

Chapter 3

Job-Order Costing: Cost Flows and External Reporting

Questions

3-1 The link that connects these two schedules is the cost of goods manufactured. It is calculated within a schedule of cost of goods manufactured and then it plugs into the schedule of cost of goods sold to enable calculating the cost of goods available for sale.

3-2 The Manufacturing Overhead clearing account is credited when overhead cost is applied to Work in Process. The applied overhead cost for the period will probably not equal the actual overhead cost because overhead application relies on a predetermined overhead rate that is based on estimates made at the beginning of the period.

3-3 Underapplied overhead occurs when the actual overhead cost exceeds the amount of overhead cost applied to Work in Process inventory during the period. Overapplied overhead occurs when the actual overhead cost is less than the amount of overhead cost applied to Work in Process inventory during the period. Underapplied or overapplied overhead is disposed of by either closing out the amount to Cost of Goods Sold or by allocating the amount among Cost of Goods Sold and ending Work in Process and Finished Goods inventories in proportion to the applied overhead in each account. The adjustment for underapplied overhead increases Cost of Goods Sold (and the two inventories) whereas the adjustment for overapplied overhead decreases Cost of Goods Sold (and the two inventories).

3-4 Manufacturing overhead may be underapplied for several reasons. Control over overhead spending may be poor. Or, some of the overhead may be fixed and the actual amount of the allocation base may be less than estimated at the beginning of the period. In this situation, the

amount of overhead applied to inventory will be less than the actual overhead cost incurred.

3-5 Underapplied overhead implies that not enough overhead was assigned to jobs during the period. Thus, cost of goods sold is understated so we add underapplied overhead to cost of goods sold. On the other hand, overapplied overhead is deducted from cost of goods sold.

3-6 The raw materials used in production is calculated by taking the beginning raw materials inventory plus raw material purchases to derive the raw materials available. From this amount, subtract the ending raw materials inventory to derive the raw materials used in production.

3-7 The total manufacturing costs added to production include the direct materials used in production, the direct labor cost, and the manufacturing overhead applied to work in process.

3-8 The beginning work in process inventory plus the total manufacturing costs (which includes the direct materials used production, the direct labor cost, and the manufacturing overhead applied to work in process) minus the ending work in process inventory equals the cost of goods manufactured.

3-9 Beginning finished goods inventory plus the cost of goods manufactured equals the cost of goods available for sale. From this amount, subtract the ending finished goods inventory to derive the unadjusted cost of goods sold.

3-10 Direct labor costs are added to Work in Process as goods are being manufactured. Once goods are completed, their manufacturing costs (including direct labor) are transferred to Finished

Goods. Once goods are sold to customers their manufacturing costs (including direct labor) are transferred to Cost of Goods Sold.

The Foundational 15

1. The journal entry to record raw materials used in production is:

Work in Process.....	480,000
Raw Materials	480,000

2. The ending balance in Raw Materials is:

Raw Materials		
Beg. Bal.	40,000	
(a)	510,000	(b) 480,000
End. Bal.	70,000	

3. The journal entry to record the labor costs is:

Work in Process.....	600,000
Manufacturing Overhead	150,000
Selling and administrative salaries....	240,000
Wages Payable	990,000

4. The total manufacturing overhead applied to production is computed as follows:

Actual direct labor-hours (a).....	41,000
Predetermined overhead rate (b).....	\$16.25
Manufacturing overhead applied (a) × (b)	\$666,250

5. The total manufacturing cost added to work in process is:

Direct materials used in production	\$ 480,000
Direct labor	600,000
Manufacturing overhead applied	<u>666,250</u>
Total manufacturing cost.....	<u>\$1,746,250</u>

The Foundational 15 (continued)

6. The journal entry is recorded as follows:

Finished Goods.....	1,680,000
Work in Process	1,680,000

7. The ending balance in Work in Process is computed as follows:

Work in Process	
Beg. Bal.	18,000
(b)	480,000
(c)	600,000
(f)	666,250
End. Bal.	84,250
(g)	1,680,000

8. The total actual manufacturing overhead cost is as follows:

Indirect labor.....	\$150,000
Depreciation, insurance, utilities, etc.....	<u>500,000</u>
Total actual manufacturing overhead cost	<u>\$650,000</u>

9. The overapplied overhead is computed as follows:

Actual manufacturing overhead cost (a).....	\$650,000
Manufacturing overhead applied (b)	\$666,250
Overapplied overhead (a) – (b)	\$(16,250)

10. The cost of goods available for sale is computed as follows:

Beginning finished goods inventory	\$ 35,000
Add: Cost of goods manufactured	<u>1,680,000</u>
Cost of goods available for sale.....	<u>\$1,715,000</u>

11. The journal entry is recorded as follows:

Cost of Goods Sold.....	1,690,000
Finished Goods.....	1,690,000

The Foundational 15 (continued)

12. The ending balance in Finished Goods is:

Finished Goods			
Beg. Bal.	35,000		
(g)	1,680,000	(h)	1,690,000
End. Bal.	25,000		

13. The adjusted cost of goods sold is computed as follows:

Beginning finished goods inventory	\$ 35,000
Cost of goods manufactured.....	<u>1,680,000</u>
Cost of goods available for sale.....	1,715,000
Ending finished goods inventory	<u>25,000</u>
Unadjusted cost of goods sold	1,690,000
Overapplied overhead	<u>(16,250)</u>
Adjusted cost of goods sold	<u>\$1,673,750</u>

14. and 15.

The gross margin and net operating income are computed as follows:

Sales.....	\$2,800,000
Cost of goods sold	<u>1,673,750</u>
Gross margin.....	1,126,250
Selling and administrative expenses	
(\$240,000 + \$367,000)	<u>607,000</u>
Net operating income.....	<u>\$ 519,250</u>

Note: The selling and administrative expenses (\$607,000) include selling and administrative salaries (\$240,000) and various other selling and administrative expenses (\$367,000).

Problem 3-11 (45 minutes)

1. The cost of raw materials used in production was:

Beginning raw materials inventory.....	\$ 15,000
Add: Purchases of materials (debits)	<u>120,000</u>
Total raw materials available.....	135,000
Deduct: Ending raw materials inventory.....	<u>25,000</u>
Raw materials used in production.....	<u><u>\$110,000</u></u>

2. Of the \$110,000 in materials requisitioned for production, \$90,000 was debited to Work in Process as direct materials. Therefore, the difference of \$20,000 was debited to Manufacturing Overhead as indirect materials.

3. Total factory wages accrued during the year (credits to the Factory Wages Payable account) \$180,000
Less direct labor cost (from Work in Process)..... 150,000
Indirect labor cost..... \$ 30,000

4. The cost of goods manufactured was \$470,000—the credits to the Work in Process account.

5. The Cost of Goods Sold for the year was:

Beginning finished goods inventory	\$ 40,000
Add: Cost of goods manufactured (from Work in Process)...	<u>470,000</u>
Cost of goods available for sale.....	510,000
Deduct: Ending finished goods inventory	<u>60,000</u>
Cost of goods sold	<u><u>\$450,000</u></u>

6. The predetermined overhead rate was:

$$\begin{aligned} \text{Predetermined overhead rate} &= \frac{\text{Estimated total manufacturing overhead cost}}{\text{Estimated total amount of the allocation base}} \\ &= \frac{\$240,000}{\$150,000 \text{ direct labor cost}} = 160\% \text{ of direct labor cost} \end{aligned}$$

Problem 3-11 (continued)

7. Manufacturing overhead was overapplied by \$10,000, computed as follows:

Actual manufacturing overhead cost for the year (debits to Manufacturing Overhead).....	\$230,000
Manufacturing overhead applied (debits to Work in Process)	<u>240,000</u>
Overapplied overhead	<u><u>\$(10,000)</u></u>

8. The ending balance in Work in Process is \$30,000. Direct materials make up \$9,200 of this balance, and applied overhead makes up \$12,800. The computations are:

Balance, Work in Process, 12/31 (a).....	\$30,000
Less: Direct labor cost (given).....	8,000
Applied overhead cost ($\$8,000 \times 160\%$)	<u>12,800</u>
Total conversion cost (b)	<u>20,800</u>
Direct materials cost (a) – (b)	<u><u>\$ 9,200</u></u>

Problem 3-12 (30 minutes)

1. The predetermined overhead rate is computed as follows:

Estimated total manufacturing overhead (a) ..	\$900,000
Estimated total computer hours (b).....	75,000 hours
Predetermined overhead rate (a) ÷ (b)	\$12.00 per hour

Actual manufacturing overhead cost.....	\$850,000
Manufacturing overhead applied to Work in Process during the year: 60,000 actual MHs × \$12 per MH	<u>720,000</u>
Underapplied overhead cost	<u><u>\$130,000</u></u>

2. Cost of Goods Sold 130,000
Manufacturing Overhead 130,000

3. The underapplied overhead would be allocated using the following percentages:

Overhead applied during the year in:

Work in process	\$ 36,000	5 %
Finished goods	180,000	25 %
Cost of goods sold.....	<u>504,000</u>	<u>70 %</u>
Total.....	<u><u>\$720,000</u></u>	<u><u>100 %</u></u>

The entry to record the allocation of the underapplied overhead would be:

Work in Process (5% × \$130,000)	6,500
Finished Goods (25% × \$130,000).....	32,500
Cost of Goods Sold (70% × \$130,000)	91,000
Manufacturing Overhead	130,000

Problem 3-12 (continued)

4. Comparing the two methods:

Cost of goods sold if the underapplied overhead is closed to cost of goods sold (\$1,400,000 + \$130,000).....	\$1,530,000
Cost of goods sold if the underapplied overhead is closed to Work in Process, Finished Goods, and Cost of Goods Sold (\$1,400,000 + \$91,000).....	<u>1,491,000</u>
Difference in cost of goods sold	<u>\$ 39,000</u>

Thus, net operating income will be \$39,000 greater if the underapplied overhead is closed to Work in Process, Finished Goods, and Cost of Goods Sold rather than being closed to Cost of Goods Sold.

Problem 3-13 (30 minutes)

Schedule of cost of goods manufactured:

Beginning work in process inventory	\$ 4 2,0 00
Direct materials:	
Beginning raw materials inventory....	\$ 40,00 0
Add: Purchases of raw materials.....	<u>290,000</u>
Total raw materials available.....	330,000
Deduct: Ending raw materials inventory	<u>10,000</u>
Direct materials used in production	32 0,0 00
Direct labor	78, 00 0
Manufacturing overhead applied to work in process..	<u>28</u> <u>5,0</u> <u>00</u>
Total manufacturing costs added to production	683 ,00 0
Total manufacturing costs to account for	725 ,00

	0
Deduct: Ending work in process inventory	<u>35</u>
	<u>,00</u>
	0
Cost of goods manufactured.....	<u><u>\$69</u></u>
	<u>0,0</u>
	<u><u>00</u></u>

Schedule of cost of goods sold:

Beginning finished goods inventory*	\$ 50,000
Add: Cost of goods manufactured	<u>690,000</u>
Cost of goods available for sale*	740,000
Deduct: Ending finished goods inventory	<u>80,000</u>
Unadjusted cost of goods sold*	660,000
Deduct: Overapplied overhead (\$270,000 – \$285,000).....	<u>15,000</u>
Adjusted cost of goods sold	<u><u>\$645,000</u></u>

Problem 3-13 (continued)

Income statement:

Sales.....	\$915,000
Cost of goods sold (\$660,000 – \$15,000)....	<u>645,000</u>
Gross margin	270,000
Selling and administrative expenses:	
Selling expenses*	\$140,000
Administrative expense*	<u>100,000</u> 240,000
Net operating income*	<u>\$ 30,000</u>

* Given in the problem

Problem 3-14 (60 minutes)

1. The predetermined overhead rate is computed as follows:

$$\begin{aligned}\text{Predetermined overhead rate} &= \frac{\text{Estimated total manufacturing overhead cost}}{\text{Estimated total amount of the allocation base}} \\ &= \frac{\$800,000}{\$500,000 \text{ direct materials cost}} = 160\%\end{aligned}$$

2. Before the underapplied or overapplied overhead can be computed, we must determine the amount of direct materials used in production for the year.

Beginning raw materials inventory.....	\$ 20,000
Add, Purchases of raw materials	<u>510,000</u>
Total raw materials available.....	530,000
Deduct: Ending raw materials inventory.....	<u>80,000</u>
Raw materials used in production.....	<u><u>\$450,000</u></u>

Actual manufacturing overhead costs:

Indirect labor	\$170,000
Property taxes.....	48,000
Depreciation of equipment	260,000
Maintenance	95,000
Insurance	7,000
Rent, building.....	<u>180,000</u>
Total actual costs.....	760,000
Manufacturing overhead applied to work in process ($\$450,000 \times 160\%$).....	<u>720,000</u>
Underapplied overhead.....	<u><u>\$ 40,000</u></u>

Problem 3-14 (continued)

3. Schedule of Cost of Goods Manufactured:

Beginning work in process inventory	\$ 150,000
Direct materials:	
Beginning raw materials inventory	\$ 20,000
Add: Purchases of raw materials	<u>510,000</u>
Total raw materials available	530,000
Deduct: Ending raw materials inventory	<u>80,000</u>
Direct materials used in production	450,000
Direct labor	90,000
Manufacturing overhead applied to work in process..	<u>720,000</u>
Total manufacturing costs added to production	1,260,000
Total manufacturing costs to account for	1,410,000
Deduct: Ending work in process inventory	<u>70,000</u>
Cost of goods manufactured	<u>\$1,340,000</u>

4. Unadjusted cost of goods sold:

Beginning finished goods inventory.....	\$ 260,000
Add: Cost of goods manufactured.....	<u>1,340,000</u>
Cost of goods available for sale	1,600,000
Deduct: Ending finished goods inventory.....	<u>400,000</u>
Unadjusted cost of goods sold.....	<u>\$1,200,000</u>

The underapplied overhead can either be closed out to Cost of Goods Sold or allocated between Work in Process, Finished Goods, and Cost of Goods Sold based on the overhead applied during the year in the ending balance in each of these accounts.

Problem 3-14 (continued)

5. The amount of overhead cost in Work in Process was:

$$\$24,000 \text{ direct materials cost} \times 160\% = \$38,400$$

The amount of direct labor cost in Work in Process is:

Total ending work in process	\$70,000
Deduct: Direct materials	\$24,000
Manufacturing overhead	<u>38,400</u>
Direct labor cost	<u><u>\$ 7,600</u></u>

The completed schedule of costs in Work in Process was:

Direct materials	\$24,000
Direct labor	7,600
Manufacturing overhead	<u>38,400</u>
Work in process inventory	<u><u>\$70,000</u></u>