REVIEW PROBLEM: JOB-ORDER COSTING

Hogle Corporation is a manufacturer that uses job-order costing. On January 1, the beginning of its fiscal year, the company's inventory balances were as follows:

<table>
<thead>
<tr>
<th>Inventory Type</th>
<th>Balance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw materials</td>
<td>$20,000</td>
</tr>
<tr>
<td>Work in process</td>
<td>$15,000</td>
</tr>
<tr>
<td>Finished goods</td>
<td>$30,000</td>
</tr>
</tbody>
</table>

The company applies overhead cost to jobs on the basis of machine-hours worked. For the current year, the company's predetermined overhead rate was based on a cost formula that estimated $450,000 of total manufacturing overhead for an estimated activity level of 75,000 machine-hours. The following transactions were recorded for the year:

a. Raw materials were purchased on account, $410,000.
b. Raw materials were requisitioned for use in production, $380,000 ($360,000 direct materials and $20,000 indirect materials).
c. The following costs were accrued for employee services: direct labor, $75,000; indirect labor, $110,000; sales commissions, $90,000; and administrative salaries, $200,000.
d. Sales travel costs were $17,000.
e. Utility costs in the factory were $43,000.
f. Advertising costs were $180,000.
g. Depreciation was recorded for the year, $350,000 (80% relates to factory operations, and 20% relates to selling and administrative activities).
h. Insurance expired during the year, $10,000 (70% relates to factory operations, and the remaining 30% relates to selling and administrative activities).
i. Manufacturing overhead was applied to production. Due to greater than expected demand for its products, the company worked 80,000 machine-hours on all jobs during the year.
j. Goods costing $900,000 to manufacture according to their job cost sheets were completed during the year.
k. Goods were sold on account to customers during the year for a total of $1,500,000. The goods cost $870,000 to manufacture according to their job cost sheets.

Required:
1. Prepare journal entries to record the preceding transactions.
2. Post the entries in (1) above to T-accounts (don't forget to enter the beginning balances in the inventory accounts).
3. Is Manufacturing Overhead underapplied or overapplied for the year? Prepare a journal entry to close any balance in the Manufacturing Overhead account to Cost of Goods Sold.
4. Prepare an income statement for the year.
Solution to Review Problem I

1.

a. Raw Materials ................................................................. 410,000
   Accounts Payable ......................................................... 410,000
b. Work in Process ......................................................... 360,000
   Manufacturing Overhead ................................................ 20,000
   Raw Materials ............................................................... 380,000
c. Work in Process ......................................................... 75,000
   Manufacturing Overhead ................................................ 110,000
   Sales Commissions Expense ........................................... 90,000
   Administrative Salaries Expense ..................................... 200,000
   Salaries and Wages Payable ........................................... 475,000
d. Sales Travel Expense ................................................... 17,000
   Accounts Payable ......................................................... 17,000
e. Manufacturing Overhead ................................................ 49,000
   Accounts Payable ......................................................... 43,000
f. Advertising Expense .................................................... 180,000
   Accounts Payable ......................................................... 180,000
g. Manufacturing Overhead ................................................ 280,000
   Depreciation Expense ................................................... 70,000
   Accumulated Depreciation ............................................. 350,000

h. Manufacturing Overhead .............................................. 7,000
   Insurance Expense ........................................................ 3,000
   Prepaid Insurance .......................................................... 10,000

i. The predetermined overhead rate for the year is computed as follows:

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

   \[
   = \frac{\$450,000}{75,000 \text{ machine-hours}}
   \]

   \[
   = \$6 \text{ per machine-hour}
   \]

   Based on the 80,000 machine-hours actually worked during the year, the company applied $480,000 in overhead cost to production: $6 per machine-hour × 80,000 machine-hours = $480,000. The following entry records this application of overhead cost:

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Work in Process</td>
<td>480,000</td>
</tr>
<tr>
<td>Manufacturing Overhead</td>
<td>480,000</td>
</tr>
<tr>
<td>Finished Goods</td>
<td>900,000</td>
</tr>
<tr>
<td>Work in Process</td>
<td>900,000</td>
</tr>
<tr>
<td>Accounts Receivable</td>
<td>1,500,000</td>
</tr>
<tr>
<td>Sales</td>
<td>1,500,000</td>
</tr>
<tr>
<td>Cost of Goods Sold</td>
<td>870,000</td>
</tr>
<tr>
<td>Finished Goods</td>
<td>870,000</td>
</tr>
</tbody>
</table>

2.
3. Manufacturing overhead is overapplied for the year. The entry to close it out to Cost of Goods Sold is as follows:

\[
\begin{align*}
\text{Manufacturing Overhead} & \quad \text{20,000} \\
\text{Cost of Goods Sold} & \quad \text{20,000}
\end{align*}
\]

4.

**Hogle Corporation**
Income Statement
For the Year Ended December 31

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$1,500,000</td>
</tr>
<tr>
<td>Cost of goods sold ($870,000 – $20,000)</td>
<td>850,000</td>
</tr>
<tr>
<td>Gross margin</td>
<td>650,000</td>
</tr>
<tr>
<td>Selling and administrative expenses:</td>
<td></td>
</tr>
<tr>
<td>Sales commissions expense</td>
<td>$ 90,000</td>
</tr>
<tr>
<td>Administrative salaries expense</td>
<td>200,000</td>
</tr>
<tr>
<td>Sales travel expense</td>
<td>17,000</td>
</tr>
<tr>
<td>Advertising expense</td>
<td>180,000</td>
</tr>
<tr>
<td>Depreciation expense</td>
<td>70,000</td>
</tr>
<tr>
<td>Insurance expense</td>
<td>3,000</td>
</tr>
<tr>
<td>Net operating income</td>
<td>$ 90,000</td>
</tr>
</tbody>
</table>
Sweeten Company had no jobs in progress at the beginning of March and no beginning inventories. It started only two jobs during March—Job P and Job Q. Job P was completed and sold by the end of the March and Job Q was incomplete at the end of the March. The company uses a plantwide predetermined overhead rate based on direct labor-hours. The following additional information is available for the company as a whole and for Jobs P and Q (all data and questions relate to the month of March):

<table>
<thead>
<tr>
<th>Estimated total fixed manufacturing overhead</th>
<th>$10,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated variable manufacturing overhead per direct labor-hour</td>
<td>$1.00</td>
</tr>
<tr>
<td>Estimated total direct labor-hours to be worked</td>
<td>$2,000</td>
</tr>
<tr>
<td>Total actual manufacturing overhead costs incurred</td>
<td>$12,500</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Job</th>
<th>Direct materials</th>
<th>Direct labor cost</th>
<th>Actual direct labor-hours worked</th>
</tr>
</thead>
<tbody>
<tr>
<td>P</td>
<td>$13,000</td>
<td>$21,000</td>
<td>1,400</td>
</tr>
<tr>
<td>Q</td>
<td>$8,000</td>
<td>$7,500</td>
<td>500</td>
</tr>
</tbody>
</table>

**Required:**
1. What is the company’s predetermined overhead rate?
2. How much manufacturing overhead was applied to Job P and Job Q?
3. What is the direct labor hourly wage rate?
4. If Job P included 20 units, what is its unit product cost? What is the total amount of manufacturing cost assigned to Job Q as of the end of March (including applied overhead)?
5. Assume the ending raw materials inventory is $1,000 and the company does not use any indirect materials.
   Prepare the journal entries to record raw materials purchases and the issuance of direct materials for use in production.
6. Assume that the company does not use any indirect labor.
   Prepare the journal entry to record the direct labor costs added to production.
7. Prepare the journal entry to apply manufacturing overhead to production.
8. Assume the ending raw materials inventory is $1,000 and the company does not use any indirect materials.
   Prepare a schedule of cost of goods manufactured.
9. Prepare the journal entry to transfer costs from Work in Process to Finished Goods.
10. Prepare a completed Work in Process T-account including the beginning and ending balances and all debits and credits posted to the account.
11. Prepare a schedule of cost of goods sold. (Stop after computing the unadjusted cost of goods sold.)
12. Prepare the journal entry to transfer costs from Finished Goods to Cost of Goods Sold.
13. What is the amount of underapplied or overapplied overhead?
14. Prepare the journal entry to close the amount of underapplied or overapplied overhead to Cost of Goods Sold.
15. Assume that Job P includes 20 units that each sell for $3,000 and that the company’s selling and administrative expenses in March were $14,000. Prepare an absorption costing income statement for March.

**EXERCISE 2–1 Compute the Predetermined Overhead Rate [LO1]**

Logan Products computes its predetermined overhead rate annually on the basis of direct labor-hours. At the beginning of the year, it estimated that 40,000 direct labor-hours would be required for the period’s estimated level of production. The company also estimated $466,000 of fixed manufacturing overhead expenses for the coming period and variable manufacturing overhead of $3.00 per direct labor-hour. Logan’s actual manufacturing overhead for the year was $713,400 and its actual total direct labor was 41,000 hours.

**Required:**
Compute the company’s predetermined overhead rate for the year.
EXERCISE 2–2 Apply Overhead [LO2]
Westan Corporation uses a predetermined overhead rate of $23.10 per direct labor-hour. This predetermined rate was based on a cost formula that estimated $277,200 of total manufacturing overhead for an estimated activity level of 12,000 direct labor-hours.
The company incurred actual total manufacturing overhead costs of $266,000 and 12,600 total direct labor-hours during the period.

Required:
Determine the amount of manufacturing overhead that would have been applied to all jobs during the period.

EXERCISE 2–3 Computing Job Costs [LO3]
Weaver Company's predetermined overhead rate is $18.00 per direct labor-hour and its direct labor wage rate is $12.00 per hour. The following information pertains to Job A-200:

<table>
<thead>
<tr>
<th>Direct materials</th>
<th>$200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct labor</td>
<td>$120</td>
</tr>
</tbody>
</table>

Required:
1. What is the total manufacturing cost assigned to Job A-200?
2. If Job A-200 consists of 50 units, what is the average cost assigned to each unit included in the job?

EXERCISE 2–4 Prepare Journal Entries [LO4]
Kirkaid Company had the following transactions for the just completed month.

a. $86,000 in raw materials were purchased on account.
b. $84,000 in raw materials were requisitioned for use in production. Of this amount, $72,000 was for direct materials and the remainder was for indirect materials.
c. Total labor wages of $108,000 were incurred. Of this amount, $105,000 was for direct labor and the remainder was for indirect labor.
d. Additional manufacturing overhead costs of $197,000 were incurred.

Required:
Record the above transactions in journal entries.

EXERCISE 2–5 Prepare T-Accounts [LO5, LO7]
Granger Products had the following transactions for the just completed month. The company had no beginning inventories.

a. $75,000 in raw materials were purchased for cash.
b. $73,000 in raw materials were requisitioned for use in production. Of this amount, $67,000 was for direct materials and the remainder was for indirect materials.
c. Total labor wages of $152,000 were incurred and paid. Of this amount, $134,000 was for direct labor and the remainder was for indirect labor.
d. Additional manufacturing overhead costs of $126,000 were incurred and paid.
e. Manufacturing overhead costs of $178,000 were applied to jobs using the company's predetermined overhead rate.
f. All of the jobs in progress at the end of the month were completed and shipped to customers.
g. Any underapplied or overapplied overhead for the period was closed out to Cost of Goods Sold.

Required:
1. Post the above transactions to T-accounts.
2. Determine the cost of goods sold for the period.

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Parmitan Corporation has provided the following data concerning last month's manufacturing operations.

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Purchases of raw materials</td>
<td>$53,000</td>
</tr>
<tr>
<td>Indirect materials included in manufacturing overhead</td>
<td>$8,000</td>
</tr>
<tr>
<td>Direct labor</td>
<td>$62,000</td>
</tr>
<tr>
<td>Manufacturing overhead applied to work in process</td>
<td>$41,000</td>
</tr>
<tr>
<td>Underapplied overhead</td>
<td>$8,000</td>
</tr>
</tbody>
</table>
EXERCISE 2–7 Underapplied and Overapplied Overhead [LO7]
Cretin Enterprises uses a predetermined overhead rate of $21.40 per direct labor-hour. This predetermined rate was based on a cost formula that estimated $171,200 of total manufacturing overhead for an estimated activity level of 8,000 direct labor-hours.
The company incurred actual total manufacturing overhead costs of $172,500 and 8,250 total direct labor-hours during the period.
Required:
1. Determine the amount of underapplied or overapplied manufacturing overhead for the period.
2. Assuming that the entire amount of the underapplied or overapplied overhead is closed out to Cost of Goods Sold, what would be the effect of the underapplied or overapplied overhead on the company’s gross margin for the period?

The following data from the just completed year are taken from the accounting records of Eccles Company:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$643,000</td>
</tr>
<tr>
<td>Direct labor cost</td>
<td>$90,000</td>
</tr>
<tr>
<td>Raw material purchases</td>
<td>$132,000</td>
</tr>
<tr>
<td>Selling expenses</td>
<td>$100,000</td>
</tr>
<tr>
<td>Administrative expenses</td>
<td>$43,000</td>
</tr>
<tr>
<td>Manufacturing overhead applied to work in process</td>
<td>$210,000</td>
</tr>
<tr>
<td>Actual manufacturing overhead costs</td>
<td>$220,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Inventories:</th>
<th>Beginning of Year</th>
<th>End of Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw materials</td>
<td>$8,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>Work in process</td>
<td>$5,000</td>
<td>$20,000</td>
</tr>
<tr>
<td>Finished goods</td>
<td>$70,000</td>
<td>$25,000</td>
</tr>
</tbody>
</table>

Required:
1. Prepare a schedule of cost of goods manufactured. Assume all raw materials used in production were direct materials.
2. Prepare a schedule of cost of goods sold.
3. Prepare an income statement.
EXERCISE 2–9 **Apply Overhead to a Job** [LO2]

Winston Company applies overhead cost to jobs on the basis of direct labor cost. Job X, which was started and completed during the current period, shows charges of $18,000 for direct materials, $10,000 for direct labor, and $15,000 for overhead on its job cost sheet. Job Q, which is still in process at year-end, shows charges of $20,000 for direct materials, and $8,000 for direct labor.

**Required:**

Should any overhead cost be added to Job Q at year-end? If so, how much? Explain.

EXERCISE 2–10 **Applying Overhead; Computing Unit Product Cost** [LO2, LO3]

A company assigns overhead cost to completed jobs on the basis of 120% of direct labor cost. The job cost sheet for Job 413 shows that $12,000 in direct materials has been used on the job and that $8,000 in direct labor cost has been incurred. A total of 200 units were produced in Job 413.

**Required:**

What is the total manufacturing cost assigned to Job 413? What is the unit product cost for Job 413?

EXERCISE 2–11 **Journal Entries and T-Accounts** [LO2, LO4, LO5]

Foley Company uses a job-order costing system. The following data relate to the month of October, the first month of the company's fiscal year:

- a. Raw materials purchased on account, $210,000.
- b. Raw materials issued to production, $190,000 (80% direct and 20% indirect).
- c. Direct labor cost incurred, $49,000; and indirect labor cost incurred, $21,000.
- d. Depreciation recorded on factory equipment, $105,000.
- e. Other manufacturing overhead costs incurred during October, $130,000 (credit Accounts Payable).
- f. The company applies manufacturing overhead cost to production on the basis of $4 per machine-hour. A total of 75,000 machine-hours were recorded for October.
- g. Production orders costing $510,000 according to their job cost sheets were completed during October and transferred to Finished Goods.
- h. Production orders that had cost $450,000 to complete according to their job cost sheets were shipped to customers during the month. These goods were sold on account at 50% above cost.

**Required:**

1. Prepare journal entries to record the information given above.
2. Prepare T-accounts for Manufacturing Overhead and Work in Process. Post the relevant information above to each account. Compute the ending balance in each account, assuming that Work in Process has a beginning balance of $35,000.

EXERCISE 2–12 **Computing Predetermined Overhead Rates and Job Costs** [LO1, LO2, LO3, LO7]

Kody Corporation uses a job-order costing system with a plantwide overhead rate based on machinehours. At the beginning of the year, the company made the following estimates:

| Machine-hours required to support estimated production | 150,000 |
| Fixed manufacturing overhead cost | $750,000 |
| Variable manufacturing overhead cost per machine-hour | $4.00 |

**Required:**

1. Compute the predetermined overhead rate.
2. During the year Job 500 was started and completed. The following information was available with respect to this job:

- Direct materials requisitioned: $350
- Direct labor cost: $230
- Machine-hours used: 30

Compute the total manufacturing cost assigned to Job 500.
3. During the year the company worked a total of 147,000 machine-hours on all jobs and incurred actual manufacturing overhead costs of $1,325,000. What is the amount of underapplied or overapplied overhead for the year? If this amount were closed out entirely to Cost of Goods Sold, would the journal entry increase or decrease net operating income?