

TB Problem Qu. 2-281 (Algo) Harnett Corporation has two manufacturing...

Harnett Corporation has two manufacturing departments--Molding and Assembly. The company used the following data at the beginning of the period to calculate predetermined overhead rates:

	Molding	Assembly	Total
Estimated total machine-hours (MHs)	4,000	6,000	10,000
Estimated total fixed manufacturing overhead cost	\$20,400	\$37,800	\$58,200
Estimated variable manufacturing overhead cost per MH	\$ 3.00	\$ 6.00	

During the period, the company started and completed two jobs--Job E and Job M. Data concerning those two jobs follow:

	Job E	Job M
Direct materials	\$ 13,700	\$ 8,000
Direct labor cost	\$ 21,200	\$ 8,100
Molding machine-hours	2,500	1,500
Assembly machine-hours	2,500	3,500

Required:

a. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate that overhead rate. (Round your answer to 2 decimal places.)

	MOLDING	ASSEMBLY
Est. FMOH	20,400	37,800
Est VMOH	$(\$3 \times 4000)$ MHs	$(\$6 \times 6000)$ MHs
Est MOH	$\$32,400$	$\$73,800$

$\$32,400 + \$73,800 = \$106,200$ / Total 10,000 MHs = $\$10.62$ per MH

b. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate the amount of manufacturing overhead applied to Job E. (Do not round intermediate calculations.)

PPMOHR $\$10.62$ per MH \times (2500 Molding + 2500 Assembly) = $\underline{\underline{\$53,100}}$ OH applied to Job E.

c. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours. Calculate the total manufacturing cost assigned to Job E. (Do not round intermediate calculations.)

Job E	
DM	\$ 13,700
DL	21,200
MOH	53,100
Total Mfg Cost.	<u><u>88,000</u></u>

d. Assume that the company uses a plantwide predetermined manufacturing overhead rate based on machine-hours and uses a markup of 80% on manufacturing cost to establish selling prices. Calculate the selling price for Job E. (Do not round intermediate calculations.)

$$\begin{array}{l} \text{Total} \\ \text{Mfg} \\ \text{Cost} \end{array} \quad \$88,000 \times 1.80 = \$158,400$$

Selling Price
for Job E.

e. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both departments. What is the departmental predetermined overhead rate in the Molding department? (Round your answer to 2 decimal places.)

$$\begin{array}{l} \text{Est. FMOH} \quad \$20,400 \\ \text{Est. VMOH} \quad \underline{12,000} \quad (\$3/\text{MH} \times 4,000 \text{ Mths}) \\ \text{Est. MOH} \quad \$32,400 \\ \text{Est Total Mths} \quad \div 4,000 \text{ Mths} \\ \text{Dept OH rate} \quad \underline{\underline{\$8.10 \text{ per MH.}}} \end{array}$$

f. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. What is the departmental predetermined overhead rate in the Assembly department? (Round your answer to 2 decimal places.)

$$\begin{array}{l} \text{Est. FMOH} \quad \$37,800 \\ \text{Est. VMOH} \quad \underline{36,000} \quad (\$6/\text{MH} \times 6,000 \text{ Mths}) \\ \quad \quad \quad \$73,800 \\ \quad \quad \quad \div 6,000 \text{ MH.} \\ \quad \quad \quad \underline{\underline{\$12.30 \text{ per MH}}} \end{array}$$

g. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. How much manufacturing overhead will be applied to Job E? (Do not round intermediate calculations.)

<u>Job E</u>	
Molding	$\$8.10/\text{MH} \times 2,500 \text{ Mths} = \$20,250$
Assembly	$\$12.30/\text{MH} \times 2,500 \text{ Mths} = \underline{\underline{\$30,750}}$
Total MOH applied to Job E	$\underline{\underline{\$51,000}}$

h. Assume that the company uses departmental predetermined overhead rates with machine-hours as the allocation base in both production departments. Further assume that the company uses a markup of 80% on manufacturing cost to establish selling prices. Calculate the selling price for Job E. (Do not round intermediate calculations.)

DM	\$13,700
DL	21,200
MOH	<u>51,000</u>
Total Mfg Cost	$\$85,900 \times 1.80 = \underline{\underline{\$154,620}}$
	(80% Markup)

Explanation:

a. The first step is to calculate the estimated total overhead costs in the two departments.

Molding

Estimated fixed manufacturing overhead	\$20,400
Estimated variable manufacturing overhead (\$3.00 per MH × 4,000 MHs)	<u>12,000</u>
Estimated total manufacturing overhead cost	<u>\$32,400</u>

Assembly

Estimated fixed manufacturing overhead	\$37,800
Estimated variable manufacturing overhead (\$6.00 per MH × 6,000 MHs)	<u>36,000</u>
Estimated total manufacturing overhead cost	<u>\$73,800</u>

The second step is to combine the estimated manufacturing overhead costs in the two departments (\$32,400 + \$73,800 = \$106,200) to calculate the plantwide predetermined overhead rate as follow:

Estimated total manufacturing overhead cost	\$106,200
Estimated total machine hours	10,000 MHs
Predetermined overhead rate	\$ 10.62 per MH

b. The overhead applied to Job E is calculated as follows:

Overhead applied to a particular job = Predetermined overhead rate × Machine-hours incurred by the job

= \$10.62 per MH × (2,500 MHs + 2,500 MHs)

= \$10.62 per MH × (5,000 MHs)

= \$53,100

c. Job E's manufacturing cost:

Direct materials	\$ 13,700
Direct labor cost	21,200
Manufacturing overhead applied	<u>53,100</u>
Total manufacturing cost	<u>\$ 88,000</u>

d. The selling price for Job E:

Total manufacturing cost	\$ 88,000
Markup (80%)	<u>70,400</u>
Selling price	<u>\$158,400</u>

e. Molding Department predetermined overhead rate:

Estimated fixed manufacturing overhead	\$20,400
Estimated variable manufacturing overhead (\$3.00 per MH × 4,000 MHs)	<u>12,000</u>
Estimated total manufacturing overhead cost (a)	\$32,400
Estimated total machine-hours (b)	4,000 MHs
Departmental predetermined overhead rate (a) ÷ (b)	\$ 8.10 per MH

f. Assembly Department predetermined overhead rate:

Estimated fixed manufacturing overhead	\$37,800
Estimated variable manufacturing overhead (\$6.00 per MH × 6,000 MHs)	<u>36,000</u>
Estimated total manufacturing overhead cost (a)	\$73,800
Estimated total machine-hours (b)	6,000 MHs
Departmental predetermined overhead rate (a) ÷ (b)	\$ 12.30 per MH

g. Manufacturing overhead applied to Job E:

Molding (\$8.10 per MH × 2,500 MHs)	\$20,250
Assembly (\$12.30 per MH × 2,500 MHs)	<u>30,750</u>
Total manufacturing overhead applied	<u>\$51,000</u>

h. The selling price for Job E would be calculated as follows:

Direct materials	\$ 13,700
Direct labor cost	21,200
Manufacturing overhead applied	<u>51,000</u>
Total manufacturing cost	\$ 85,900
Markup (80%)	<u>68,720</u>
Selling price	<u>\$ 154,620</u>

References

Worksheet

Learning Objective: 02-01 Compute a predetermined overhead rate.

Learning Objective: 02-04 Compute the total cost and the unit product cost of a job using multiple predetermined overhead rates.

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Learning Objective: 02-02 Apply overhead cost to jobs using a predetermined overhead rate.

Difficulty: 2 Medium

Learning Objective: 02-03 Compute the total cost and the unit product cost of a job using a plantwide predetermined overhead rate.