	Raw Materials Inventory		19,000
	Wages Payable		3,710
	Manufacturing Overhead		9,225
	(To record manufacturing costs incurred in the Insertion		
	Department during October)		

Next, recall the journal entry made to transfer the cost of shaped masks out of the Shaping Department and into the Insertion Department at the end of October (page 280). This journal entry would only be made *once*, but is repeated here simply as a reminder:

	Work in Process Inventory—Insertion	176,000	
	Work in Process Inventory—Shaping		176,000
	(*To record the transfer cost out of the Shaping Department*		
	and into the Insertion Department)		

The fifth step of the process costing procedure (Exhibit 5-14) showed that $199,500 should be assigned to the completed masks, while $31,535 should be assigned to the units still being worked on. Thus, the following journal entry is needed to transfer cost out of the Insertion Department and into Finished Goods Inventory:

	Finished Goods Inventory	199,500	
	Work in Process Inventory—Insertion		199,500
	(*To record transfer of cost out of the Insertion Department*		
	and into Finished Goods Inventory)		

After posting, the key accounts appear as follows:

Work in Process Inventory—Shaping

Balance, September 30	0	Transferred to Insertion	176,000
Direct materials	140,000		
Direct labor	21,250		
Manufacturing overhead	46,750		
Balance, October 31	32,000		

Work in Process Inventory—Insertion

Balance, September 30	23,100	Transferred to Finished	
Transferred in from Shaping	176,000	Goods Inventory	199,500
Direct materials	19,000		
Direct labor	3,710		
Manufacturing overhead	9,225		
Balance, October 31	31,535		

Finished Goods Inventory

Balance, September 30	0		
Transferred in from Insertion	199,500		

STOP & THINK

Assume that SeaView sells 36,000 of the masks for $10 each. Assuming that SeaView uses a perpetual inventory system, what journal entries would SeaView make to record the sales transaction?

Answer: The unit cost of making one mask from start to finish is $5.25 ($199,500 transferred to Finished Goods ÷ 38,000 finished masks). SeaView will make one journal entry to record the sales revenue, and a second journal entry to record the cost of goods sold:

	Accounts Receivable (36,000 × $10.00)	360,000	
	Sales Revenue		360,000

	Cost of Goods Sold (36,000 × 5.25)	189,000	
	Finished Goods Inventory		189,000