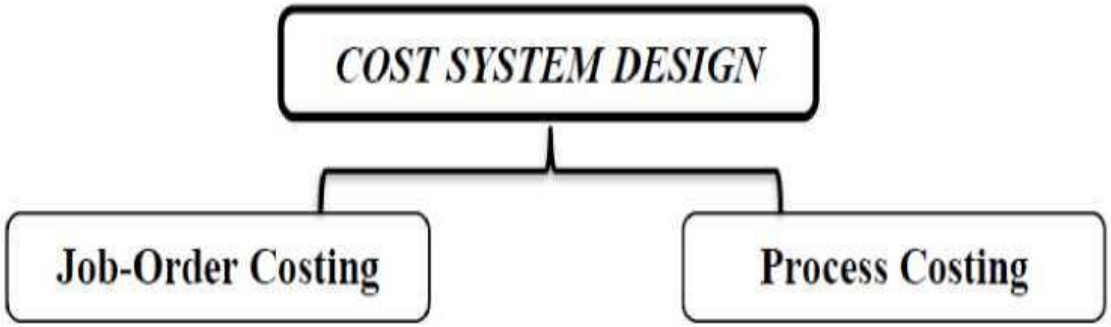
COST SYSTEM DESIGN

Cost is an analytical and detailed accounting branch dealing with the accounting measurement function for measuring, analyzing and reporting the cost per unit as well as the total costs. Based on classification of cost elements, determining the fixed & variable costs and determining direct and indirect costs.



The ***job-order costing system*** is used in situations where many different products are produced each period. Products are made based on specific customer orders. Each product group produced is considered as a job.

$$\text{Unit product cost of a Job} = \frac{\text{Total manufacturing cost of the Job}}{\text{Total units produced of the Job}}$$

PROCESS COSTING SYSTEM

Process costing system is used when there is mass production of similar products, where the costs associated with individual units of output cannot be differentiated from each other. In other words, the cost of each product produced is assumed to be the same as the cost of every other product.

Some companies have homogeneous or very similar products that are not made to order and are produced in large volumes. They continually process their product, moving it from one function to the next until it is completed.

In these companies, the manufacturing costs incurred are allocated to the proper functions or departments within the factory process rather than to specific products.

Under this system, each department is assigned a cost centre. That means product costs are tracked by department rather than by job.

Examples of products that companies produce continuously are cement, steel, automotive parts, chips, sugar, and computers. Companies that refine oil or bottle drinks and companies that provide services such as mail sorting and catalogue order are also examples of continuous, homogeneous processing.

Cost Flows in Process Costing

Processing Departments:

A processing department is an organizational unit where work is performed on a product and where materials, labor, or overhead costs are added to the product.

For example: a Nalley's potato chip factory might have three processing departments—one for preparing potatoes, one for cooking, and one for inspecting and packaging.

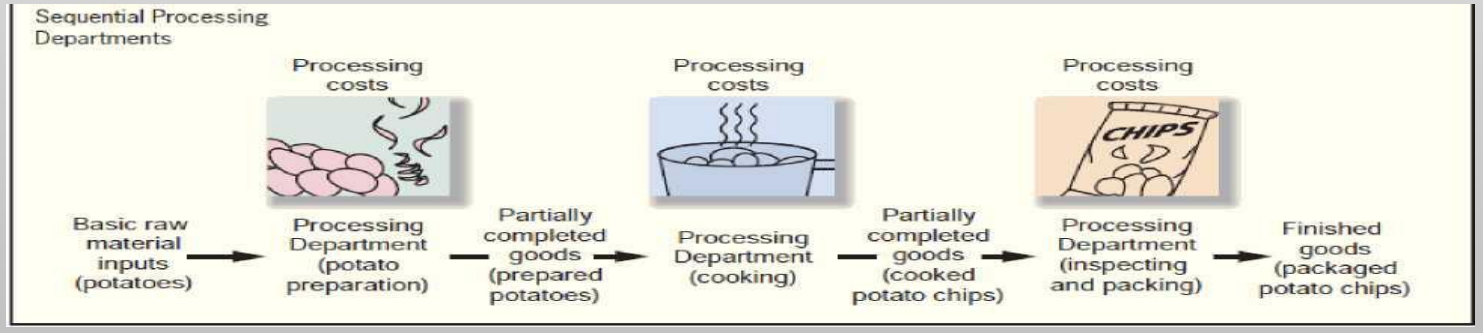
A brick factory might have two processing departments—one for mixing and molding clay into brick form and one for fi ring the molded brick.

Some products and services may go through a number of processing departments, while others may go through only one or two.

Regardless of the number of processing departments, they all have two essential features.

First, the activity in the processing department is performed uniformly on all of the units passing through it.

Second, the output of the processing department is homogeneous; in other words, all of the units produced are identical. Products in a process costing environment, such as bricks or potato chips, typically flow in sequence from one department to another as in the below figure:

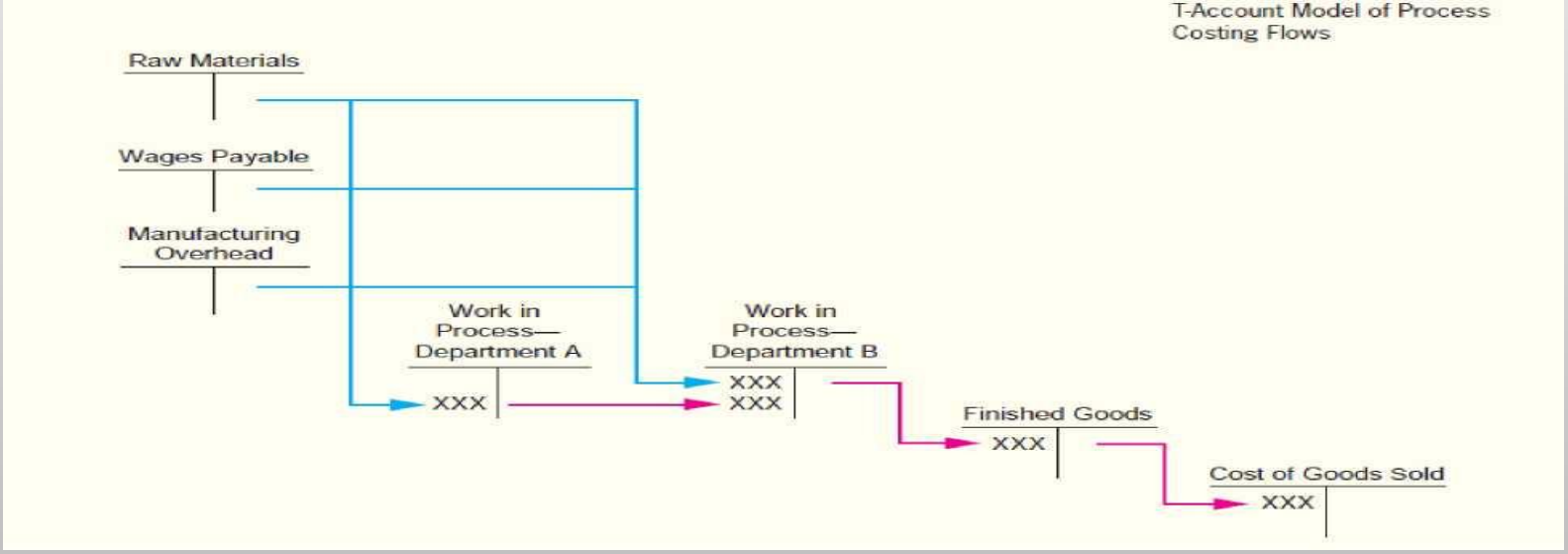


The Flow of Materials, Labor, and Overhead Costs

Cost accumulation is simpler in a process costing system than in a job-order costing system. In a process costing system, instead of having to trace costs to hundreds of different jobs, costs are traced to only a few processing departments.

A T-account model of materials, labor, and overhead cost flows in a process costing system is shown in the below figure. Several key points should be noted from this figure.

First, note that a separate Work in Process account is maintained for each processing department.
Second, note that the completed production of the first processing department (Department A in the figure) is transferred to the Work in Process account of the second processing department (Department B).
After further work in Department B, the completed units are then transferred to Finished Goods.
Finally, note that materials, labor, and overhead costs can be added in any processing department - not just the first. Costs in Department B's Work in Process account consist of the materials, labor, and overhead costs incurred in Department B plus the costs attached to partially completed units transferred in from Department A (called transferred-in costs).



Product Cost Flows in a Process Costing System

1. Direct Materials:

In a process costing setting, direct materials are often used by several production departments. When direct materials are requisitioned from the raw materials storeroom, a journal entry is made to reduce the raw materials inventory account and increase the appropriate work-in-process inventory account. For example, assume the Assembly department of Desk Products, Inc., requisitions direct materials to be used in production. The journal entry to reflect this is as follows:

1.a.	WIP inventory—*assembly*	XXX	
	Raw materials inventory		XXX

The use of direct materials is not limited to one production department. Suppose the Finishing department requisitions direct materials for production. The journal entry to reflect this is as follows:

1.b.	WIP inventory—*finishing*	XXX	
	Raw materials inventory		XXX

Notice that two different work-in-process inventory accounts are used to track production costs-one for each department.

2. Direct Labour:

Each production department typically has a direct labour work force. Direct labour costs are recorded directly in the production department's work-in-process inventory account. Assume direct labour costs are incurred by the Assembly department. The journal entry to reflect this is as follows:

As with direct materials, the use of direct labour is not limited to one production department. Suppose direct labour costs are incurred by the Finishing department. The journal entry to reflect this is as follows:

3. Manufacturing Overhead:

Manufacturing overhead costs (often simply called overhead costs) are applied to products going through the Assembly department. The journal entry to reflect this is as follows:

3.a.	WIP inventory—*assembly*	XXX	
	Manufacturing overhead		XXX

The journal entry to reflect manufacturing overhead costs being applied to products going through the Finishing department is as follows:

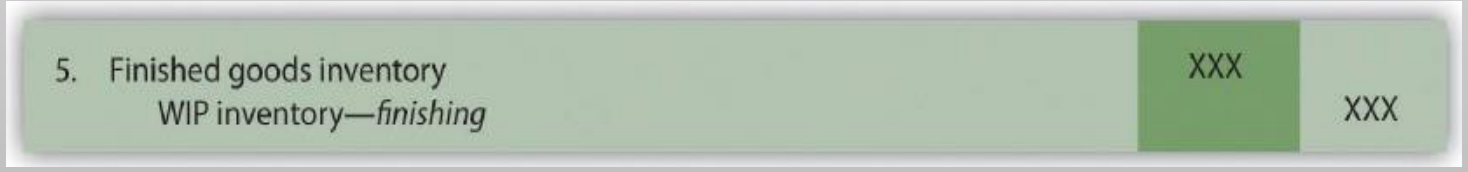
3.b.	WIP inventory—*finishing*	XXX	
	Manufacturing overhead		XXX

4. Transferred-In Costs:

Assume the Assembly department at Desk Products, Inc., completes a batch of desks and moves the desks to the Finishing department. The costs associated with these desks must be transferred from the work-in-process inventory account for the Assembly department to the work-in-process inventory account for the Finishing department. Thus these costs are being transferred in to the Finishing department. The journal entry to reflect this is as follows:

5. Finished Goods:

Goods are completed and ready to sell once they have gone through the final production department. The final production department at Desk Products, Inc., is the Finishing department. When goods go through the final production department and are completed, the related costs are moved to the finished goods inventory account. The journal entry to reflect this is as follows:

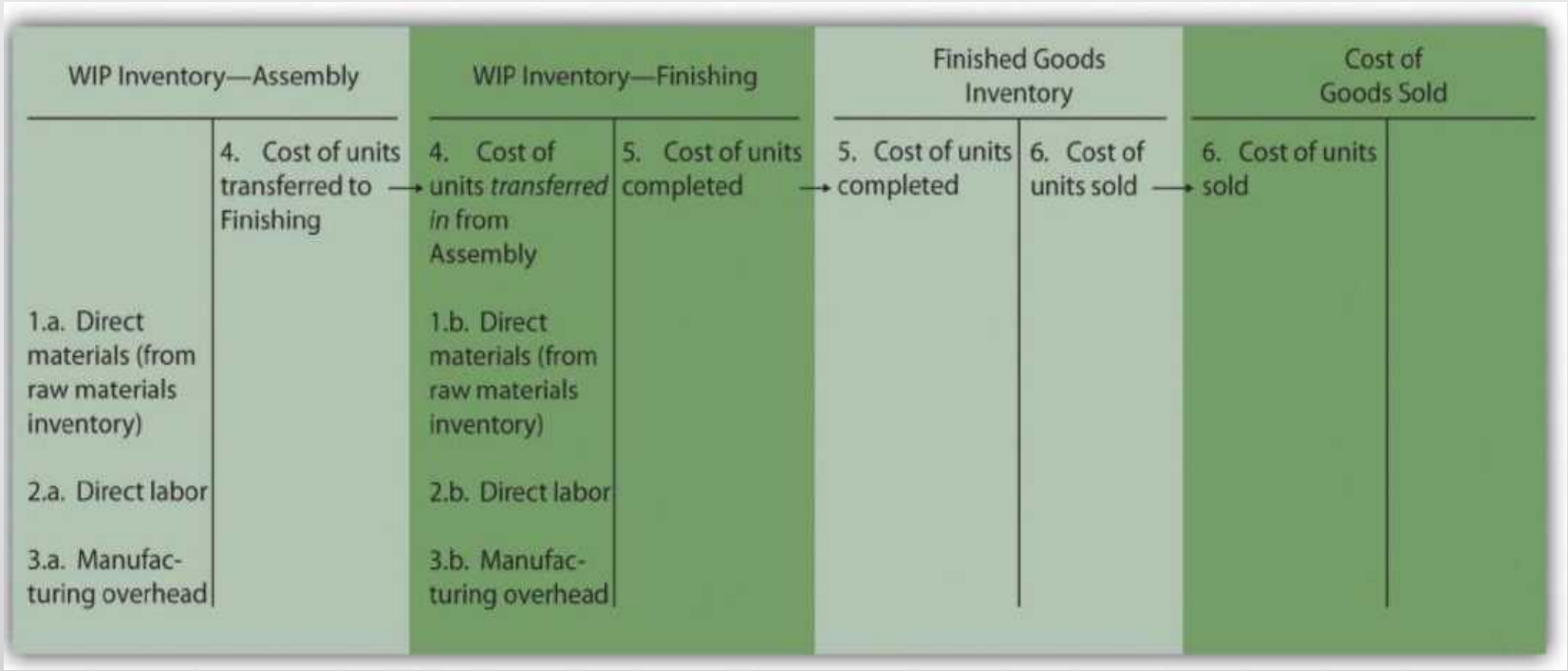


6. Cost of Goods Sold:

Once the completed goods are sold, the related costs are moved out of the finished goods inventory account and into the cost of goods sold account. The journal entry to reflect this is as follows:

6.	Cost of goods sold	XXX	
	Finished goods inventory		XXX

The following table summarizes the flow of product costs through T-accounts for each of the journal entries presented in this section.



Note that when goods are sold and production costs are moved from finished goods inventory to cost of goods sold, an additional entry is made to record the revenue associated with this transaction.

Cash or A.R.	XXX	
Sales Revenue		XXX

Question 1:

Luxguard Home Paint Company produces exterior latex paint, which it sells in one-gallon containers.

The company has two processing departments—Base Fab and Finishing. White paint, which is used as a base for all the company's paints, is mixed from raw ingredients in the Base Fab Department. Pigments are then added to the basic white paint, the pigmented paint is squirted under pressure into one-gallon containers, and the containers are labeled and packed for shipping in the Finishing Department. Information relating to the company's operations for April follows:

a. Issued raw materials for use in production: Base Fab Department, $851,000; and Finishing Department, $629,000.

b. Incurred direct labor costs: Base Fab Department, $330,000; and Finishing Department, $270,000.

c. Applied manufacturing overhead cost: Base Fab Department, $665,000; and Finishing Department, $405,000.

d. Transferred basic white paint from the Base Fab Department to the Finishing Department, $1,850,000.

e. Transferred paint that had been prepared for shipping from the Finishing Department to Finished Goods, $3,200,000.

Required:

1. Prepare journal entries to record items (a) through (e) above.

2. Post the journal entries from (1) above to T-accounts. The balance in the Base Fab Department's Work in Process account on April 1 was $150,000; the balance in the Finishing Department's Work in Process account was $70,000. After posting entries to the T-accounts, find the ending balance in each department's Work in Process account.

Solution (Question 1):

1- Prepare journal entries to record items (a) through (e) above.

1.	*a.*	Work in Process—Base Fab Department	851,000	
		Work in Process—Finishing Department	629,000	
		Raw Materials		1,480,000
	b.	Work in Process—Base Fab Department	330,000	
		Work in Process—Finishing Department	270,000	
		Salaries and Wages Payable		600,000
	c.	Work in Process—Base Fab Department	665,000	
		Work in Process—Finishing Department	405,000	
		Manufacturing Overhead		1,070,000
	d.	Work in Process—Finishing Department	1,850,000	
		Work in Process—Base Fab Department		1,850,000
	e.	Finished Goods	3,200,000	
		Work in Process—Finishing Department		3,200,000

2- Post the journal entries from (1) above to T-accounts. The balance in the Base Fab Department's Work in Process account on April 1 was $150,000; the balance in the Finishing Department's Work in Process account was $70,000. After posting entries to the T-accounts, find the ending balance in each department's Work in Process account.

2.

Raw Materials

Bal.	XXX	(a)	1,480,000

Salaries and Wages Payable

		(b)	600,000

Work in Process—Base Fab Department

Bal.	150,000	(d)	1,850,000
(a)	851,000		
(b)	330,000		
(c)	665,000		
Bal.	146,000		

Manufacturing Overhead

(Various actual costs)		(c)	1,070,000

Work in Process—Finishing Department

Bal.	70,000	(e)	3,200,000
(a)	629,000		
(b)	270,000		
(c)	405,000		
(d)	1,850,000		
Bal.	24,000		

Finished Goods

Bal.	XXX		
(e)	3,200,000		

Question 2:

Chewy Gum Corporation produces bubble gum in large batches and uses a process costing system. Three departments—Mixing, Rolling, and Packaging—are involved in the production process. Chewy Gum has the following transactions:

A. Direct materials totalling $20,000 ($6,000 for the Mixing department, $5,000 for the Rolling department, and $9,000 for the Packaging department) are requisitioned and placed in production.

B. Each production department incurs the following direct labour costs (payable):

Mixing	$2,500
Rolling	$4,600
Packaging	$2,200

C. Manufacturing overhead costs are applied to each department as follows:

Mixing	$10,000
Rolling	$ 7,000
Packaging	$ 7,500

D. Products with a cost of $5,500 are transferred from the Mixing department to the Rolling department.

E. Products with a cost of $6,400 are transferred from the Rolling department to the Packaging department.

F. Products with a cost of $9,100 are completed and transferred from the Packaging department to the finished goods warehouse.

G. Products with a cost of $8,300 are sold to customers for total sales revenue of $14,000 on account.

Required:

1. Prepare journal entries to record the transaction.
2. Summarize the flow of costs through T-accounts.

NOTES: (No need to include T-accounts for raw materials inventory, wages and salaries payable or manufacturing overhead). There is no beginning balance for inventories.