

JOB ORDER COSTING

**** PROBLEMS IN THIS MODULE INCLUDE TOPICS INCLUDED IN THE MANUFACTURING OVERHEAD MODULE ****

Key Terms and Concepts to Know

Job-Order Costing vs. Process Costing

- Job-order costing is used for companies that produce different products each period. Costs are accumulated for each job.
- Process costing is used for companies that produce many identical units of a single product for long periods of time. Costs are accumulated for each manufacturing department.

Key Job-Order Costing Documents

- Material requisitions request materials for production and support direct materials costs charged to each job.
- Time cards or time tickets record direct labor hours used in production and support direct labor costs charged to each job.
- Job cost sheets are the most important job costing document. They summarize all of the key information about the job and accumulate total direct materials costs, total direct labor costs and overhead costs applied to the job to determine the total costs for the job.

Inventory Classifications on the Balance Sheet

- Manufacturing companies have three inventory accounts: raw materials inventory, work-in-process inventory and finished goods inventory. Manufacturing companies add value (conversion cost) to the raw materials inventory before selling the finished goods.
- (Raw) Materials inventory includes all the direct and indirect materials purchased but not yet used in the manufacturing or production process.
- Work-In-Process Inventory includes all the direct materials, direct labor and manufacturing overhead costs that have been added to the manufacturing process but for which production has not been completed.
- Finished Goods Inventory includes all manufacturing costs for products that have been completed but not sold.

Key Topics to Know

Choosing a Cost System

- Companies with multiple unique products that generally have a low to moderate annual production volume use job-order costing.

Example #1

Which method for assigning costs to products would be more appropriate in each of the following cases?

- a) Cruise ship builder
- b) Cornflakes factory
- c) Law firm
- d) Dentists office
- e) Beverage bottling company

Solution #1

- a) Job-order costing (every ship is a separate job)
- b) Process costing
- c) Job-order costing (every case is a separate job)
- d) Job-order costing (every patient visit is a separate job)
- e) Process costing

Flow of Costs Through Inventory Accounts

| Raw Materials | | Work in Process | | Finished Goods | | Cost of Goods Sold | |
|-------------------|-----------|---------------------------------|----------------|-------------------|-------|--------------------|--|
| Beginning Balance | | Beginning Balance | | Beginning Balance | | Beginning Balance | |
| | -DM Usage | → +DM Usage | | | | | |
| +Purchases | | +DL Usage | -COGM | → +COGM | -COGS | → +COGS | |
| | | +MOH Applied | | | | | |
| =Ending Balance | | =Ending Balance | | =Ending Balance | | =Ending Balance | |
| | | Manufacturing Overhead | | | | | |
| | | Beginning Balance | | | | | |
| | | +Actual overhead costs incurred | -MOH applied | | | | |
| | | =Under-applied | = Over-applied | | | | |

- Actual overhead costs incurred flow through the Manufacturing Overhead account into the work-in-process inventory as overhead applied.
- Some companies may use departmental predetermined overhead rates rather than the single plant-wide predetermined overhead rate shown here in an effort to make the overhead application process more accurate.

- The journal entries to record the flow of costs through the inventory accounts are:

Purchase of raw materials

| | | |
|------------------------|-----|-----|
| Raw material inventory | xxx | |
| Accounts payable | | xxx |

Issue raw materials

| | | |
|------------------------------------|-----|-----|
| Work-in-process inventory (direct) | xxx | |
| Manufacturing overhead (indirect) | xxx | |
| Raw materials inventory | | xxx |

Labor costs incurred

| | | |
|------------------------------------|-----|-----|
| Work-in-process inventory (direct) | xxx | |
| Manufacturing overhead (indirect) | xxx | |
| Wages and salaries payable | | xxx |

Manufacturing overhead costs incurred

| | | |
|--------------------------|-----|-----|
| Manufacturing overhead | xxx | |
| Accounts payable or cash | | xxx |

| | | |
|--------------------------|-----|-----|
| Manufacturing overhead | xxx | |
| Accumulated depreciation | | xxx |

| | | |
|------------------------|-----|-----|
| Manufacturing overhead | xxx | |
| Prepaid expenses | | xxx |

| | | |
|------------------------|-----|-----|
| Manufacturing overhead | xxx | |
| Accrued expenses | | xxx |

Manufacturing overhead applied

| | | |
|---------------------------|-----|-----|
| Work-in-process inventory | xxx | |
| Manufacturing overhead | | xxx |

Goods are completed

| | | |
|---------------------------|-----|-----|
| Finished goods inventory | xxx | |
| Work-in-process inventory | | xxx |

Finished goods are sold

| | | |
|-----------------------------|-----|-----|
| Cash or accounts receivable | xxx | |
| Sales | | xxx |
| Cost of goods sold | Xxx | |
| Finished goods inventory | | xxx |

Close balance in overhead account

- Underapplied

| | | |
|------------------------|-----|-----|
| Cost of goods sold | xxx | |
| Manufacturing overhead | | xxx |

OR

- Overapplied

| | | |
|------------------------|-----|-----|
| Manufacturing overhead | xxx | |
| Cost of goods sold | | xxx |

Example #2

ABC uses job-order costing. It applies overhead cost to jobs on the basis of direct labor-hours. The following transactions took place during the year:

- a) \$300,000 of raw materials were purchased on account
- b) Raw materials were issued into production: \$90,000 direct materials and \$40,000 indirect materials
- c) Labor costs incurred: \$40,000 direct, \$130,000 indirect, sales commissions \$50,000, administrative salaries \$100,000
- d) Utility costs for the factory were \$60,000
- e) Depreciation recorded was \$300,000 (70% related to factory; 30% related to administrative offices)
- f) Manufacturing overhead of \$715,000 was applied to production. Actual direct labor-hours incurred were 22,000.
- g) Units costing \$300,000 were completed and transferred into the finished goods inventory.
- h) Goods with a cost of \$150,000 were sold on account for \$200,000.
- i) Closed the under/overapplied overhead for the year.

Solution #2

- | | | |
|------------------------|---------|---------|
| a) Raw materials | 300,000 | |
| Accounts payable | | 300,000 |
| | | |
| b) Work in process | 90,000 | |
| Manufacturing overhead | 40,000 | |
| Raw materials | | 130,000 |

| | | | |
|----|---------------------------------|---------|---------|
| c) | Work in process | 40,000 | |
| | Manufacturing overhead | 130,000 | |
| | Sales commission expense | 50,000 | |
| | Administrative salaries expense | 100,000 | |
| | Salaries and wage payable | | 320,000 |
| d) | Manufacturing overhead | 60,000 | |
| | Accounts payable | | 60,000 |
| e) | Manufacturing overhead | 210,000 | |
| | Depreciation expense | 90,000 | |
| | Accumulated depreciation | | 300,000 |
| f) | Work in process | 715,000 | |
| | Manufacturing overhead (1) | | 715,000 |
| g) | Finished goods | 300,000 | |
| | Work in process | | 300,000 |
| h) | Accounts receivable | 200,000 | |
| | Sales | | 200,000 |
| | Cost of goods sold | 150,000 | |
| | Finished goods | | 150,000 |
| i) | Manufacturing overhead | 275,000 | |
| | Cost of goods sold | | 275,000 |

(1)

| Manufacturing Overhead | |
|------------------------|---------------------|
| actual | applied |
| 40,000 | |
| 130,000 | 715,000 |
| 60,000 | |
| 210,000 | |
| | 275,000 overapplied |

Practice Problems

Practice Problem #1

Company XYZ makes custom motorboats. It incurred the following costs for the just-completed job B011. 500 pounds of direct materials were used at a cost per pound of \$25. The job cost sheet indicates that a total of 90 direct labor-hours incurred on job B011. The workers were paid at a rate of \$18 per hour. The company applies overhead based on machine hours. At the beginning of the year, it was estimated that the total amount of overhead would be \$180,000 and a total of 30,000 machine hours would be incurred. Job B011 required 150 machine hours.

Required: Determine the total cost assigned to Job B011

Practice Problem #2

Theodore's Cookies had 3 cookie orders in production at June 30: chocolate chip, oatmeal raisin and peanut butter. Material costs for chocolate chip and peanut butter were \$500 and \$350. Direct labor costs per batch were \$200 and \$250 for chocolate chip and oatmeal raisin, respectively and \$600 in total. Overhead is applied at the rate of 50% of direct materials costs. Total costs for the oatmeal raisin batch were \$1,150.

Required: What was the balance in work-in-process at June 30?

Practice Problem #3

Buckman Corporation, which began operations on January 1 of the current year, reported the following information:

| | |
|---|-----------|
| Estimated manufacturing overhead | \$600,000 |
| Actual manufacturing overhead | 639,000 |
| Estimated direct labor cost | 480,000 |
| Actual direct labor cost | 500,000 |
| Total debits in the Work-In-Process account | 1,880,000 |
| Total credits in the Finished Goods account | 920,000 |

Buckman uses a normal cost system and applies manufacturing overhead to jobs on the basis of direct labor cost. A 60% markup is added to the cost of completed production when finished goods are sold. On December 31, job no. 18 was the only job that

remained in production. That job had direct-material and direct-labor charges of \$16,500 and \$36,000, respectively.

- Required:
- Determine the company's predetermined overhead rate.
 - Determine the amount of under- or overapplied overhead.
 - Compute the amount of direct materials used in production.
 - Calculate the balance the company would report as ending work-in-process inventory.
 - Prepare the journal entry(ies) needed to record Buckman's sales, which are all made on account.

Practice Problem #4

Rock Star, Inc., which uses a job-costing system, began business on January 1, 20x3 and applies manufacturing overhead on the basis of direct-labor cost. The following information relates to 20x3:

- Budgeted direct labor and manufacturing overhead were anticipated to be \$200,000 and \$250,000, respectively.
- Job nos. 1, 2, and 3 were begun during the year and had the following charges for direct material and direct labor:

| <u>Job #</u> | <u>Direct Materials</u> | <u>Direct Labor</u> |
|--------------|-------------------------|---------------------|
| 1 | \$145,000 | \$35,000 |
| 2 | 320,000 | 65,000 |
| 3 | 55,000 | 80,000 |

- Job nos. 1 and 2 were completed and sold on account to customers at a profit of 60% of cost. Job no. 3 remained in production.
- Actual manufacturing overhead by year-end totaled \$233,000. Rock Star adjusts all under- and overapplied overhead to cost of goods sold.

- Required:
- Compute the company's predetermined overhead application rate.
 - Compute Rock Star's ending work-in-process inventory.
 - Determine Rock Star's sales revenue.
 - Was manufacturing overhead under- or overapplied during 20x3? By how much?
 - Present the necessary journal entry to handle under- or overapplied manufacturing overhead at year-end.
 - Does the presence of under- or overapplied overhead at year-end indicate that Rock Star's accountants made a serious error? Briefly explain.

True / False Questions

1. When raw materials are issued into production the Raw Materials account is debited.
True False
2. Manufacturing overhead account is debited for the actual overhead costs incurred.
True False
3. Finished Goods inventory account is credited for the amount of cost of goods manufactured during a period.
True False
4. When direct labor costs are incurred, Work in Process is debited.
True False
5. The cost in the ending Finished Goods inventory account consists of the direct materials, direct labor, and manufacturing overhead of all jobs still in process at the end of the period.
True False
6. Selling expenses are applied to production using a predetermined overhead rate.
True False
7. Indirect materials are part of manufacturing overhead.
True False
8. Job cost sheets are used in accounting systems as a subsidiary ledger for the Work-in-Process account.
True False
9. A company that produces cornflakes will most likely use a job-order cost system.
True False
10. Indirect materials issued into production should be debited to Work in Process.
True False

Multiple Choice Questions

1. XYZ company had the following data for the current year:

| | |
|-------------------------------------|-----------|
| Work in Process, beginning balance | \$420,000 |
| Direct materials used in production | 30,000 |
| Direct labor | 55,000 |
| Actual overhead | 70,000 |
| Overhead applied | 65,000 |
| Work in Process, ending balance | 40,000 |

Determine the amount of cost of goods manufactured during the year.

- a) \$155,000
 - b) \$530,000
 - c) \$535,000
 - d) \$520,000
2. ABC company had the following data for the current year:

| | |
|-------------------------------------|-----------|
| Work in Process, beginning balance | \$110,000 |
| Direct materials used in production | 45,000 |
| Actual overhead | 60,000 |
| Overhead applied | 70,000 |
| Work in Process, ending balance | 30,000 |
| Cost of goods manufactured | 235,000 |

Determine the amount of direct labor cost incurred during the year.

- a) \$50,000
 - b) \$45,000
 - c) \$40,000
 - d) \$35,000
3. The beginning balance of Raw Materials inventory was \$10,000. During the year purchases of raw materials for \$125,000 were made, but only \$75,000 were paid for. The balance of Raw Materials at the end of the year was \$30,000. What was the amount of raw materials used in production?
- a) \$55,000
 - b) \$95,000
 - c) \$45,000
 - d) 105,000

The next 2 questions refer to the following information.

Z Company uses a job-order costing system and applies overhead based on direct materials used in production. For the recent year it estimated that \$150,000 of manufacturing overhead will be incurred and \$100,000 of direct materials will be used. The following data were provided by the company:

| | <u>Beginning</u> | <u>Ending</u> |
|----------------------------|------------------|---------------|
| Raw Materials (all direct) | \$30,000 | \$10,000 |
| Work in Process | \$45,000 | \$35,000 |
| Finished Goods | \$20,000 | \$25,000 |

Costs incurred during the year:

| | |
|-------------------------------------|-----------|
| Purchases of raw materials (direct) | \$90,000 |
| Direct Labor | \$40,000 |
| Actual overhead | \$150,000 |

4. The amount of cost of goods manufactured during the year is:
 - a) \$315,000
 - b) \$325,000
 - c) \$360,000
 - d) \$340,000

5. The cost of goods sold not (including any under or overapplied overhead) is:
 - a) \$335,000
 - b) \$320,000
 - c) \$325,000
 - d) \$305,000

6. Finished Goods inventory account is credited when:
 - a) Goods are purchased on account
 - b) Raw materials are purchased
 - c) Goods are sold
 - d) Underapplied overhead is closed

7. Nonmanufacturing costs are:
 - a) Included in manufacturing overhead
 - b) Not part of the product cost
 - c) Deducted from Work in Process
 - d) Added directly to cost of goods sold

8. Total manufacturing costs for the period consist of:
- a) Direct materials, direct labor and manufacturing overhead applied
 - b) Manufacturing overhead applied and selling expenses
 - c) All expenses incurred, including selling and administrative
 - d) Cost of goods sold plus ending Finished Goods inventory
9. Cost of Goods Sold is derived from:
- a) Job-cost sheets
 - b) Raw Materials inventory account
 - c) Finished Goods inventory account
 - d) Estimates for the expected level of sales
10. Dillon Corporation applies manufacturing overhead to jobs using a predetermined overhead rate of 75% of direct labor cost. Any under or overapplied manufacturing overhead cost is closed out to Cost of Goods Sold at the end of the month. During May, the following transactions were recorded by the company:

Raw materials (all direct materials):

| | |
|----------------------------|----------|
| Purchased during the month | \$38,000 |
| Used in production | \$35,000 |

Labor:

| | |
|--|----------|
| Direct labor-hours worked during the month | 3,150 |
| Direct labor cost incurred | \$30,000 |
| Manufacturing overhead cost incurred | \$24,500 |
| Direct labor cost included in May 31 work in process | \$4,400 |

Inventories:

| | |
|------------------------------------|----------|
| Raw materials (all direct), May 31 | \$8,000 |
| Work in process, May 1 | \$9,000 |
| Work in process, May 31 | \$12,000 |

The balance on May 1 in the Raw Materials inventory account was:

- a) \$11,000
- b) \$5,000
- c) \$7,000
- d) \$9,000

Solutions to Practice Problems

Practice Problem #1

Predetermined overhead rate: $\frac{\$180,000}{30,000 \text{ MH}} = \6.00 per MH

| | | |
|-------------------------------|------------------------|------------|
| Direct materials used: | 500 pounds X \$25.00 = | \$12,500 |
| Direct labor cost: | 90 DLH X \$18.00 = | 1,620 |
| Overhead applied to job B011: | \$6.00 X 150 MH = | <u>900</u> |
| Total job cost: | | \$15,020 |

Practice Problem #2

| | Chocolate Chip | | Oatmeal Raisin | | Peanut Butter | | Work in Process | |
|------------------|-------------------|--------------|-------------------|----------------|------------------|--------------|--------------------|----------------|
| Direct Materials | \$500 | (3) | \$600 | | \$350 | (6) | \$1,450 | |
| Direct Labor | \$200 | | \$250 | (7) | \$150 | | \$600 | |
| Overhead | (1) | \$250 | (4) | \$300 | (5) | \$175 | (9) | \$725 |
| Total Job Costs | (2) | <u>\$950</u> | | <u>\$1,150</u> | (8) | <u>\$675</u> | (10) | <u>\$2,775</u> |

- (1) $\$500 \times 50\% = \250
- (2) $\$500 + \$200 + \$250 = \950
- (3) $\$1,150 - \$250 = \$900$ direct materials and overhead
 $\$900 = 150\% \times$ direct materials
 Direct materials = \$600
- (4) $\$1,150 - \$600 - \$250 = \300
- (5) $\$350 \times 50\% = \175
- (6) $\$500 + \$600 + \$350 = \$1,450$
- (7) $\$600 - \$200 - \$250 = \150
- (8) $\$350 + \$150 + \$175 = \675
- (9) $\$250 + \$300 + \$175 = \725
- (10) $\$950 + \$1,150 + 675 = \$2,775$ or $\$1,450 + \$600 + \$725 = \$2,775$

Practice Problem #3

a)

$$\text{Predetermined overhead rate} = \frac{\text{Estimated overhead costs } \$600,000}{\text{Estimated direct labor cost } \$480,000} = 125\% \text{ of direct labor cost}$$

b)

| | |
|--|----------------|
| Actual manufacturing overhead | \$639,000 |
| less: Applied overhead: \$500,000 x 125% | <u>625,000</u> |
| Under-applied overhead | \$14,000 |

c)

| | |
|---------------------------|----------------|
| Debits to Work-In-Process | \$1,880,000 |
| less: Direct labor | 500,000 |
| Applied overhead | <u>625,000</u> |
| Direct materials used | \$755,000 |

d)

| | |
|--|----------------|
| | <u>Job #18</u> |
| Direct materials used | \$16,500 |
| Direct labor | 36,000 |
| Applied overhead at 125% of direct labor of \$36,000 | <u>45,000</u> |
| Total cost | \$97,000 |

e)

| | | |
|------------------------|-----------|-----------|
| Accounts receivable | 1,472,000 | |
| Sales \$920,000 x 1.60 | | 1,472,000 |
| Cost of goods sold | 920,000 | |
| Finished goods | | 920,000 |

Practice Problem #4

- | | | |
|--|--------------------|---------------------------|
| a) Estimated Overhead cost | \$250,000 | |
| Estimated direct labor cost | \$200,000 | = 125% of direct labor |
| | | |
| b) Job #3: | | |
| Direct materials | | \$55,000 |
| Direct labor | | 80,000 |
| Overhead applied | | 100,000 |
| | | \$235,000 |
| | | |
| c) Jobs #1 and #2: | | |
| Direct materials | | \$465,000 |
| Direct labor | | 100,000 |
| Overhead applied | | 125,000 |
| | | \$690,000 |
| | | |
| Revenue | \$690,000 x 160% = | \$1,104,000 |
| | | |
| d) Actual manufacturing overhead | | \$233,000 |
| less: Applied manufacturing overhead | | 225,000 |
| Under-applied overhead | | 8,000 |
| | | |
| e) Cost of goods sold | 8,000 | |
| Manufacturing overhead | | 8,000 |
| | | |
| f) No. Companies use a predetermined application rate for several reasons including the fact that manufacturing overhead is not easily traced to jobs and products. The predetermined rate is based on estimates of both overhead and an appropriate cost driver, and these estimated rarely equal actual overhead incurred or the actual cost driver activity. Under- or overapplied overhead typically arises at year-end. | | |

Solutions to True / False Problems

1. False - Raw materials account is credited when raw materials are issued.
2. True
3. False – finished goods inventory is debited for cost of goods manufactured and credited for cost of goods sold
4. True
5. False – this is the definition of the balance in work-in-process inventory.
6. False - Selling expenses are expensed as incurred as a period cost.
7. True
8. True
9. False - Process costing is appropriate when all the products (the cornflakes) are essentially the same.
10. False - Indirect materials issued should be debited to Manufacturing Overhead.

Solutions to Multiple Choice Questions

1. B
2. C
3. D
4. B
5. D
6. C
7. B
8. A
9. C
10. B