Module 17 Class Exercises

M17-15. Developing and Using a Predetermined Overhead Rate (LO2) Assume that the following predictions were made for 2012 for one of the plants of Milliken & Company:

Total manufacturing overhead for the year ......................... $40,000,000
Total machine hours for the year ................................. 2,000,000

Actual results for February 2012 were as follows:
Manufacturing overhead ........................................ $5,520,000
Machine hours ...................................................... 310,000

Required
a. Determine the 2012 predetermined overhead rate per machine hour.

\[
\frac{40,000,000}{2,000,000} = \$20
\]

b. Using the predetermined overhead rate per machine hour, determine the manufacturing overhead applied to Work-in-Process during February.

\[
310,000 \times 20 = 6,200,000
\]

c. As of February 1, actual overhead was underapplied by $400,000. Determine the cumulative amount of any overapplied or underapplied overhead at the end of February.

\[
\begin{align*}
\text{Actual} & \quad +5,520,000 \\
\text{Applied} & \quad -6,200,000 \\
\text{Credit} & \quad -280,000
\end{align*}
\]
E17-26. Manufacturing Cost Flows with Machine Hours Allocation (LO4) On November 1, 2012, Robotics Mfg. had balances in its accounts as below. During November, Robotics Manufacturing completed the following manufacturing transactions:
1. Purchased raw materials costing $58,000 and manufacturing supplies costing $3,000 on account.
2. Requisitioned raw materials costing $40,000 to the factory.
3. Incurred direct labor costs of $27,000 and indirect labor costs of $4,800.
4. Used manufacturing supplies costing $3,000.
5. Recorded manufacturing depreciation of $15,000.
7. Applied manufacturing overhead, based on 2,250 machine hours, at a predetermined rate of $10 per machine hour.  2250x10 = 22,500
8. Completed jobs costing $85,000.
9. Finished goods costing $96,000 were sold.

Required: Complete the “T-Accounts” below.

<table>
<thead>
<tr>
<th>Raw Materials</th>
<th>Work in Process</th>
<th>Finished Goods</th>
<th>Cost of Goods Sold</th>
</tr>
</thead>
<tbody>
<tr>
<td>$9,000</td>
<td>$5,000</td>
<td>$25,000</td>
<td></td>
</tr>
<tr>
<td>$82,000</td>
<td>DL 27,000</td>
<td>$85,000</td>
<td></td>
</tr>
<tr>
<td>27,000</td>
<td>OH 12,500</td>
<td></td>
<td>22,500</td>
</tr>
<tr>
<td>$500</td>
<td></td>
<td>$500</td>
<td></td>
</tr>
<tr>
<td>$40,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>27,000</td>
<td></td>
<td></td>
<td>27,000</td>
</tr>
<tr>
<td>4,800</td>
<td></td>
<td></td>
<td>4,800</td>
</tr>
<tr>
<td>$500</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3,000</td>
<td></td>
<td></td>
<td>3,000</td>
</tr>
<tr>
<td>3,600</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Accounts Payable</th>
<th>Wages Payable</th>
<th>Accum. Depreciation</th>
</tr>
</thead>
<tbody>
<tr>
<td>61,000</td>
<td>27,000</td>
<td>15,000</td>
</tr>
<tr>
<td></td>
<td>4,800</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3,000</td>
<td>2,250</td>
</tr>
<tr>
<td></td>
<td>3,600</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Miscellaneous Payables</th>
</tr>
</thead>
<tbody>
<tr>
<td>3,600</td>
</tr>
</tbody>
</table>
E17-25. Developing and Using a Predetermined Overhead Rate: High-Low Cost Estimation (LO2)

For years, Daytona Parts Company has used an actual plantwide overhead rate and based its prices on cost plus a markup of 25 percent. Recently the marketing manager, Jan Arton, expressed a concern that Daytona's prices seem to vary widely throughout the year. According to Arton, "It seems irrational to charge higher prices when business is bad and lower prices when business is good. While we get a lot of business during high-volume months because we charge less than our competitors, it is a waste of time to even call on customers during low-volume months because we are raising prices while our competitors are lowering them."

Required

a. Assume that the Daytona Parts Company had the following total manufacturing overhead costs and direct labor hours in 2010 and 2011:

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total manufacturing overhead</td>
<td>$200,000</td>
<td>$237,500</td>
</tr>
<tr>
<td>Direct labor hours</td>
<td>20,000</td>
<td>27,500</td>
</tr>
</tbody>
</table>

Use the high-low method to develop a cost estimating equation for total manufacturing overhead:

\[
VC = \frac{(237,500 \ - \ 200,000)}{27,500 \ - \ 20,000} = \$5 \quad FC = 100,000 - 5 * 20,000
\]

b. Develop a predetermined rate for 2012, assuming 25,000 direct labor hours are budgeted for 2012.

\[
100,000 + 25,000 * 5 = \frac{225,000}{25,000} = \$9
\]

c. Assume that the actual level of activity in 2012 was 30,000 direct labor hours and that the total 2012 manufacturing overhead was $250,000. Determine the underapplied or overapplied manufacturing overhead at the end of 2012. How will this difference be accounted for?

\[
\text{Actual OHs} - \text{Actual Hrs} = \frac{250,000}{270,000} = \$9 \times 30,000 = -\$20,000
\]
Module 17 Review Questions

1. Of the following statements, which is NOT true concerning indirect costs?
   a. T An allocation rate for an indirect cost is determined by dividing the total cost to be allocated by an appropriate cost driver.
   b. T An indirect cost is a cost that cannot easily be traced to a cost object.
   c. T The economic sacrifice to trace an indirect cost is generally not worth the informational benefits derived therefrom.
   d. F An indirect cost may be fixed but cannot be variable.
   e. T The indirect costs of production are called Manufacturing overhead.

2. Which of the following accounts results in recording an expense when its asset account is reduced in the accounting system?
   A) Raw materials
   B) Work in process
   C) Finished goods inventory
   D) Cost of goods sold

3. Logan Corporation has 30 employees, 10 in "A-line," and 20 in "B-line." Logan incurred $180,000 in fringe benefits costs last year. How much in fringe benefit costs should be allocated to "A-line"?
   a. $60,000
   b. $120,000
   c. $180,000
   d. $90,000
   e. $3,000

4. Employees of DTI, Inc. worked 1,600 direct labor hours in January and 1,000 direct labor hours in February. DTI expects to use 18,000 direct labor hours during the year, and expects to incur $22,500 of Worker's Compensation insurance cost for the year. The cash payment for this cost will be paid in April. How much insurance premium should be allocated to products made in January and February?
   a. $7,200; $5,500
   b. $2,000; $1,250
   c. $4,000; $2,500
   d. $2,000; $5,500
   e. $2,000; $2,500

5. Costs that can be traced to objects in a cost-effective manner are called
   a. allocated costs.
   b. conversion costs.
   c. direct costs.
   d. indirect costs.
Exercise  The Tabor Co. produces 3 products with the following information for March:

<table>
<thead>
<tr>
<th></th>
<th>Product 1</th>
<th>Product 2</th>
<th>Product 3</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Material Cost</td>
<td>$25,000</td>
<td>$30,000</td>
<td>$35,000</td>
<td>$90,000</td>
</tr>
<tr>
<td>Direct Labor Cost</td>
<td>$30,000</td>
<td>$40,000</td>
<td>$50,000</td>
<td>$120,000</td>
</tr>
<tr>
<td>Direct Labor Hours</td>
<td>1,500</td>
<td>2,000</td>
<td>2,500</td>
<td>6,000 hours</td>
</tr>
</tbody>
</table>

Factory overhead is estimated to be $60,000 and is applied based on direct labor dollars. This overhead cost is not traceable to any particular product. The total cost for product 1 is:

\[
\text{DM} \quad \frac{25,000}{150,000} \quad \frac{60,000}{6,000} = 10
\]

Exercise  Employees of DTI, Inc. worked 1,600 direct labor hours in January and 1,000 direct labor hours in February. DTI expects to use 18,000 direct labor hours during the year, and expects to incur $22,500 of Worker’s Compensation insurance cost for the year. The cash payment for this cost will be paid in April. How much insurance premium should be allocated to products made in January and February?

See mc # 4