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 includes the raw materials used production (less any indirect materials used in production), the direct labor cost added to production, and the manufacturing overhead applied to production.

3-8 The total manufacturing costs added to production (which includes the raw materials used production, the direct labor cost added to production, and the manufacturing overhead applied to production) plus the beginning work in process inventory 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:

Raw materials used in production	$ 480,000
Direct labor	600,000
Manufacturing overhead applied	666,250
Total manufacturing cost	$1,746,250

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	(g)	1,680,000

End. Bal.	84,250		

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

Indirect labor	$150,000
Depreciation, insurance, utilities, etc.	500,000
Total actual manufacturing overhead cost	$650,000

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	1,680,000
Cost of goods available for sale	$1,715,000

11. The journal entry is recorded as follows:

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

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	1,680,000
Cost of goods available for sale	1,715,000
Ending finished goods inventory	25,000
Unadjusted cost of goods sold	1,690,000
Overapplied overhead	(16,250)
Adjusted cost of goods sold	$1,673,750

14. and 15.

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

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

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

Exercise 3-3 (20 minutes)

1. Schedule of Cost of Goods Manufactured:

Direct materials:		
Beginning raw materials inventory	$12,000	
Add: Purchases of raw materials	30,000	
Total raw materials available	42,000	
Deduct: Ending raw materials inventory	18,000	
Raw materials used in production	24,000	
Less indirect materials included in manufacturing overhead	5,000	$ 19,000
Direct labor		58,000
Manufacturing overhead applied to work in process		87,000
Total manufacturing costs		164,000
Add: Beginning work in process inventory		56,000
		220,000
Deduct: Ending work in process inventory		65,000
Cost of goods manufactured		$155,000

2. Schedule of Cost of Goods Sold:

Beginning finished goods inventory	$ 35,000
Add: Cost of goods manufactured	155,000
Cost of goods available for sale	190,000
Deduct: Ending finished goods inventory	42,000
Unadjusted cost of goods sold	148,000
Add: Underapplied overhead	4,000
Adjusted cost of goods sold	$152,000

Exercise 3-4 (10 minutes)

1. Manufacturing overhead incurred (a)	$215,000
Actual direct labor-hours	11,500
× Predetermined overhead rate	$18.20
= Manufacturing overhead applied (b)	$209,300
Manufacturing overhead underapplied (a) – (b)	$5,700

2. Because manufacturing overhead is underapplied, the journal entry would increase cost of goods sold by $5,700 and the gross margin would decrease by $5,700.

Exercise 3-6 (30 minutes)

1. Mason Company's schedule of cost of goods manufactured is as follows:

Direct materials:		
Beginning raw materials inventory	$ 7,000	
Add: Purchases of raw materials	118,000	
Total raw materials available	125,000	
Deduct: Ending raw materials inventory	15,000	
Raw materials used in production		$110,000
Direct labor		70,000
Manufacturing overhead applied to work in process		90,000
Total manufacturing costs		270,000
Add: Beginning work in process inventory		10,000
		280,000
Deduct: Ending work in process inventory		5,000
Cost of goods manufactured		$275,000

2. Mason Company's schedule of cost of goods sold is as follows:

Beginning finished goods inventory	$ 20,000
Add: Cost of goods manufactured	275,000
Cost of goods available for sale	295,000
Deduct: Ending finished goods inventory	35,000
Unadjusted cost of goods sold	260,000
Deduct: Overapplied overhead*	10,000
Adjusted cost of goods sold	$250,000

* Actual manufacturing overhead cost of $80,000 – Manufacturing overhead applied of $90,000 = Overapplied overhead of $10,000.

3.

Mason Company
Income Statement

Sales		$524,000
Cost of goods sold ($260,000 – $10,000)		250,000
Gross margin		274,000
Selling and administrative expenses:		
Selling expenses	$140,000	
Administrative expense	63,000	203,000
Net operating income		$ 71,000

Exercise 3-7 (15 minutes)

1.	Actual manufacturing overhead costs (a)		$473,000
	Manufacturing overhead cost applied: 19,400 MH × $25 per MH (b)		485,000
	Overapplied overhead cost (a) – (b)		$(12,000)
2.	Direct materials:		
	Beginning raw materials inventory.....	$ 20,000	
	Add: purchases of raw materials	400,000	
	Total raw materials available	420,000	
	Deduct: Ending raw materials inventory.....	30,000	
	Raw materials used in production.....	390,000	
	Less indirect materials	15,000	$375,000
	Direct labor		60,000
	Manufacturing overhead applied to work in process		485,000
	Total manufacturing costs		920,000
	Add: Beginning work in process inventory		40,000
			960,000
	Deduct: Ending work in process inventory		70,000
	Cost of goods manufactured		$890,000

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)	120,000
Total raw materials available	135,000
Deduct: Ending raw materials inventory	25,000
Raw materials used in production	$110,000

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)	470,000
Cost of goods available for sale	510,000
Deduct: Ending finished goods inventory	60,000
Cost of goods sold	$450,000

6. The predetermined overhead rate was:

$$\text{Predetermined overhead rate} = \frac{\text{Estimated total manufacturing overhead cost}}{\text{Estimated total amount of the allocation base}}$$

$$= \frac{\$240{,}000}{\$150{,}000 \text{ direct labor cost}} = 160\% \text{ of direct labor cost}$$

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)	240,000
Overapplied overhead	$(10,000)

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 × 160%)	12,800	
Total conversion cost (b)		20.800
Direct materials cost (a) – (b)		$ 9,200

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	720,000
Underapplied overhead cost	$130,000

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	504,000	70 %
Total	$720,000	100 %

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

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)	1,491,000
Difference in cost of goods sold	$ 39,000

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:

Direct materials:		
Beginning raw materials inventory*	$ 40,000	
Add: Purchases of raw materials*	290,000	
Total raw materials available	330,000	
Deduct: Ending raw materials inventory*	10,000	
Raw materials used in production		$320,000
Direct labor		78,000
Manufacturing overhead applied to work in process*		285,000
Total manufacturing costs*		683,000
Add: Beginning work in process inventory		42,000
		725,000
Deduct: Ending work in process inventory*		35,000
Cost of goods manufactured		$690,000

Schedule of cost of goods sold:

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

Income statement:

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

* Given in the problem

Problem 3-14 (60 minutes)

1. The predetermined overhead rate is computed as follows:

$$\text{Predetermined overhead rate} = \frac{\text{Estimated total manufacturing overhead cost}}{\text{Estimated total amount of the allocation base}}$$

$$= \frac{\$800{,}000}{\$500{,}000 \text{ direct materials cost}} = 160\%$$

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	510,000
Total raw materials available	530,000
Deduct: Ending raw materials inventory	80,000
Raw materials used in production	$450,000
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	180,000
Total actual costs	760,000
Manufacturing overhead applied to work in process ($450,000 × 160%)	720,000
Underapplied overhead	$ 40,000

Problem 3-14 (continued)

3.

Gitano Products
Schedule of Cost of Goods Manufactured

Direct materials:		
Beginning raw materials inventory	$ 20,000	
Add purchases of raw materials	510,000	
Total raw materials available	530,000	
Deduct Ending raw materials inventory	80,000	
Raw materials used in production		$ 450,000
Direct labor		90,000
Manufacturing overhead applied to work in process		720,000
Total manufacturing costs		1,260,000
Add: Beginning work in process inventory		150,000
		1,410,000
Deduct: Ending work in process inventory		70,000
Cost of goods manufactured		$1,340,000

4. Unadjusted cost of goods sold:

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

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.

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

$24,000 direct materials cost × 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	38,400	62,400
Direct labor cost		$ 7,600

The completed schedule of costs in Work in Process was:

Direct materials	$24,000
Direct labor	7,600
Manufacturing overhead	38,400
Work in process inventory	$70,000