

Process Costing

Chapter 4

AC202 Managerial Accounting

ผศ.ดร. นนทวรรณ ยมจินดา

Copyright © 2012 by The McGraw-Hill Companies, Inc. All rights reserved.

Similarities Between Job-Order and Process Costing

- Both systems assign material, labor, and overhead costs to products and they provide a mechanism for computing unit product costs.
- Both systems use the same manufacturing accounts, including Manufacturing Overhead, Raw Materials, Work in Process, and Finished Goods.
- The flow of costs through the manufacturing accounts is basically the same in both systems.

Differences Between Job-Order and Process Costing

Process costing:

1. Is used when a single product is produced on a continuing basis or for a long period of time. Job-order costing is used when many different jobs having different production requirements are worked on each period.
2. Systems accumulate costs by department. Job-order costing systems accumulated costs by individual jobs.
3. Systems compute unit costs by department. Job-order costing systems compute unit costs by job on the job cost sheet.

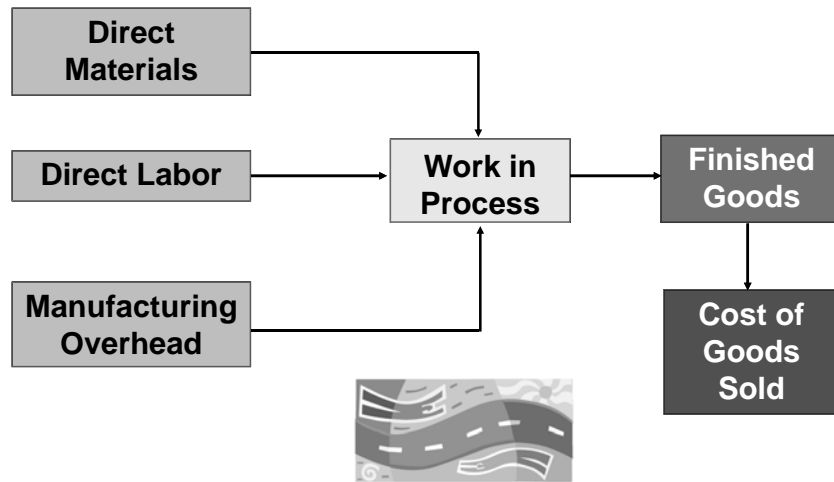
Processing Departments

Any unit in an organization where materials, labor, or overhead are added to the product.

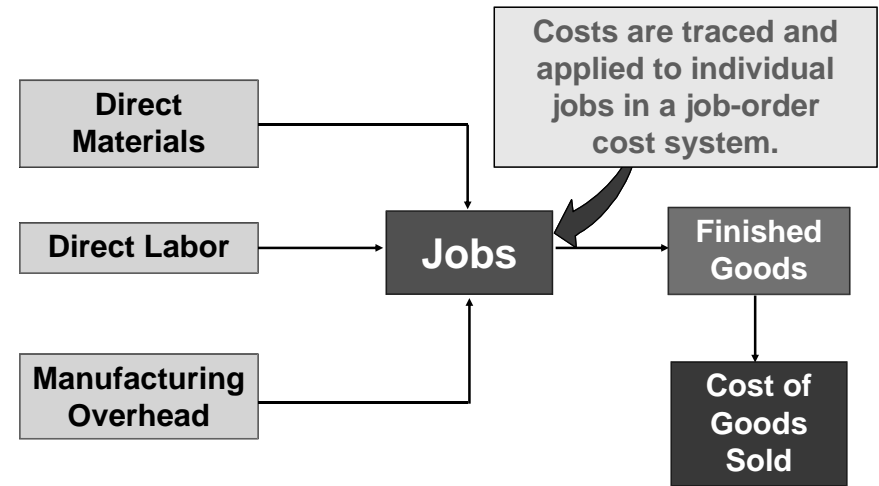
The activities performed in a processing department are *performed uniformly* on all units of production. Furthermore, the output of a processing department must be *homogeneous*. Products in a process costing environment typically flow in a sequence from one department to another.



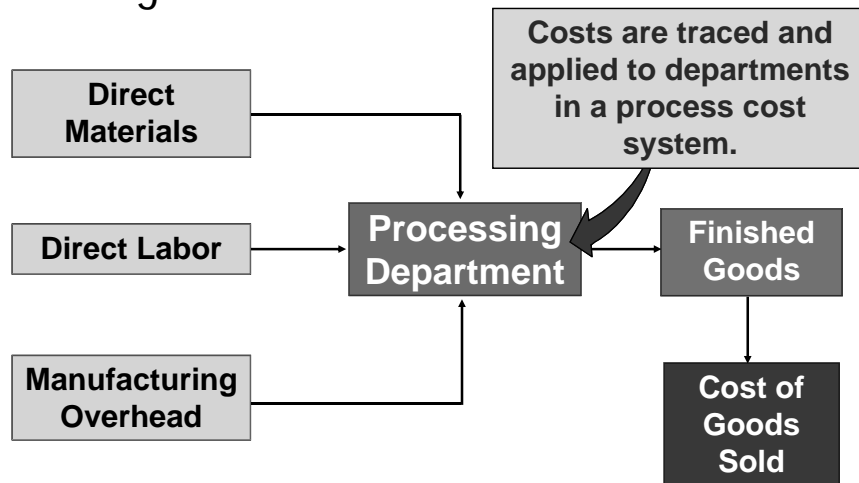
Comparing Job-Order and Process Costing



Comparing Job-Order and Process Costing



Comparing Job-Order and Process Costing



T-Account and Journal Entry Views of Process Cost Flows

For purposes of this example, assume there are two processing departments – Departments A and B. We will use T-accounts and journal entries.



Process Cost Flows: The Flow of Raw Materials (in journal entry form)

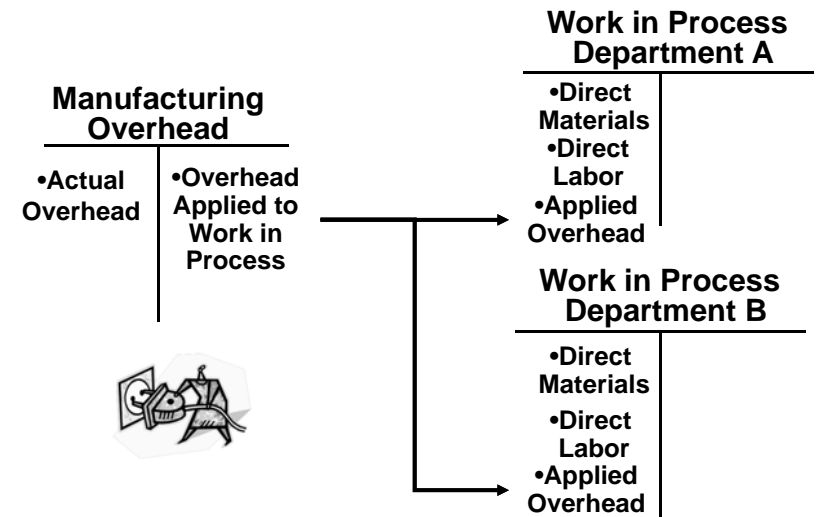
Work in Process - Department A	XXXXX	
Work in Process - Department B	XXXXX	
Raw Materials		XXXXX

Work in Process - Department A	XXXXX	
Work in Process - Department B	XXXXX	
Salaries and Wages Payable		XXXXX

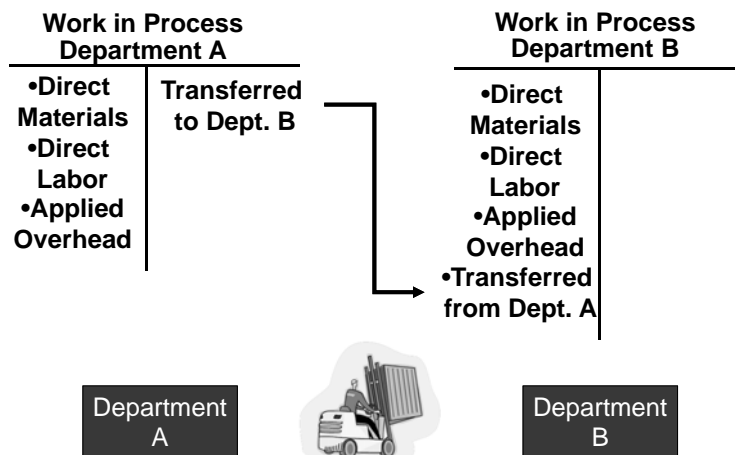
Work in Process - Department A	XXXXX	
Work in Process - Department B	XXXXX	
Manufacturing Overhead		XXXXX



Process Cost Flows: The Flow of Manufacturing Overhead Costs (in T-account form)



Process Cost Flows: Transfers from WIP-Dept. A to WIP-Dept. B (in T-account form)

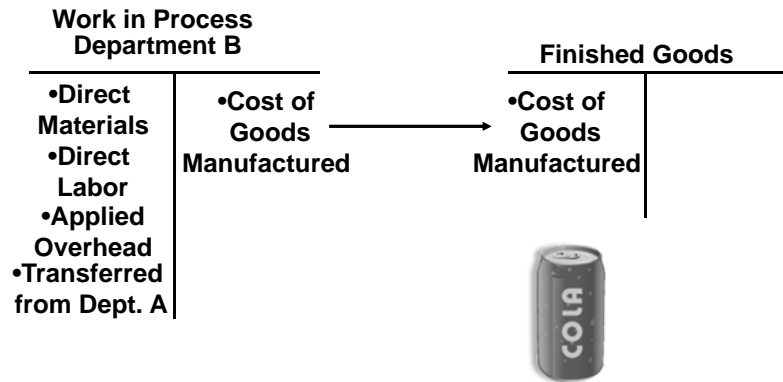


Process Cost Flows: Transfers from WIP-Dept. A to WIP-Dept. B (in journal entry form)

Work in Process - Department B	XXXXX	
Work in Process - Department A		XXXXX



Process Cost Flows: Transfers from WIP-Dept. B to Finished Goods (in T-account form)

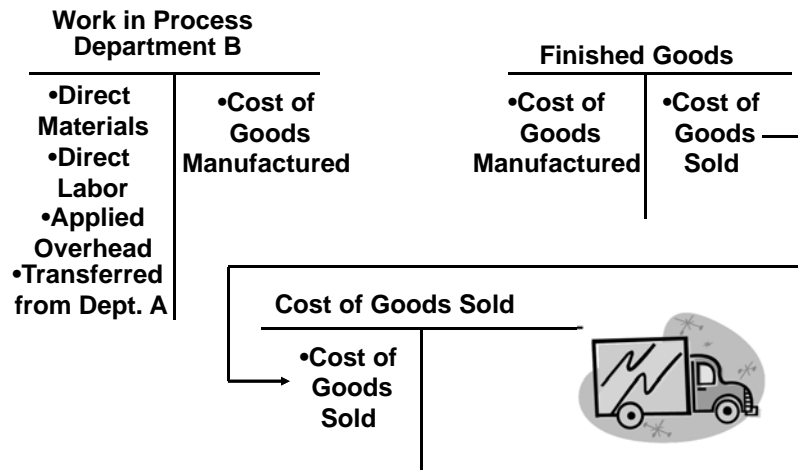


Process Cost Flows: Transfers from WIP-Dept. B to Finished Goods (in journal entry form)

Finished Goods	XXXXX	
Work in Process - Department B		XXXXX



Process Cost Flows: Transfers from Finished Goods to COGS (in T-account form)



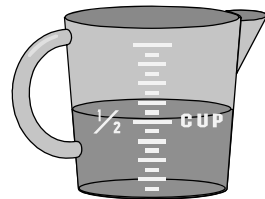
Process Cost Flows: Transfers from Finished Goods to COGS (in journal entry form)

Cost of Goods Sold	XXXXX	
Finished Goods		XXXXX



Equivalent Units of Production

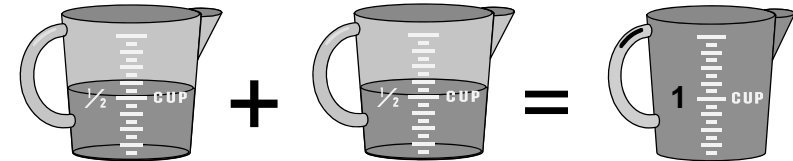
Equivalent units are the product of the number of partially completed units and the percentage completion of those units.



These partially completed units complicate the determination of a department's output for a given period and the unit cost that should be assigned to that output.

Equivalent Units - The Basic Idea

Two half completed products are *equivalent to one complete product.*



So, 10,000 units 70% complete are *equivalent to 7,000 complete units.*

Calculating Equivalent Units

Equivalent units can be calculated two ways:

- ① The First-In, First-Out Method – FIFO is covered in the appendix to this chapter.
- ② The Weighted-Average Method – This method will be covered in the main portion of the chapter.



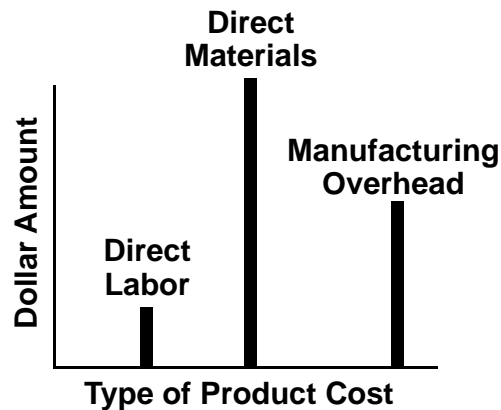
Equivalent Units of Production Weighted-Average Method

The weighted-average method . . .

1. Makes no distinction between work done in prior or current periods.
2. Blends together units and costs from prior and current periods.
3. Determines equivalent units of production for a department by adding together the number of units transferred out plus the equivalent units in **ending** Work in Process Inventory.

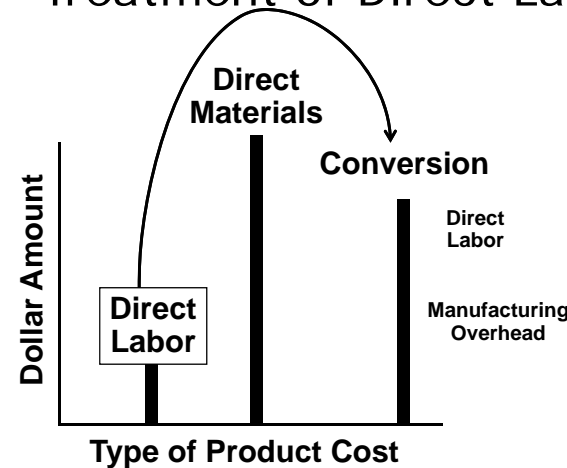


Treatment of Direct Labor



Direct labor costs may be small in comparison to other product costs in process cost systems.

Treatment of Direct Labor



Direct labor and manufacturing overhead may be combined into one classification of product cost called *conversion costs*.

Weighted-Average - An Example

Smith Company reported the following activity in the Assembly Department for the month of June:

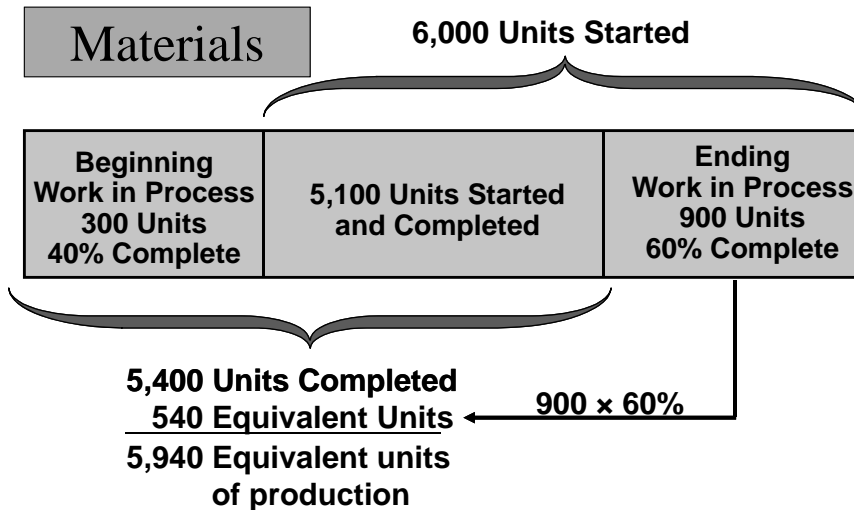
	Units	Percent Completed	
		Materials	Conversion
Work in process, June 1	300	40%	20%
Units started into production in June	6,000		
Units completed and transferred out of Department A during June	5,400		
Work in process, June 30	900	60%	30%

Weighted-Average - An Example

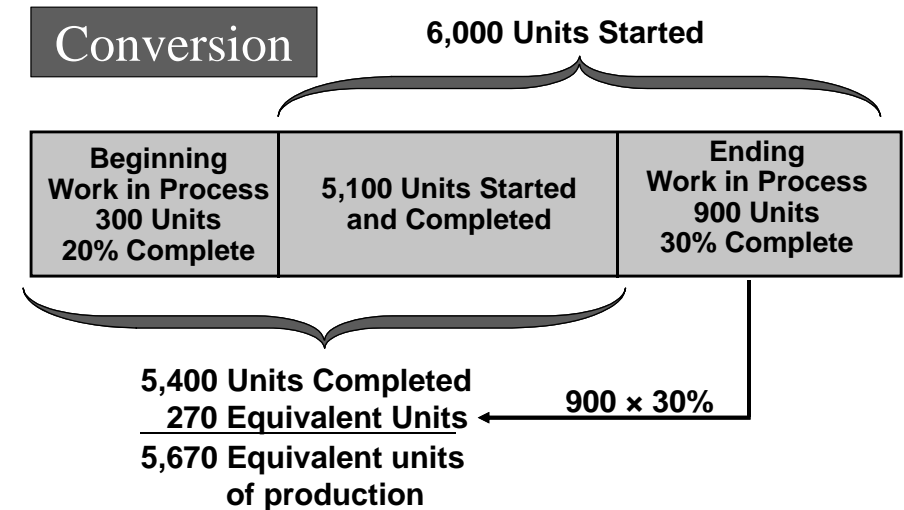
Equivalent units of production *always* equals:
 Units completed and transferred
 + Equivalent units remaining in work in process

	Materials	Conversion
① Units completed and transferred out of the Department in June	5,400	5,400
Work in process, June 30:		
900 units × 60%	② 540	
900 units × 30%		③ 270
Equivalent units of Production in the Department during June	<u>5,940</u>	<u>5,670</u>

Weighted-Average - An Example



Weighted-Average - An Example



Compute and Apply Costs

Beginning Work in Process Inventory:		300 units
Materials:	40% complete	\$ 6,119
Conversion:	20% complete	\$ 3,920
Production started during June	6,000 units	
Production completed during June	5,400 units	
Costs added to production in June		
Materials cost	\$ 118,621	
Conversion cost	\$ 81,130	
Ending Work in Process Inventory:		900 units
Materials:	60% complete	
Conversion:	30% complete	

Compute and Apply Costs

The formula for computing the cost per equivalent unit is:

Cost per equivalent unit	=	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center; padding: 5px;">Cost of beginning Work in Process Inventory</td> <td style="text-align: center; padding: 5px;">+ Cost added during the period</td> </tr> <tr> <td colspan="2" style="text-align: center; border-top: 1px solid black; padding: 5px;">Equivalent units of production</td> </tr> </table>	Cost of beginning Work in Process Inventory	+ Cost added during the period	Equivalent units of production	
Cost of beginning Work in Process Inventory	+ Cost added during the period					
Equivalent units of production						



Compute and Apply Costs

Here is a schedule with the cost and equivalent unit information.

	Total Cost	Materials	Conversion
Cost to be accounted for:			
Work in process, June 1	\$ 10,039	\$ 6,119	\$ 3,920
Cost added in Assembly	199,751	118,621	81,130
Total cost	\$ 209,790	\$ 124,740	\$ 85,050
Equivalent units		5,940	5,670

Applying Cost and Computing the Cost of Units Transferred Out

Assembly Department Cost of Ending WIP Inventory and Units Transferred Out			
	Materials	Conversion	Total
Ending WIP inventory:			
Equivalent units	540	270	
Cost per equivalent unit	\$ 21.00	\$ 15.00	
Cost of Ending WIP inventory	\$ 11,340	\$ 4,050	\$ 15,390
Units completed and transferred out:			
Units transferred	5,400	5,400	
Cost per equivalent unit	\$ 21.00	\$ 15.00	
Cost of units transferred out	\$ 113,400	\$ 81,000	\$ 194,400

Reconciling Costs

Assembly Department Cost Reconciliation	
Costs to be accounted for:	
Cost of beginning Work in Process Inventory	\$ 10,039
Costs added to production during the period	199,751
Total cost to be accounted for	\$ 209,790
Cost accounted for as follows:	
Cost of ending Work in Process Inventory	\$ 15,390
Cost of units transferred out	194,400
Total cost accounted for	\$ 209,790

Operation Costing

Operation cost is a hybrid of job-order and process costing because it possesses attributes of both approaches.

Operation costing is commonly used when batches of many different products pass through the same processing department.

