AGENDA: PROCESS COSTING
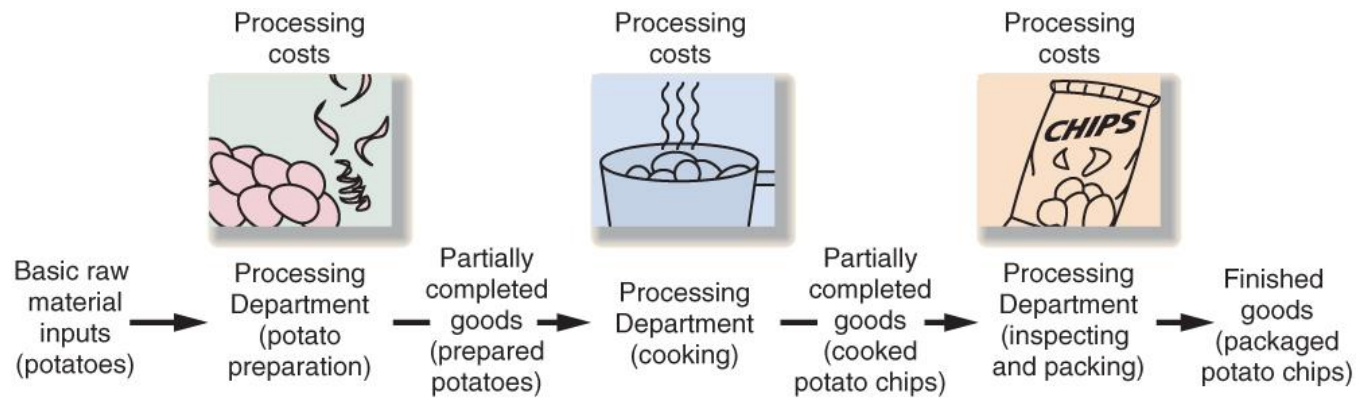
A. Differences between job-order and process costing.

B. Overview of cost flows in process costing.

C. The concept of equivalent (whole) units for partially completed units.

D. The weighted-average method for determining costs.

E. (Appendix 4A) The FIFO method for determining costs.

F. (Appendix 4A) Comparison of weighted-average and FIFO methods.
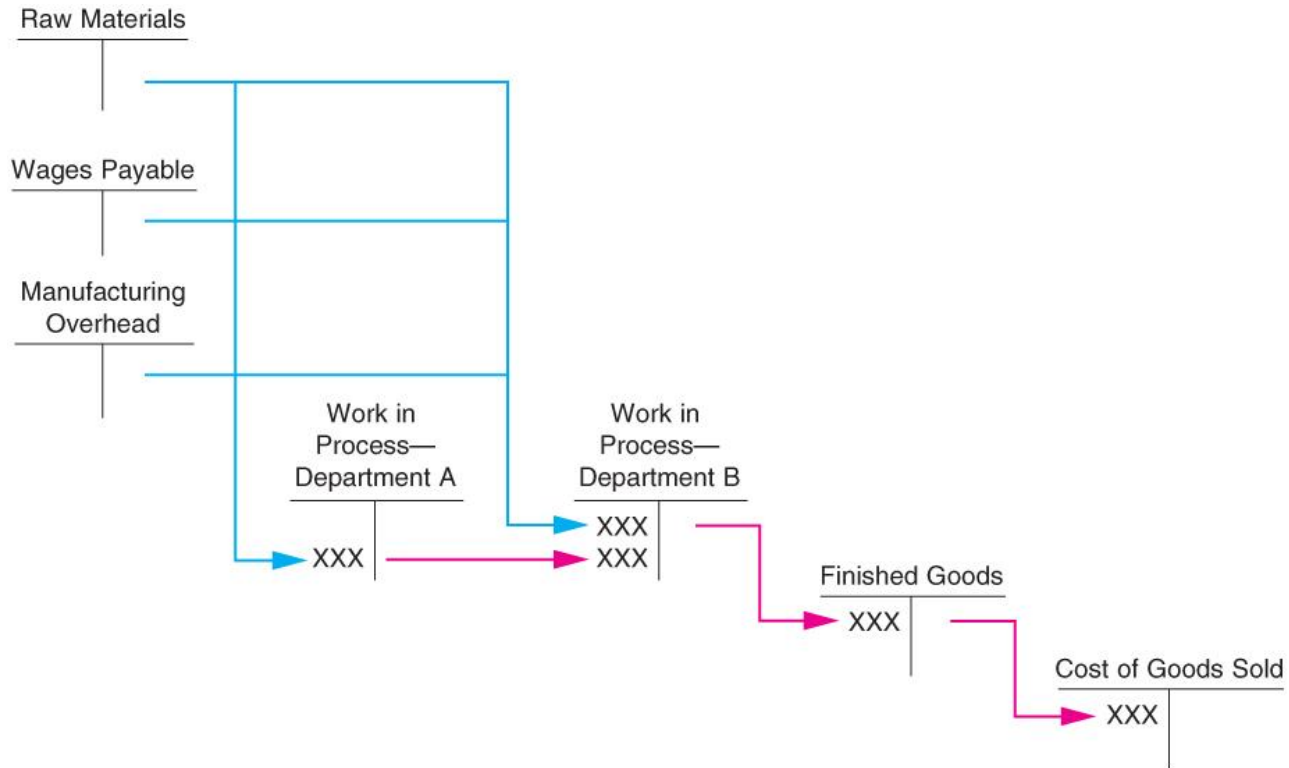
G. (Appendix 4B) Service department charges

DIFFERENCES BETWEEN JOB-ORDER AND PROCESS COSTING

Job-Order Costing	Process Costing
1. Many different jobs are worked on during each period, with each job having different production requirements.	1. A single product is produced either on a continuous basis or for long periods of time. All units of product are identical.
2. Costs are accumulated by individual job.	2. Costs are accumulated by department.
3. Unit costs are computed *by job* on the job cost sheet.	3. Unit costs are computed *by department*.

SEQUENTIAL PROCESSING DEPARTMENTS

Processing costs

Processing costs

Processing costs

Basic raw material inputs (potatoes) → Processing Department (potato preparation) — Partially completed goods (prepared potatoes) → Processing Department (cooking) — Partially completed goods (cooked potato chips) → Processing Department (inspecting and packing) → Finished goods (packaged potato chips)

T-ACCOUNT MODEL OF PROCESS COSTING FLOWS

Raw Materials

Wages Payable

Manufacturing Overhead

Work in Process—Department A

XXX

Work in Process—Department B

XXX
XXX

Finished Goods

XXX

Cost of Goods Sold

XXX

OVERVIEW OF PROCESS COSTING

A. In process costing, costs are accumulated in processing departments.

B. A separate departmental production report is compiled for each processing department. This report provides the details of how costs are assigned to units that pass through the department.

C. Costs to be accounted for in each processing department consist of:

1. Costs of the beginning work in process inventory in the department.

2. Costs added during the period.

   a. Costs of units transferred in from a preceding department.

   b. Costs added in the department itself.

   Materials + Labor + Overhead

   ↑

   Conversion Costs

D. Costs are accounted for by assigning them to:

1. Ending work in process inventory in the department.

2. Units transferred out to the next department (or to finished goods).

OVERVIEW OF PROCESS COSTING (continued)

E. In process costing, each unit is assigned the average cost of units processed through the department.

F. Two things must be known to compute the average cost per unit in a department:

1. The total cost.

2. The total number of units processed.

G. Partially completed units are converted to <u>equivalent (whole) units</u>.

For example, 200 units in ending inventory are 25% complete with respect to conversion costs.

$$\text{Equivalent units} = \text{Number of partially completed units} \times \text{Percentage completion}$$

$$= 200 \times 25\% = 50 \text{ EUs}$$

H. The two common methods of computing average costs per unit are the <u>weighted-average method</u> and the <u>FIFO method</u>. The FIFO method is discussed in Appendix 4A.

WEIGHTED-AVERAGE METHOD

- The weighted-average method averages together the beginning work in process inventories with the units started during the current period.

- For each category of cost in each processing department the following calculations are made:

$$\begin{matrix} \text{Equivalent} \\ \text{units of} \\ \text{production} \end{matrix} = \begin{matrix} \text{Units} \\ \text{transferred} \\ \text{out} \end{matrix} + \begin{matrix} \text{Equivalent units} \\ \text{in ending WIP} \\ \text{inventory} \end{matrix}$$

Units transferred out of the department
are 100% complete with respect to
the work done in the department.

$$\begin{matrix} \text{Cost per} \\ \text{equivalent unit} \end{matrix} = \frac{\begin{matrix} \text{Cost of beginning} \\ \text{work in process inventory} \end{matrix} + \begin{matrix} \text{Cost added} \\ \text{during the period} \end{matrix}}{\text{Equivalent units of production}}$$

$$\begin{matrix} \text{Cost of units} \\ \text{transferred out} \end{matrix} = \begin{matrix} \text{Cost per} \\ \text{equivalent unit} \end{matrix} \times \begin{matrix} \text{Units} \\ \text{transferred out} \end{matrix}$$

$$\begin{matrix} \text{Cost of units in} \\ \text{ending WIP inventory} \end{matrix} = \begin{matrix} \text{Cost per} \\ \text{equivalent unit} \end{matrix} \times \begin{matrix} \text{Equivalent units in} \\ \text{ending WIP inventory} \end{matrix}$$

WEIGHTED-AVERAGE METHOD (continued)

EXAMPLE: Halsey Company makes small sailboats. During the most recent month, the following activity was recorded in the Hull Fabrication Department for conversion costs.

Work in process, beginning (80% complete)...	15,000 units
Units started into production..........................	180,000 units
Units transferred to the next department........	175,000 units
Work in process, ending (30% complete)	20,000 units

Conversion Costs:

Work in process, beginning............................	$24,000
Conversion costs incurred during the month ...	$338,000

● Computation of equivalent units of production:

Units transferred to the next department........	175,000 EUs
Work in process, ending (20,000 units × 30% complete)	6,000 EUs
Equivalent units of production........................	181,000 EUs

● Computation of cost per equivalent unit:

Cost of beginning work in process inventory ...	$ 24,000
Costs added during the period	338,000
Total cost (a)...	$362,000

Equivalent units of production (b) ....   181,000 EUs

Cost per equivalent unit (a) ÷ (b) .... $2 per EU

WEIGHTED-AVERAGE METHOD (continued)

- Computation of cost of units in ending work in process inventory:

Equivalent units of production of units in ending work in process inventory	6,000 EUs
Cost per equivalent unit (see above) (b).........	$2 per EU
Cost of units in ending work in process inventory (a) × (b)	$12,000

- Computation of cost of units transferred out:

Units transferred to the next department (a) ..	175,000 EUs
Cost per equivalent unit (see above) (b).........	$2 per EU
Cost of units transferred out (a) × (b)............	$350,000

- The above computations would be repeated for each classification of costs incurred in the production of the sailboats.

WEIGHTED-AVERAGE METHOD (continued)

The Cost Reconciliation Report:

Costs to be accounted for:

Cost of beginning work in process inventory ...	$24,000
Costs added to production during the period ..	338,000
Total costs to be accounted for	$362,000

Costs accounted for as follows:

Cost of ending work in process inventory	$12,000
Cost of units transferred out	350,000