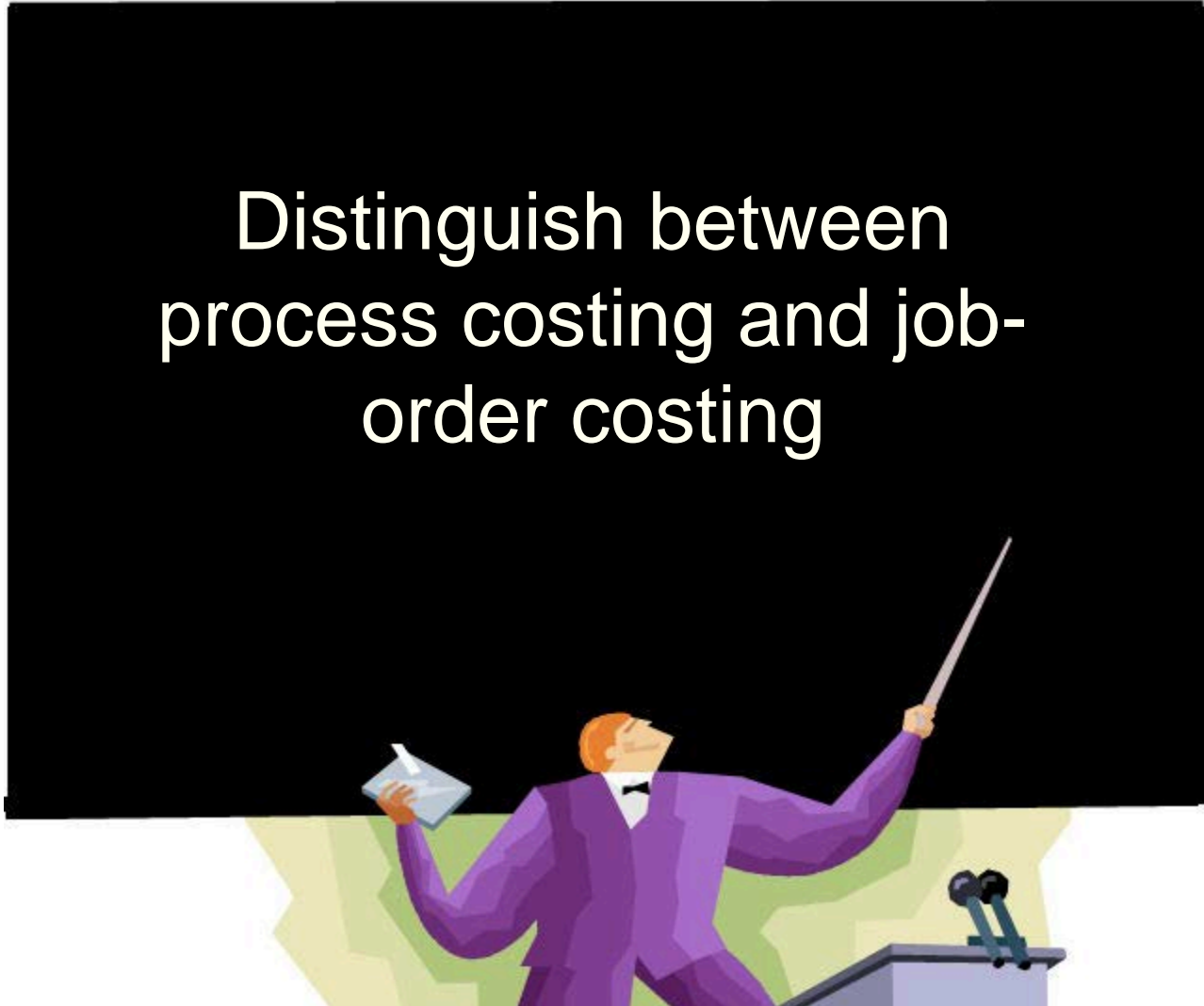


Job-Order Costing

Chapters 2 & 3

Learning Objective 1

Distinguish between
process costing and job-
order costing



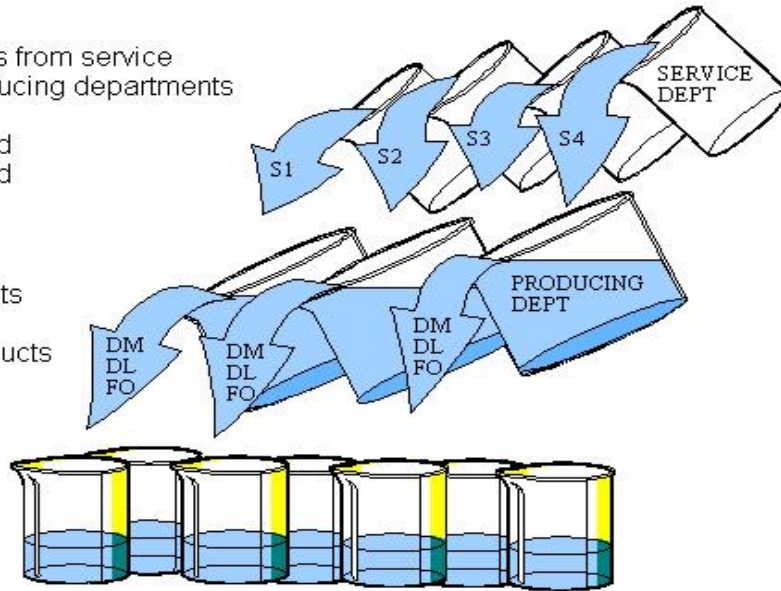
For Job-order costing method and Process costing method: we are learning the methods for **Stage 2** in the picture.

Stage I: Assign costs from service departments to producing departments

1. Direct method
2. Step-down method
3. Reciprocal method

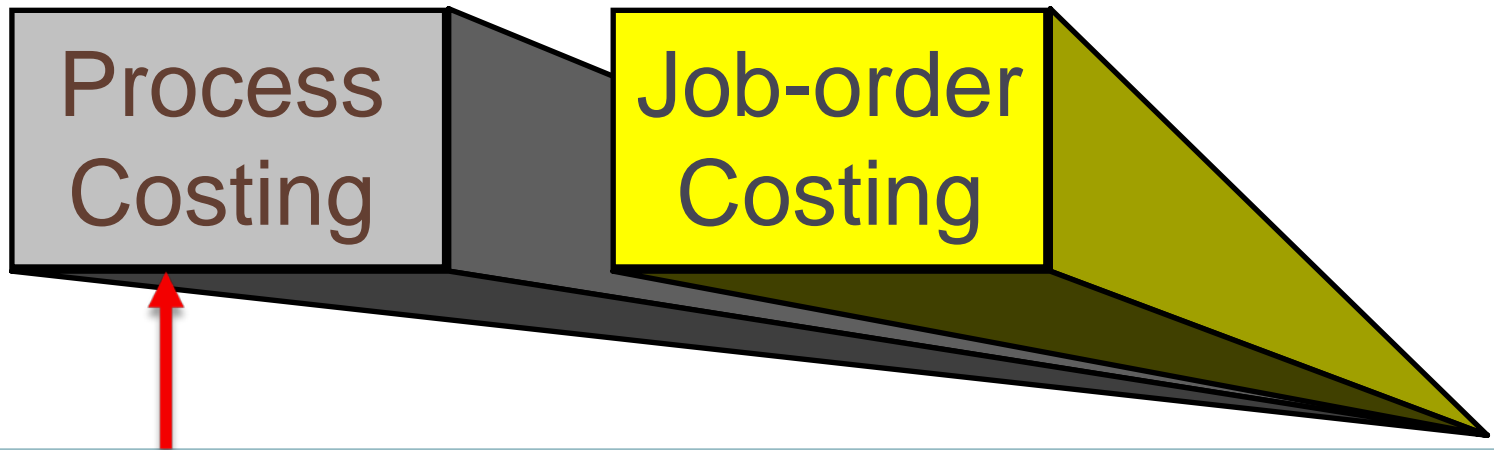
Stage 2: Assign costs from producing departments to products

Products



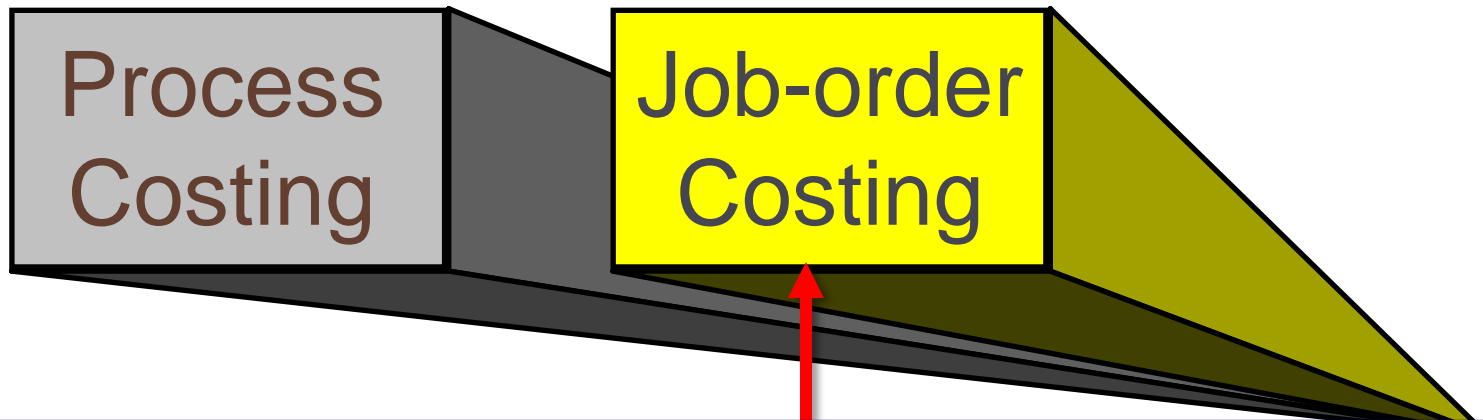
- Both job-order costing and process-costing methods are under absorption costing system;
- all manufacturing costs, both fixed and variable (including fixed MOH), are assigned/allocated to units of products
- therefore, both costing methods are acceptable under GAAP (i.e., for external reporting).

Types of Product Costing Systems



- ❖ A company makes a single product.
- ❖ Each unit of product is indistinguishable from other units.
- ❖ The identical nature of each unit of product enables the assignment of the same average cost per unit.
- ❖ Examples:
 1. Asia Pulp & Paper (paper manufacturing)
 2. Kang-shi-fu (Instant Noodle Producer)
 3. Coca-Cola (mixing and bottling beverages)

Types of Product Costing Systems



- ❖ Many different products are manufactured each period.
- ❖ Products are manufactured by the orders of jobs.
- ❖ The unique nature of each order requires tracing or allocating costs to each job, and maintaining cost records for each job.
- ❖ Examples:
 1. Hospitals
 2. Advertising agencies, Law firm, CPA firm, consulting firm
 3. Movie making; Airplanes

Comparison b/w Process Costing and Job-Order Costing

	Job-Order	Process
Number of jobs worked	Many	Single Product
Cost accumulated by	Individual Job	Department or Process
Average cost computed by	Job	Department or Process

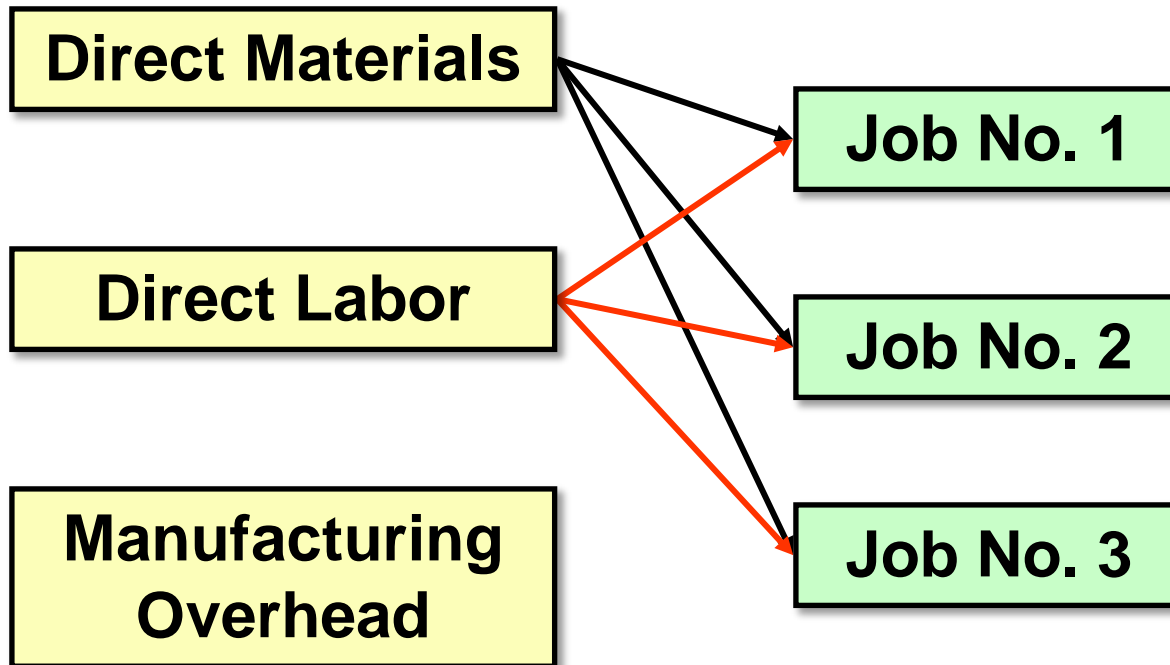


Learning Objective 2

Compute predetermined overhead rates and explain why estimated overhead costs (rather than actual overhead costs) are used in the costing process.



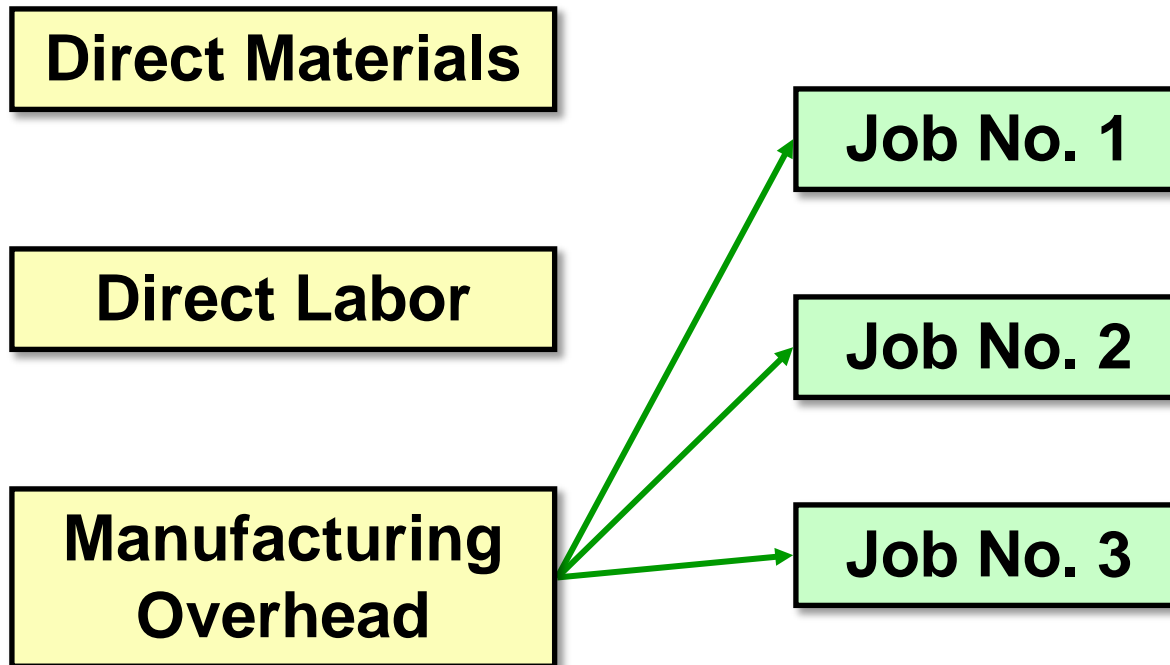
Job-Order Costing – An Overview



Charge direct materials and direct labor costs to each job as work is performed.

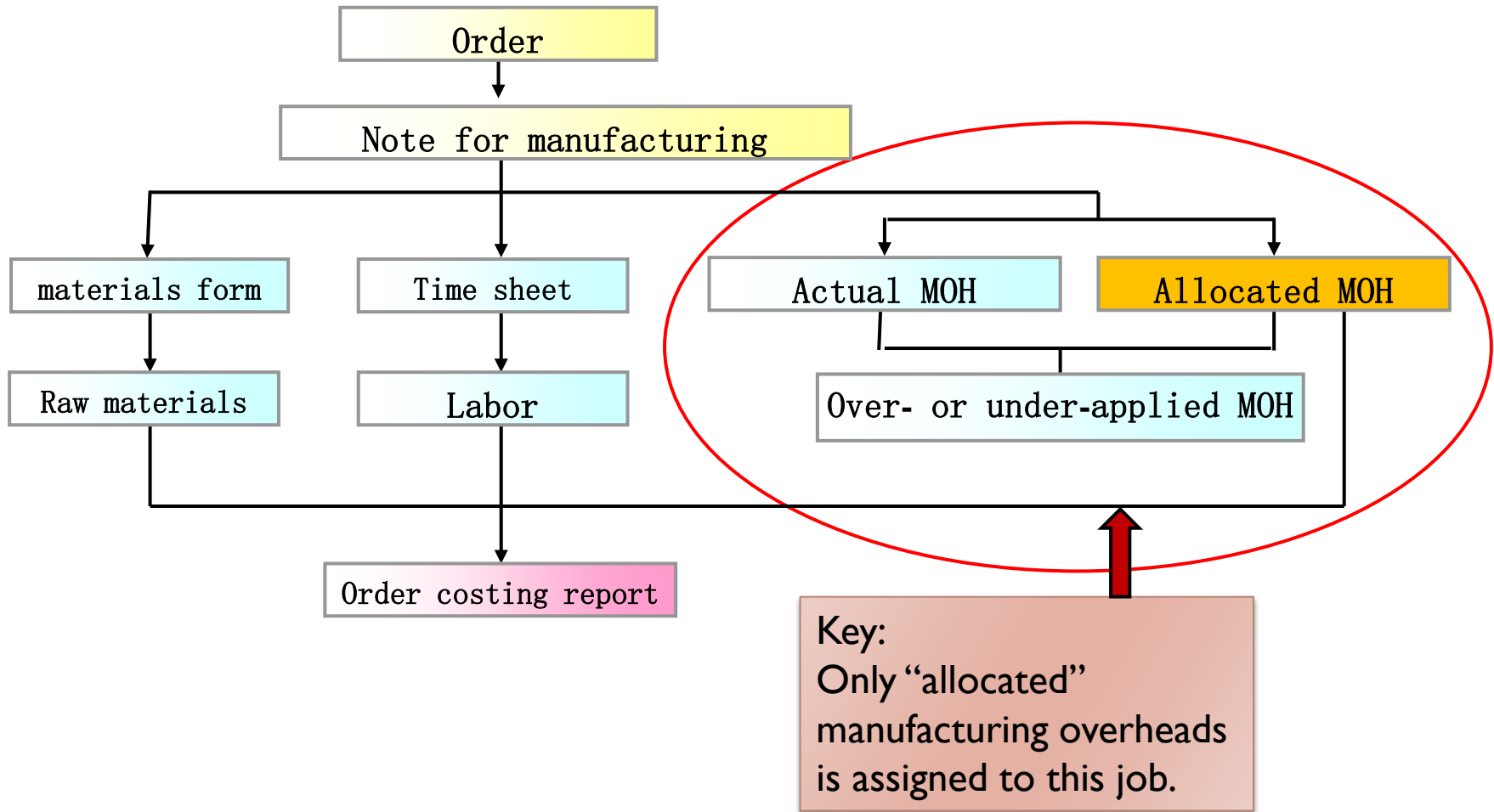
Indirect Manufacturing Costs (MOH)

All costing methods are developed for the assignment of MOH to products.



Manufacturing Overhead, including *indirect materials* and *indirect labor*, are assigned to all jobs rather than directly traced to each job.

Detailed procedures



Why Use an Allocation Base?

Manufacturing overhead is applied to jobs that are in process. An allocation base, such as direct labor hours, direct labor dollars, or machine hours, is used to assign manufacturing overhead to individual jobs.

We use an allocation base because:

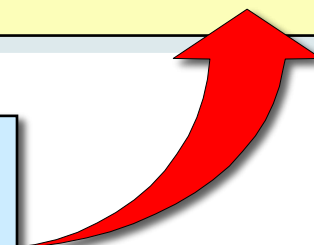
1. It is impossible or difficult to trace overhead costs to particular jobs.
2. Manufacturing overhead consists of many different items ranging from the grease used in machines to production manager's salary.
3. Many types of manufacturing overhead costs are fixed even though the output fluctuates during the period.

Manufacturing Overhead Application

The predetermined overhead rate (**POHR**) used to apply the overhead costs to jobs is determined before the period begins.

$$\text{POHR} = \frac{\text{Estimated total manufacturing overhead cost for the coming period}}{\text{Estimated total units in the allocation base for the coming period}}$$

Ideally, the allocation base is a **cost driver** that causes overhead.



The Need for a POHR

Using a predetermined rate makes it possible to estimate total job costs sooner.



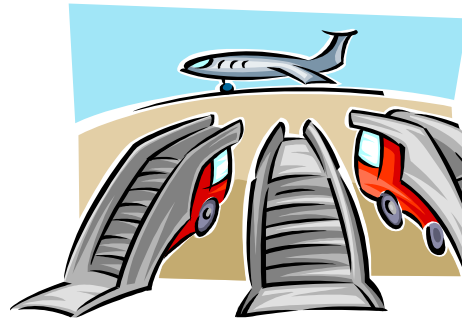
Actual overhead for the period is not known until the end of the period.

➤ Timeliness

- Managers will be held responsible for abnormal MOH: recognize the total of abnormal MOH as one-time charge to cost of goods sold or re-allocate it to other procedures (discussed later).

Determining Predetermined Overhead Rates

Predetermined overhead rates are calculated using a three-step process.



Attention:

③ Estimated total MOH is the sum of estimated fixed and estimated variable MOH

①

Estimate the level of production for the period.

②

Estimate total amount of the allocation base for the period.

③

Estimate total manufacturing overhead costs.

$$\text{POHR} = \textcircled{3} \div \textcircled{2}$$

$$\text{Overhead applied} = \text{POHR} \times \text{Actual activity}$$

Plant-wide vs. Departmental POHR

Read the following comprehensive exercise (E2-15):

Delph Company uses a job-order costing system and has two manufacturing departments- Molding and Fabrication. The company has the following estimates at the beginning of the year:

	Molding	Fabrication	Total
Machine-hours	20,000	30,000	50,000
Fixed manufacturing overhead costs	\$700,000	\$210,000	\$910,000
Variable manufacturing overhead per machine-hour	\$3.00	\$3.00	

During the year, the company had no beginning or ending inventories and it started, completed, and sold only two jobs – Job D-70 and Job C-200. It provides the following information related to those two jobs:

Plant-wide vs. Departmental POHR

Job D-70	Molding	Fabrication	Total
Direct materials cost	\$375,000	\$325,000	\$700,000
Direct labor cost	\$200,000	\$160,000	\$360,000
Machine-hours	14,000	6,000	20,000
Job C-200	Molding	Fabrication	Total
Direct materials cost	\$300,000	\$250,000	\$550,000
Direct labor cost	\$175,000	\$225,000	\$400,000
Machine-hours	6,000	24,000	30,000

In this case, actual hours = estimated hours (i.e., the hours number used for the calculation of predetermined rate of variable MOH) for both departments.

Also, assume that actual total MOH= estimated total MOH. Therefore, Delph had no over-applied or under-applied manufacturing overhead during the year.

We will learn about over- and under-applied overhead in the next section.

Plant-wide vs. Departmental POHR

Q1: Delph uses a plant-wide POHR based on machine-hour.

- (a) Compute the predetermined plantwide overhead rate.
- (b) Compute the total manufacturing costs assigned to these two jobs;
- (c) What is Delph's COGS for the year?

1(a):

Estimated fixed manufacturing overhead.....	\$ 910,000
Estimated variable manufacturing overhead: \$3.00 per MH × 50,000 MHs	<u>150,000</u>
Estimated total manufacturing overhead cost	<u><u>\$1,060,000</u></u>

The predetermined overhead rate is computed as follows:

Estimated total manufacturing overhead.....	\$1,060,000	
÷ Estimated total machine-hours (MHs).....	<u>50,000</u>	MHs
= Predetermined overhead rate	<u><u>\$21.20</u></u>	per MH

Answers

1b. Total manufacturing cost assigned to Jobs D-70 and C-200:

	<i>D-70</i>	<i>C-200</i>
Direct materials	\$700,000	\$550,000
Direct labor	360,000	400,000
Manufacturing overhead applied (\$21.20 per MH × 20,000 MHs; \$21.20 per MH × 30,000 MHs)	<u>424,000</u>	<u>636,000</u>
Total manufacturing cost	<u>\$1,484,000</u>	<u>\$1,586,000</u>

1C.

Because the company has no beginning or ending inventories and only Jobs D-70 and C-200 were started, completed, and sold during the year, the cost of goods sold is equal to the sum of the manufacturing costs assigned to both jobs of \$3,070,000 ($=\$1,484,000 + \$1,586,000$).

Plant-wide vs. Departmental POHR

Let's change the setting:

Q2: Delph uses a departmental POHR based on machine-hour.

- (a) Compute the predetermined departmental overhead rate.
- (b) Compute the total manufacturing costs assigned to these two jobs;
- (c) What is Delph's COGS for the year?

Answers

2(a): Molding department

Estimated fixed manufacturing overhead.....	\$700,000
Estimated variable manufacturing overhead: \$3.00 per MH × 20,000 MHs	<u>60,000</u>
Estimated total manufacturing overhead cost	<u>\$760,000</u>

The predetermined overhead rate is computed as follows:

Estimated total manufacturing overhead.....	\$760,000	
÷ Estimated total machine-hours	<u>20,000</u>	MHs
= Predetermined overhead rate	<u>\$38.00</u>	per MH

2(b): Fabrication department

Estimated fixed manufacturing overhead.....	\$210,000
Estimated variable manufacturing overhead: \$3.00 per MH × 30,000 MHs	<u>90,000</u>
Estimated total manufacturing overhead cost	<u>\$300,000</u>

The predetermined overhead rate is computed as follows:

Estimated total manufacturing overhead.....	\$300,000	
÷ Estimated total direct labor-hours	<u>30,000</u>	MHs
= Predetermined overhead rate	<u>\$10.00</u>	per MH

Answers

2b. Total manufacturing costs assigned to Jobs D-70 and C-200:

	<i>D-70</i>	<i>C-200</i>
Direct materials	\$700,000	\$550,000
Direct labor	360,000	400,000
Molding Department (14,000 MHs × \$38 per MH; 6,000 MHs × \$38 per MH)	532,000	228,000
Fabrication Department (6,000 MH × \$10 per MH; 24,000 MH × \$10 per MH)	<u>60,000</u>	<u>240,000</u>
Total manufacturing cost.....	<u>\$1,652,000</u>	<u>\$1,418,000</u>

2C.

Because the company has no beginning or ending inventories and only Jobs D-70 and C-200 were started, completed, and sold during the year, the cost of goods sold is equal to the sum of the manufacturing costs assigned to both jobs of \$3,070,000 ($=\$1,652,000 + \$1,418,000$).

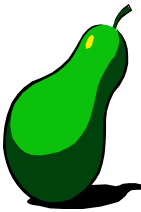
Learning Objective 3

Compute underapplied or overapplied overhead cost and prepare the journal entry to close the balance in Manufacturing Overhead to the appropriate accounts.



Overapplied or Underapplied overheads (OH)

- Actual OH may not equal to Applied OH (POHR x actual activity level).
 - **Actual OH > Applied OH: Underapplied.** It suggests that there are some real overheads that are NOT included in the product costing system; Therefore, **COGS would be understated**
 - **Actual OH < Applied OH: Overapplied.** It suggests that the product costing system includes overheads MORE than actual. Therefore, **COGS would be overstated**
- 2 Solutions :
 - Adjust to cost of goods sold
 - Prorate between Cost of Goods Sold, Work in Process Inventory, Finished Goods Inventory



Overhead Application Example

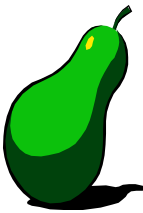
PearCo's *actual overhead* for the year was **\$650,000** with a total of **170,000** direct labor hours worked on jobs.

How much total overhead was applied to PearCo's jobs during the year? Use PearCo's predetermined overhead rate of \$4.00 per direct labor hour.

Overhead Applied During the Period

Applied Overhead = POHR × Actual Direct Labor Hours

Applied Overhead = \$4.00 per DLH × 170,000 DLH = **\$680,000**



Overhead Application Example

PearCo's **actual overhead** for the year was **\$650,000** with a total of **170,000** direct labor hours worked on jobs.

PearCo has **overapplied** overhead for the year by \$30,000. What will PearCo do?

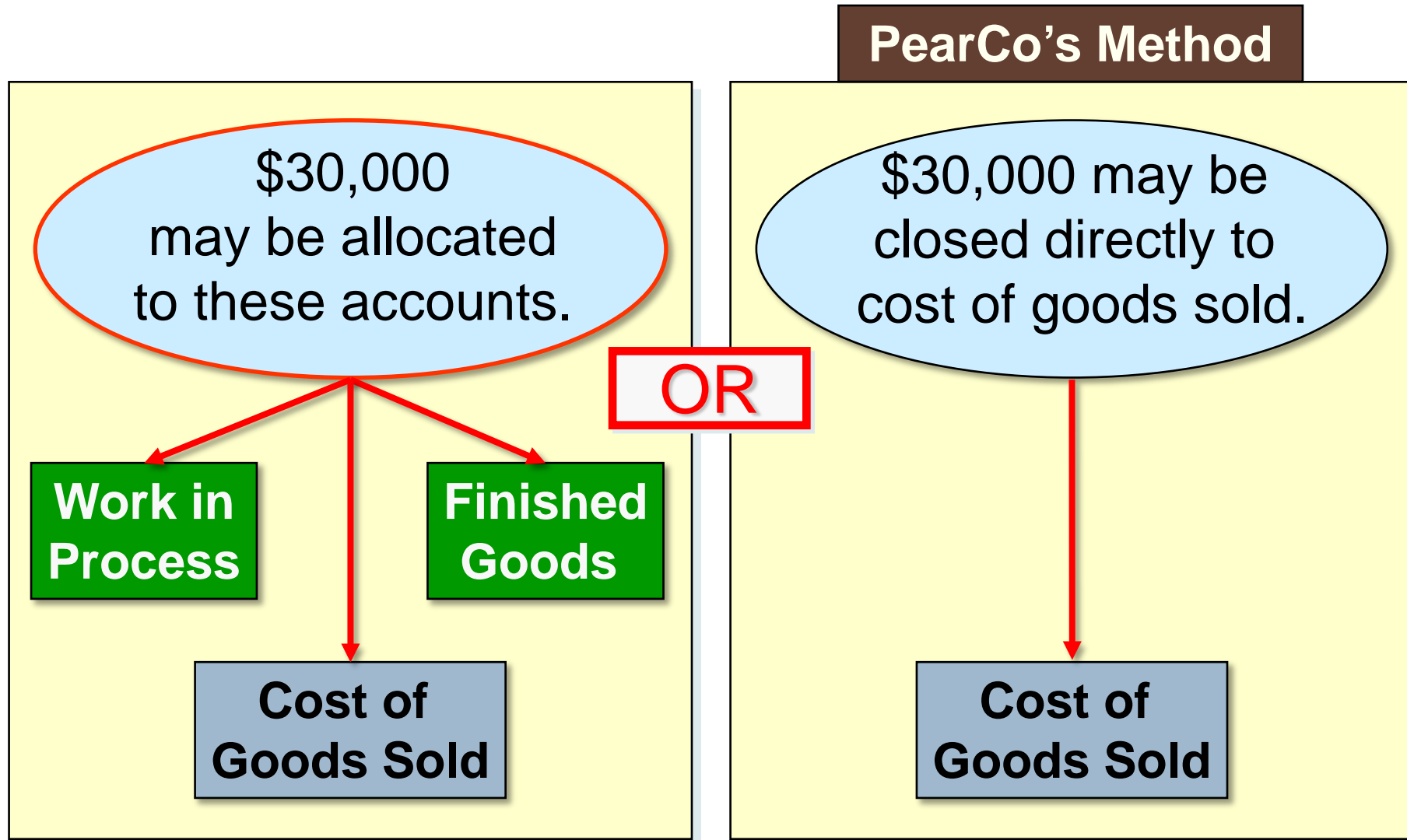


Period

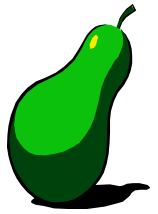
Applied Overhead = POHR × Actual Direct Labor Hours

Applied Overhead = \$4.00 per DLH × 170,000 DLH = \$680,000

Disposition of Under- or Overapplied Overhead



Allocating Under- or Overapplied Overhead Between Accounts



Assume the overhead applied in ending Work in Process Inventory, ending Finished Goods Inventory, and Cost of Goods Sold is shown below:

	Amount
Work in process	\$ 68,000
Finished Goods	204,000
Cost of Goods Sold	408,000
Total	<u>\$ 680,000</u>



Allocating Under- or Overapplied Overhead Between Accounts



We would complete the following allocation of \$30,000 overapplied overhead:

	Amount	Percent of Total	Allocation of \$30,000
Work in process	\$ 68,000	10%	\$ 3,000
Finished Goods	204,000	30%	9,000
Cost of Goods Sold	408,000	60%	18,000
Total	<u>\$ 680,000</u>	<u>100%</u>	<u>\$ 30,000</u>



$$10\% \times \$30,000$$

Allocating Under- or Overapplied Overhead Between Accounts



	Amount	Percent of Total	Allocation of \$30,000
Work in process	\$ 68,000	10%	\$ 3,000
Finished Goods	204,000	30%	9,000
Cost of Goods Sold	408,000	60%	18,000
Total	<u>\$ 680,000</u>	<u>100%</u>	<u>\$ 30,000</u>

GENERAL JOURNAL

Date	Description	Post. Ref.	Debit	Credit
	Manufacturing Overhead		30,000	
	Work in Process Inventory			3,000
	Finished Goods Inventory			9,000
	Cost of Goods Sold			18,000

In-class exercise: P2-19



End of Chapters 2 & 3