

Process Cost Accounting

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Dept. of Management and Law

1

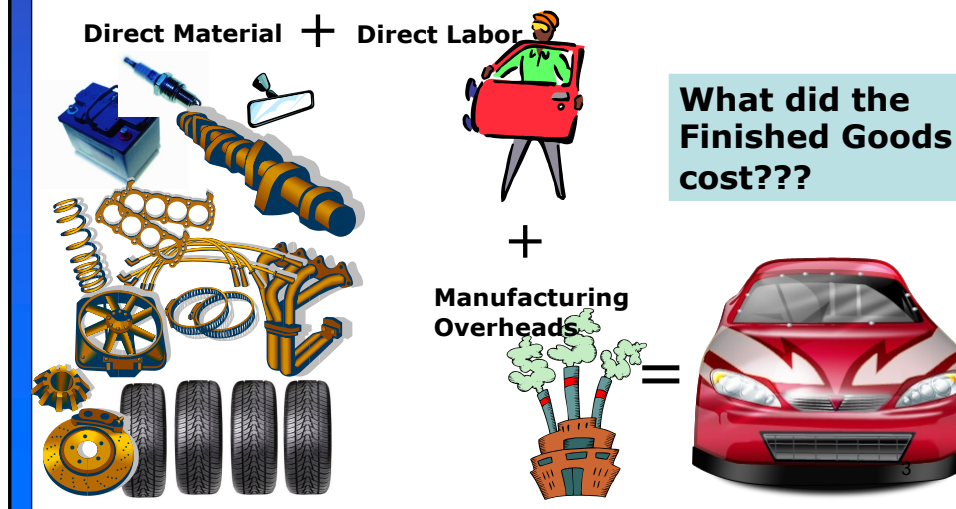
Agenda

- PC vs JOC: differences and similarities
- Costs Flow in PCS
- EUP
- FIFO vs Average Method
- Production Report
- Examples

2

2

Keep your eye on the goal of Cost Accounting!



3

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 cost.
- 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.

4

Differences Between Job-Order and Process Costing

- Process costing 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 are worked on each period.
- Process costing systems accumulate costs by department. Job-order costing systems accumulated costs by individual jobs.
- Process costing systems compute unit costs by department. Job-order costing systems compute unit costs by job on the job cost sheet.

5

Differences Between Job-Order and Process Costing (Summary)

Job order costing

- One (or more) work in process account.
- Costs are determined for each job.
- Job cost sheet is the key document.
- Unit cost computed by costs added to job /units in the job.

Process costing

- WIP account for each department.
- Costs are determined by department.
- Production cost report is the key document.
- Unit costs computed by total department costs/units produced.

6

6

Quick Check ✓

Process costing is used for products that are:

- a. Different and produced continuously.
- b. Similar and produced continuously.
- c. Individual units produced to customer specifications.
- d. Purchased from vendors.

7

7

Processing Departments

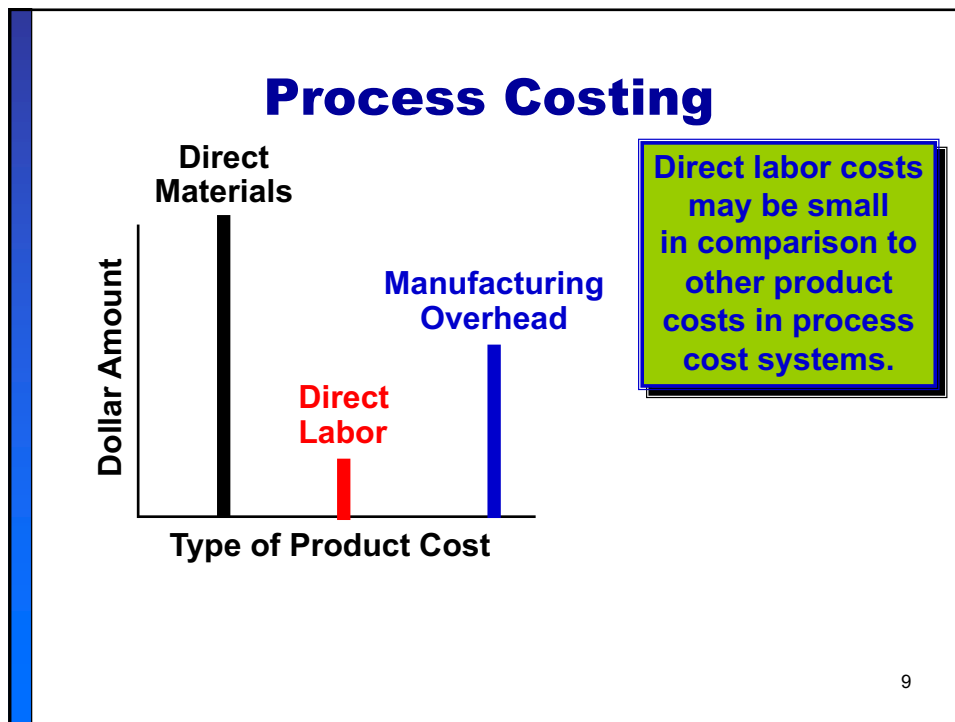
Any unit in an organization where materials, labor or overhead are added to the product.

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*.

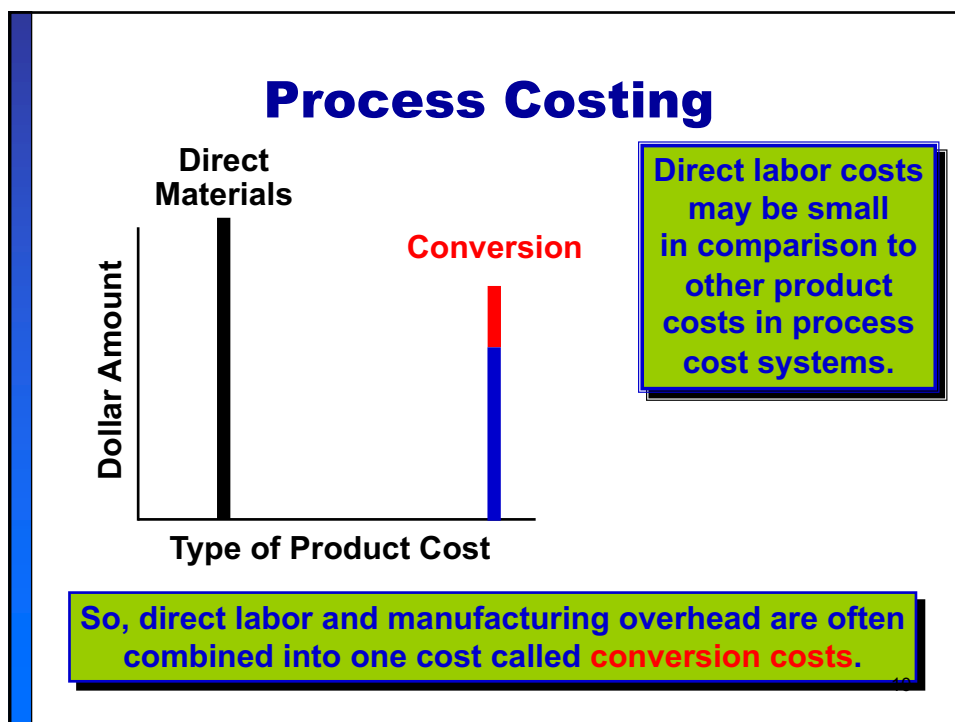


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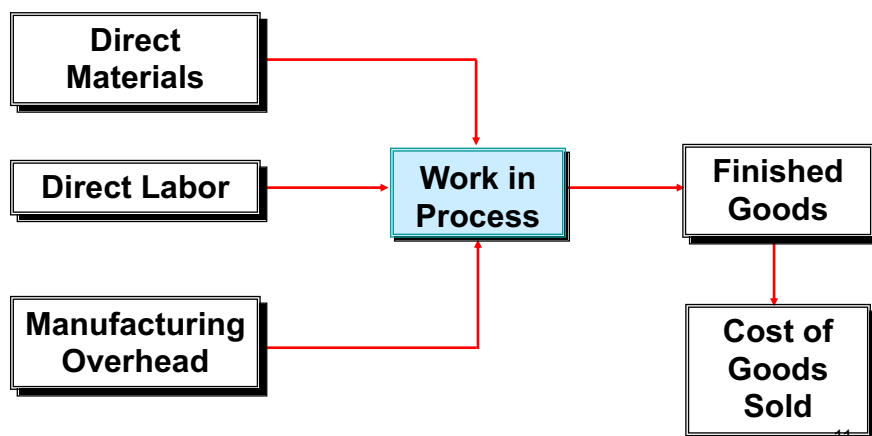


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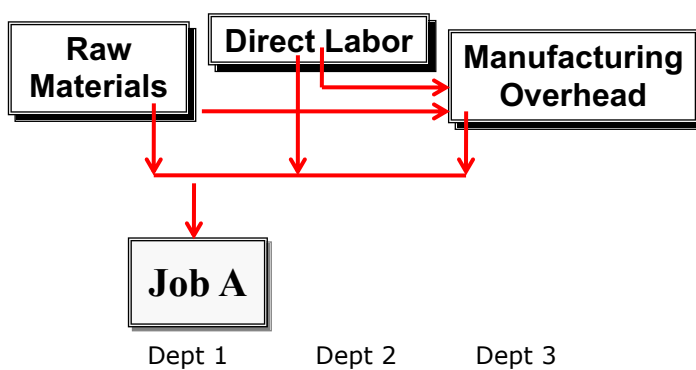
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Comparing Job-Order and Process Costing



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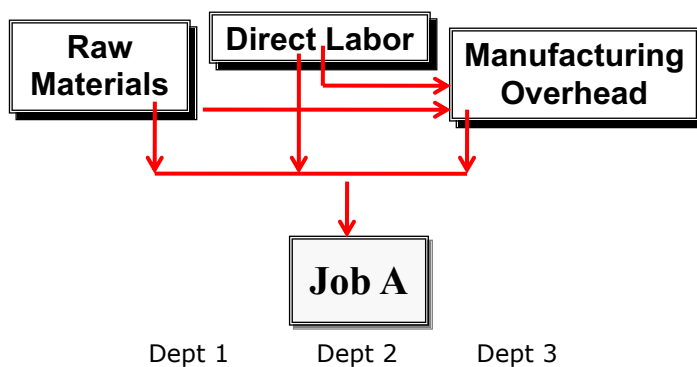
Comparing Job-Order and Process Costing



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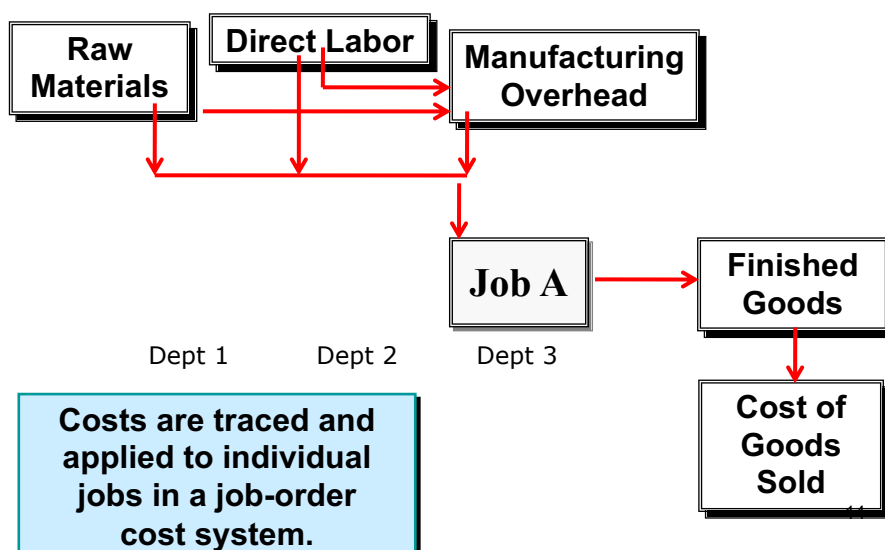
Comparing Job-Order and Process Costing



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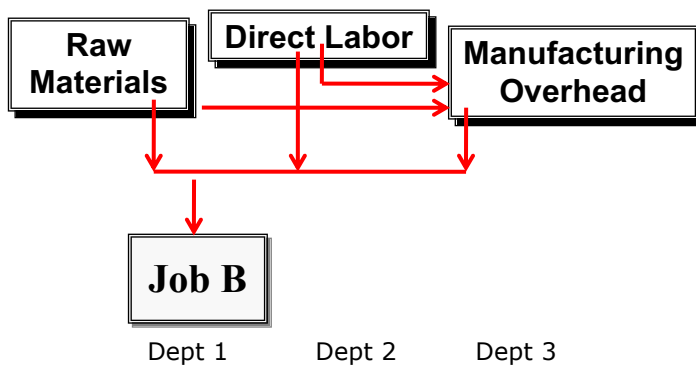
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Comparing Job-Order and Process Costing



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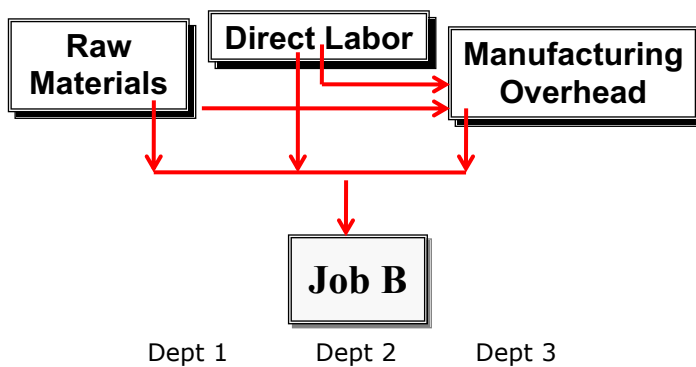
Comparing Job-Order and Process Costing



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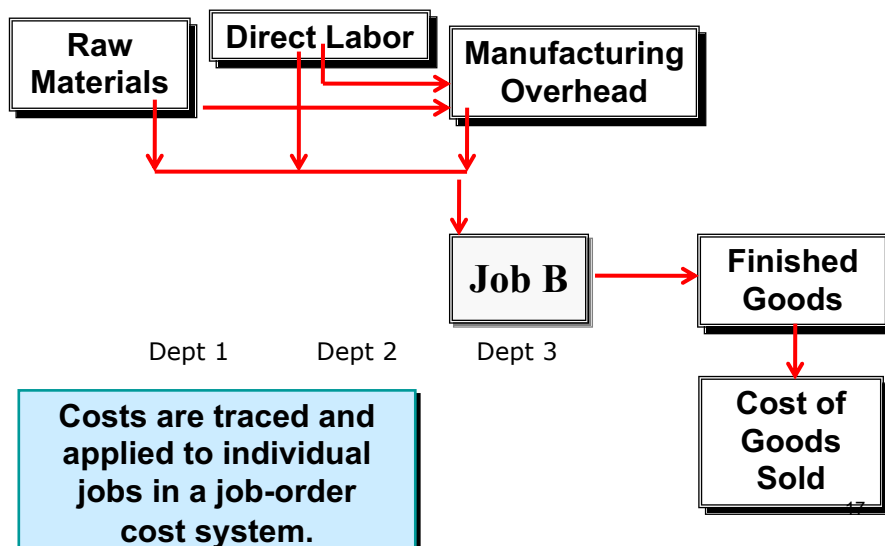
Comparing Job-Order and Process Costing



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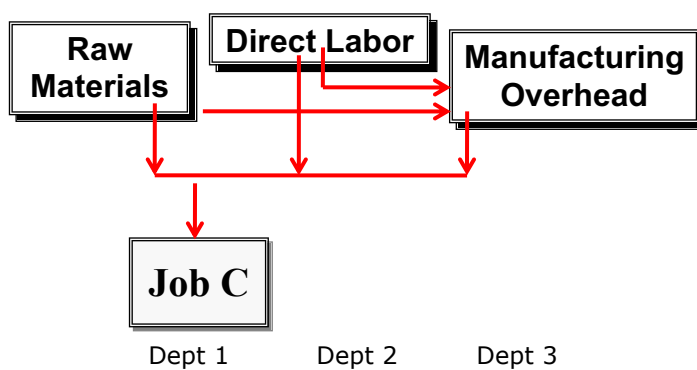
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Comparing Job-Order and Process Costing



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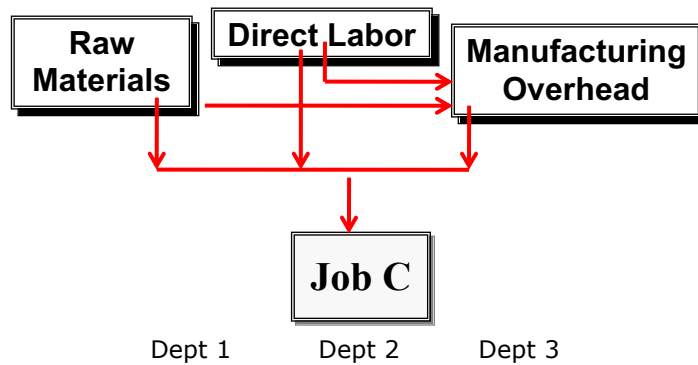
Comparing Job-Order and Process Costing



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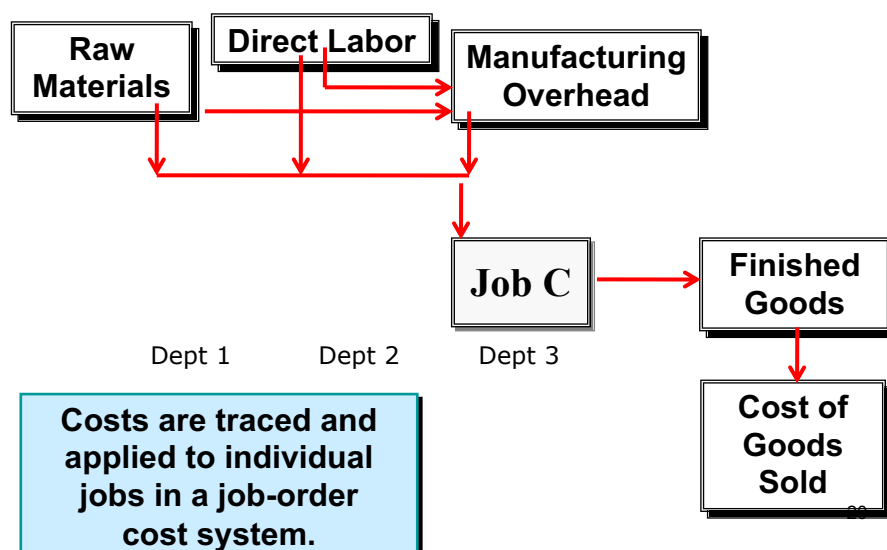
Comparing Job-Order and Process Costing



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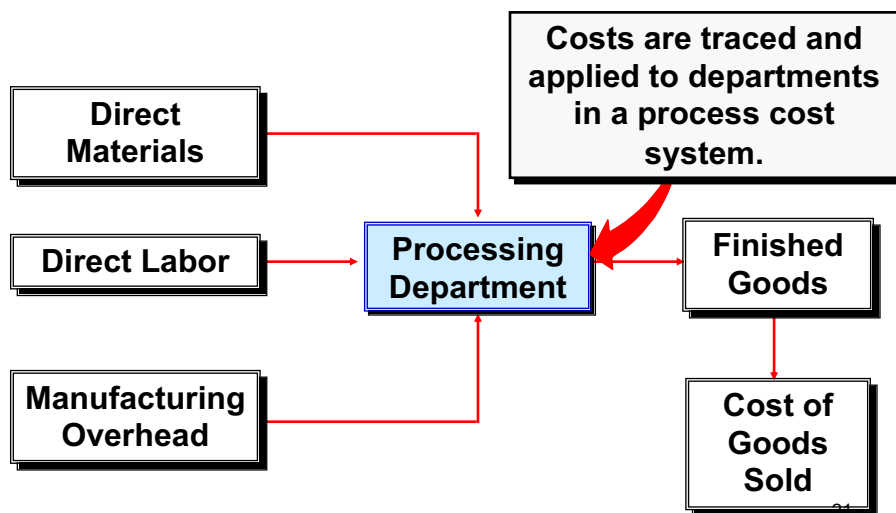
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Comparing Job-Order and Process Costing



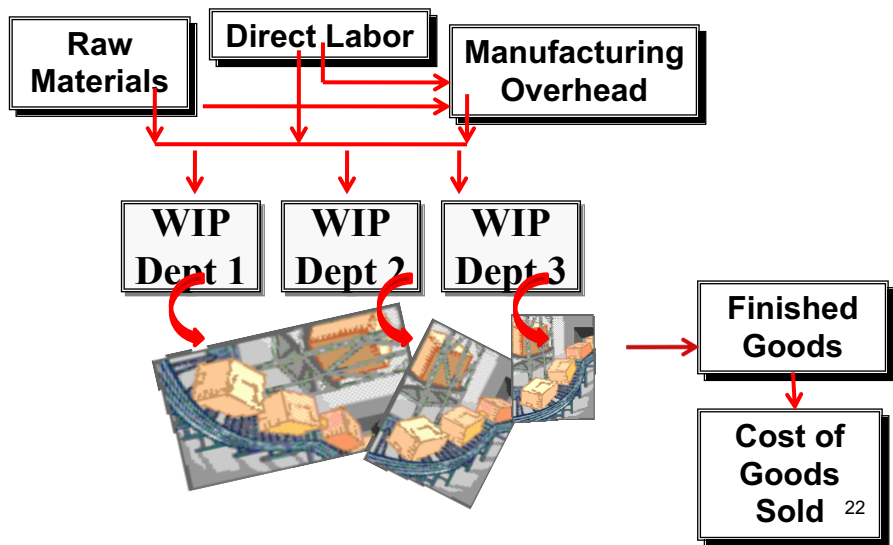
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Comparing Job-Order and Process Costing



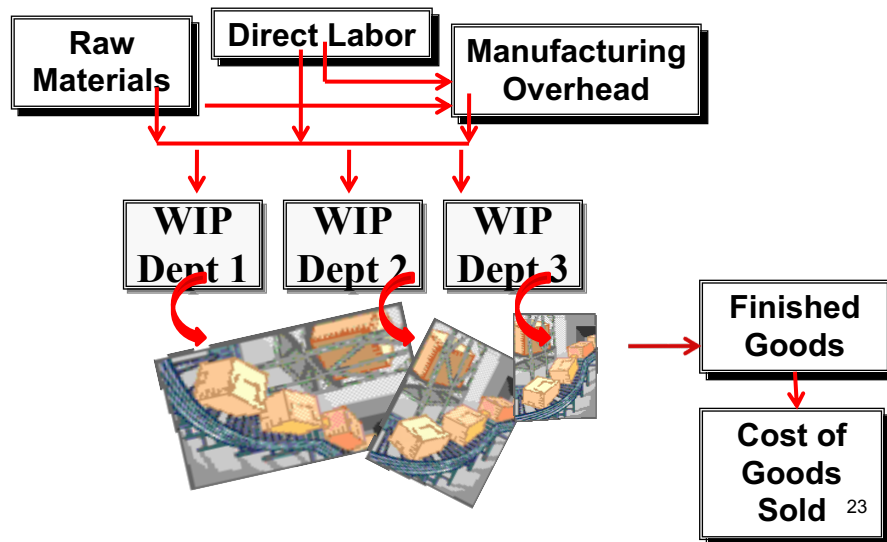
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Comparing Job-Order and Process Costing



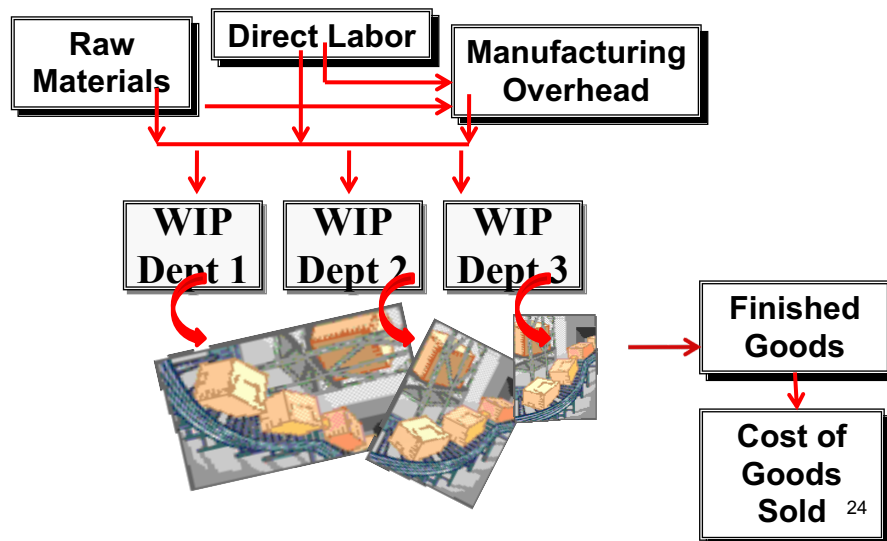
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Comparing Job-Order and Process Costing

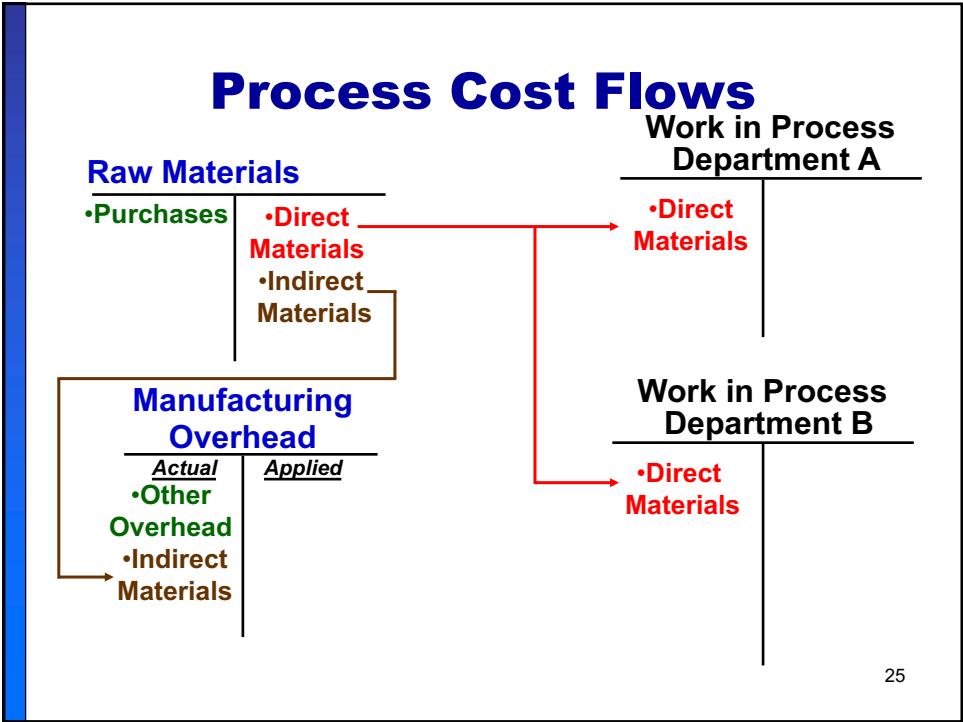


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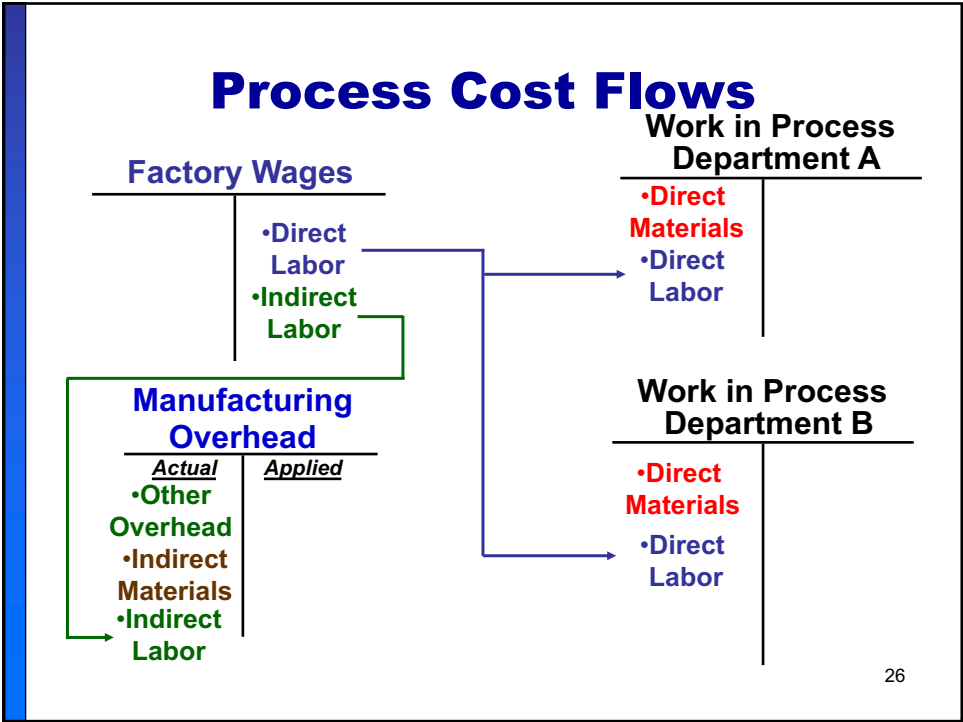
Comparing Job-Order and Process Costing



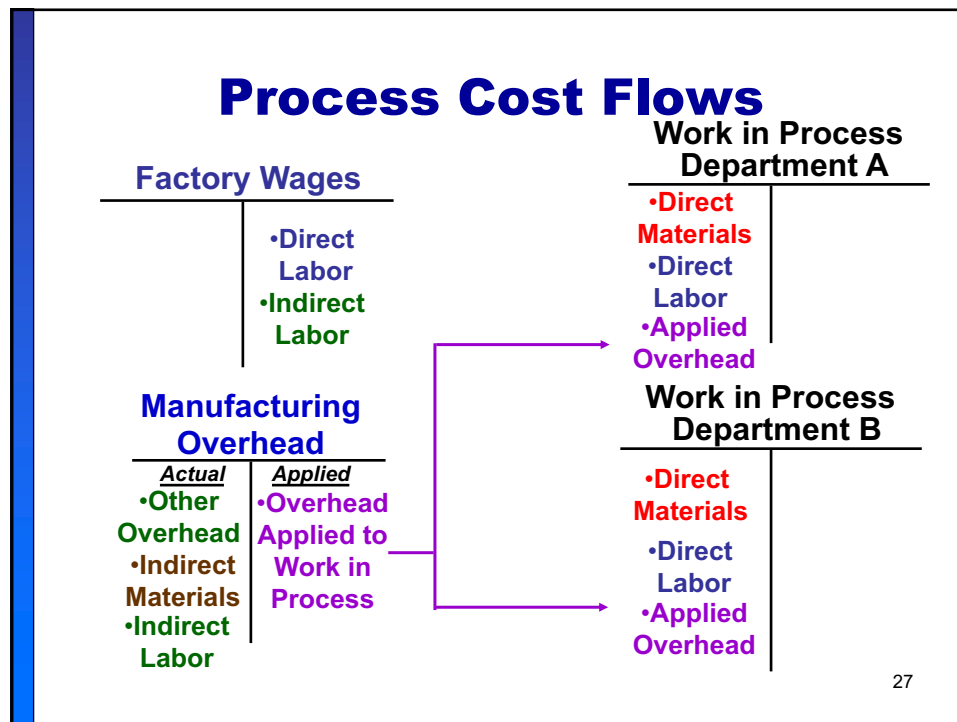
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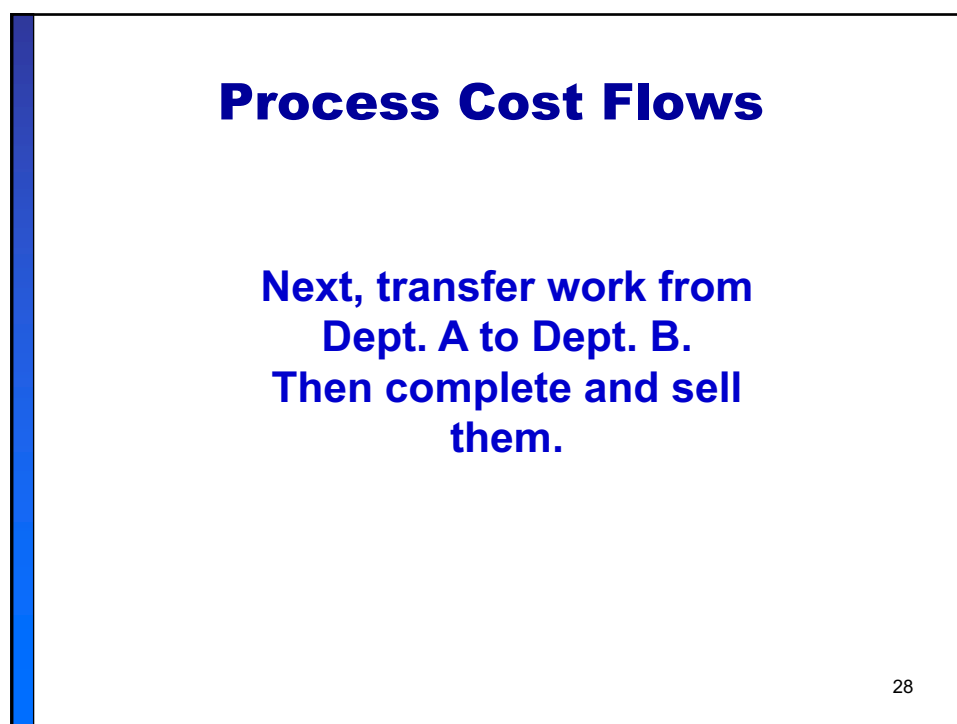
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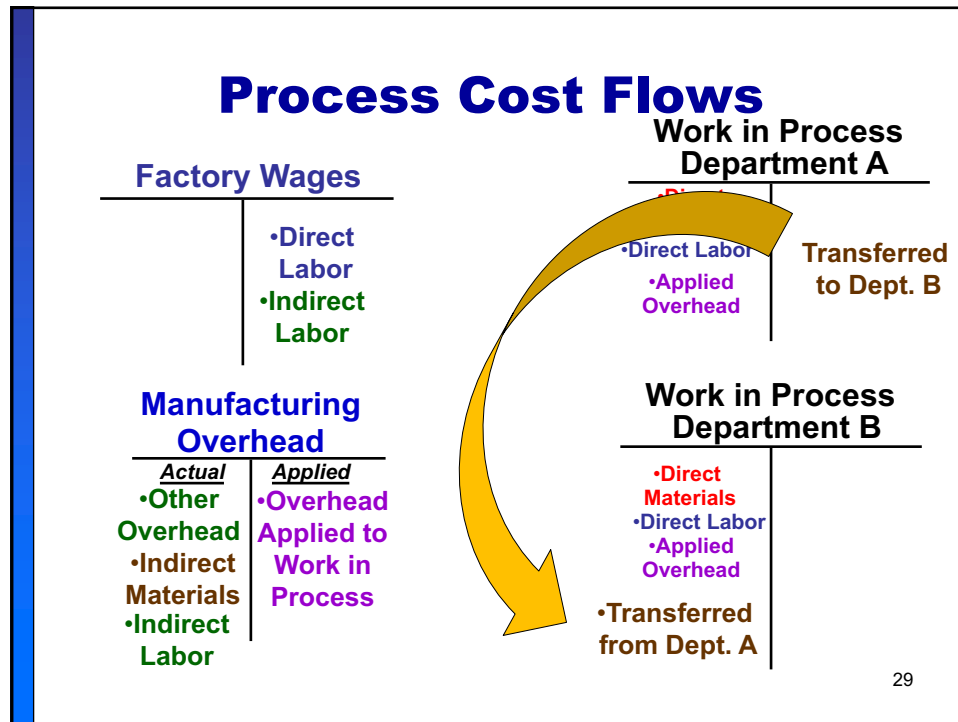
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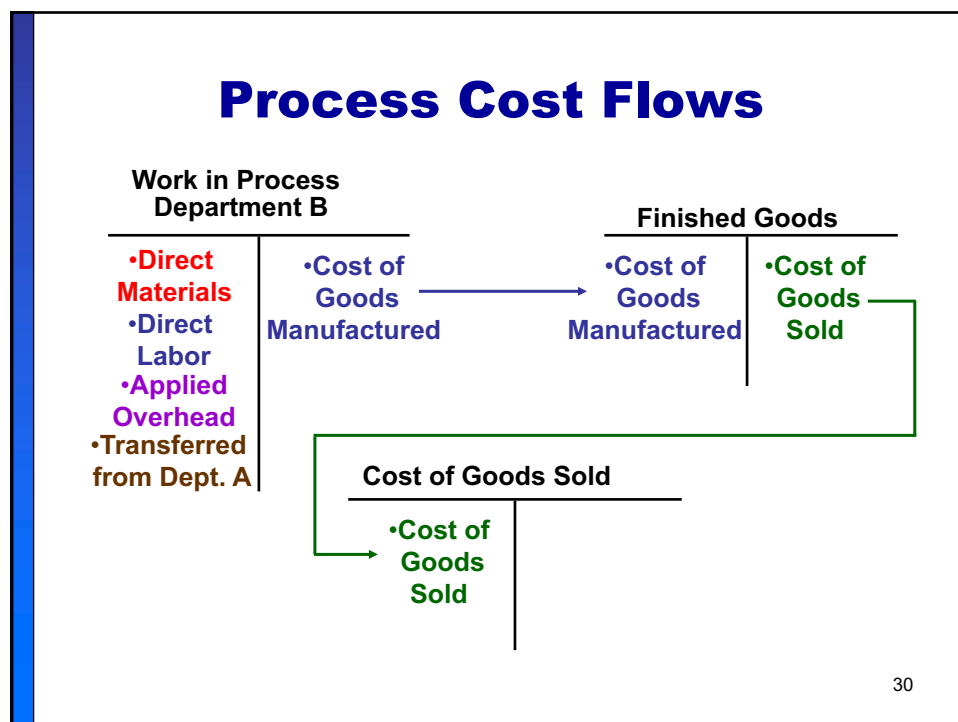
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30

Try this problem:

Schiller Company has unit costs of \$5 for materials and \$15 for conversion costs. There are 4,200 units in ending work in process which are 25% complete as to conversion costs, and fully complete as to materials cost. How much is the total cost assignable to the ending work in process?

- a) \$36,750
- b) \$84,000
- c) \$21,000
- d) \$15,750

31

31

Equivalent units of production

If there is no beginning or ending inventory in work in process account (WIP) the unit cost of products can be obtained as follows

$$\text{Unit Cost} = \frac{\text{Sum of production costs}}{\text{Production quantity}}$$

32

32

Try this problem:

Schiller Company has unit costs of \$5 for materials and \$15 for conversion costs. There are 4,200 units in ending work in process which are fully complete as to conversion costs and fully complete as to materials cost. How much is the total cost assignable to the ending work in process?

- a) \$36,750
- b) \$84,000
- c) \$21,000
- d) \$15,750

33

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Try this problem:

Schiller Company has unit costs of \$5 for materials and \$15 for conversion costs. There are 4,200 units in ending work in process which are 25% complete as to conversion costs, and fully complete as to materials cost. How much is the total cost assignable to the ending work in process?

- a) \$36,750
- b) \$84,000
- c) \$21,000
- d) \$15,750

34

34

Equivalent Units of Production

Equivalent units are **partially complete** and they are part of work in process inventory. Partially completed products are expressed in terms of a smaller number of fully completed units.

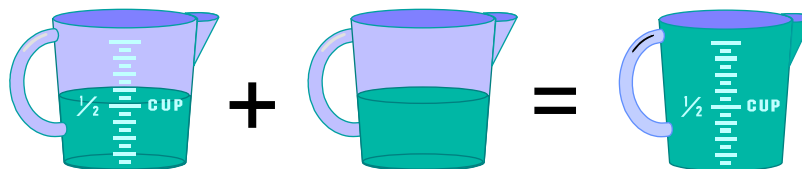


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Equivalent Units of Production

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



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

36

36

Try this problem again:

Schiller Company has unit costs of \$5 for materials and \$15 for conversion costs. There are 4,200 units in ending work in process which are 25% complete as to conversion costs, and fully complete as to materials cost. How much is the total cost assignable to the ending work in process?

- a) \$36,750
- b) \$84,000
- c) \$21,000
- d) \$15,750

37

37

Equivalent Units

For the current period, Jones started 15,000 units and completed 10,000 units, leaving 5,000 units in process 30 percent complete. How many equivalent units of production did Jones have for the period?

- a. 10,000
- b. 11,500
- c. 13,500
- d. 15,000

38

38

Calculating and Using Equivalent Units of Production

To calculate the cost per equivalent unit for the period:

$$\text{Cost per equivalent unit} = \frac{\text{Costs for the period}}{\text{Equivalent units of production for the period}}$$

39

39

Equivalent Units

Now assume that Jones incurred \$27,600 in production costs for the 11,500 equivalent units of production. What was Jones' cost per equivalent unit for the period?

- a. \$1.84
- b. \$2.40
- c. \$2.76
- d. \$2.90

40

40

Brush up your financial accounting knowledgements 1/2

Schedule of raw materials inventory

	Quantity	Price
Beginning	50	2
Purchase 1	40	3
Purchase 2	30	4
Withdrawals	60	
Ending	60	?

41

41

Brush up your financial accounting knowledgements 2/2

1. Average cost method

$$(50 \times 2 + 40 \times 3 + 30 \times 4) \div 120 = 2,83333333$$

$$2,83333333 \times 60 = \mathbf{170}$$

2. FIFO method

$$30 \times 3 + 30 \times 4 = \mathbf{210}$$

42

42

Equivalent Units of Production

Weighted Average Method

The weighted average method . . .

- Makes no distinction between work done in prior and current period.
- Blends together units and costs from prior period and current period.

Let's see how this works!

43

43

Weighted Average Example

Smith Company reported the following activity in Department A 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	@100%	@100%
Work in process, June 30	900	@60%	@30%

Calculate the Equivalent Units of Production.

44

44

Weighted Average Example

Smith Company reported the following activity in Department A 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	5,400 @100%	5,400 @100%
Work in process, June 30	900	540 @60%	270 @30%
Equivalent Units of Production.			

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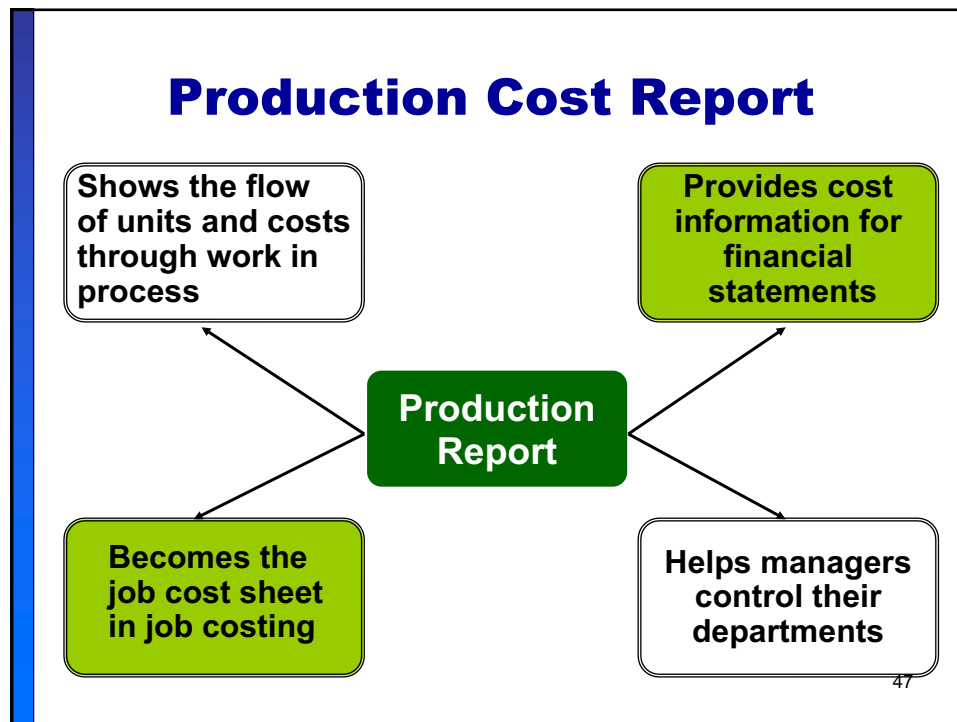
Weighted Average Example

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

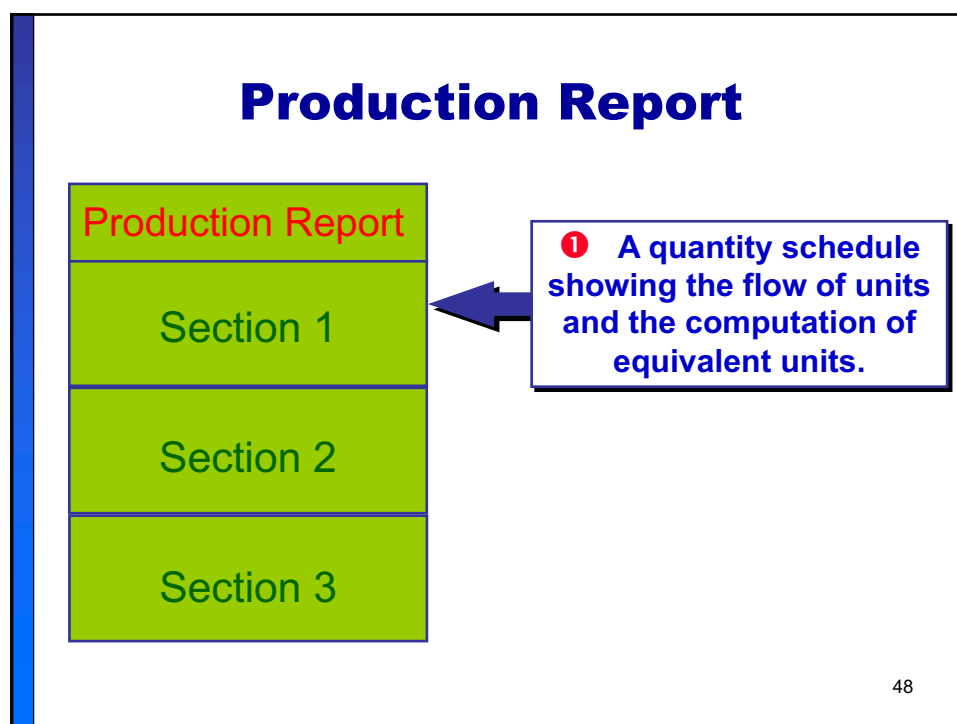
	Units	Percent Completed	
		Materials	Conversion
Work in process, June 1	300	40%	20%
Units started into production in June	6,000		
Units completed and transferred out of Department A during June	5,400	5,400 @100%	5,400 @100%
Work in process, June 30	900	540 @60%	270 @30%
Equivalent Units of Production.		5,940	5,670

46

46



47



48

Production Report

Production Report

Section 1

Section 2

Section 3

2 A computation of cost per equivalent unit.

49

49

Production Report

Production Report

Section 1

Section 2

Section 3

3 A reconciliation of cost flows for the period, including:

- ❖ Total cost for units completed and transferred from the processing department.
- ❖ Total cost for partially completed units remaining in work in process.

50

50

Production Report Example



- Double Diamond Skis uses process costing to determine unit costs in its Milling Department.
- Double Diamond uses the **weighted average** cost procedure.
- Using the following information for the month of May, let's prepare a production report for the Milling Department.

51

51

Production Report Milling



Work in process, May 1: 200 units		<u>Cost</u>
Materials:	50% complete.	\$ 3,000
Conversion:	30% complete.	1,000

Units started into production in May:	5,000
Units completed and transferred out in May:	4,800

Costs added to production in May	
Materials cost	\$ 74,000
Conversion cost	70,000

Work in process, May 31: 400 units	
Materials	40% complete.
Conversion	25% complete.

52

52

Production Report Milling



Section 1: Quantity Schedule with Equivalent Units

Units to be accounted for:

Work in process, May 1	200
Started into production	<u>5,000</u>
Total units	<u>5,200</u>

		Equivalent units	
		Materials	Conversion
Units accounted for as follows:			
Completed and transferred	4,800	4,800	4,800
	<u> </u>	<u> </u>	<u> </u>
	<u> </u>	<u> </u>	<u> </u>

53

53

Production Report Milling



Section 1: Quantity Schedule with Equivalent Units

Units to be accounted for:

Work in process, May 1	200
Started into production	<u>5,000</u>
Total units	<u>5,200</u>

		Equivalent units	
		Materials	Conversion
Units accounted for as follows:			
Completed and transferred	4,800	4,800	4,800
Work in process, May 31	400		
Materials 40% complete		160	
	<u>5,200</u>	<u>4,960</u>	<u> </u>

54

54

Production Report Milling



Section 1: Quantity Schedule with Equivalent Units

Units to be accounted for:

Work in process, May 1	200
Started into production	<u>5,000</u>
Total units	<u>5,200</u>

		Equivalent units	
		Materials	Conversion
Units accounted for as follows:			
Completed and transferred	4,800	4,800	4,800
Work in process, May 31	400		
Materials 40% complete		160	
Conversion 25% complete			100
	5,200	4,960	4,900

55

55

Production Report Milling



Section 2: Compute cost per equivalent unit

	Total Cost	Materials	Conversion
Cost to be accounted for:			
Work in process, May 1	\$ 4,000	\$ 3,000	\$ 1,000
Costs added in the Milling Dept	<u>144,000</u>	<u>74,000</u>	<u>70,000</u>
Total cost	<u>\$ 148,000</u>	<u>\$ 77,000</u>	<u>\$ 71,000</u>
Equivalent units			
		4,960	4,900

56

56

Production Report Milling



Section 2: Compute cost per equivalent unit

	Total Cost	Materials	Conversion
Cost to be accounted for:			
Work in process, May 1	\$ 4,000	\$ 3,000	\$ 1,000
Costs added in the Milling Dept	144,000	74,000	70,000
Total cost	\$148,000	\$ 77,000	\$ 71,000
 Equivalent units		4,960	4,900

Notice: The beginning % complete is irrelevant

57

57

Production Report Milling



Section 2: Compute cost per equivalent unit

	Total Cost	Materials	Conversion
Cost to be accounted for:			
Work in process, May 1	\$ 4,000	\$ 3,000	\$ 1,000
Costs added in the Milling Dept	144,000	74,000	70,000
Total cost	\$148,000	\$ 77,000	\$ 71,000
 Equivalent units		4,960	4,900
Cost per equivalent unit		\$ 15.524	

$$\$77,000 \div 4,960 \text{ units} = \$15.524 \text{ (rounded)}$$

58

58

Production Report Milling

Section 2: Compute cost per equivalent unit

	Total Cost	Materials	Conversion
Cost to be accounted for:			
Work in process, May 1	\$ 4,000	\$ 3,000	\$ 1,000
Costs added in the Milling Dept	144,000	74,000	70,000
Total cost	<u>\$148,000</u>	<u>\$ 77,000</u>	<u>\$ 71,000</u>
Equivalent units		4,960	4,900
Cost per equivalent unit		\$ 15.524	\$ 14.490

$$\$71,000 \div 4,900 \text{ units} = \$14.490 \text{ (rounded)}$$

59

Production Report Milling

Section 2: Compute cost per equivalent unit

	Total Cost	Materials	Conversion
Cost to be accounted for:			
Work in process, May 1	\$ 4,000	\$ 3,000	\$ 1,000
Costs added in the Milling Dept	144,000	74,000	70,000
Total cost	<u>\$148,000</u>	<u>\$ 77,000</u>	<u>\$ 71,000</u>
Equivalent units		4,960	4,900
Cost per equivalent unit		\$ 15.524	\$ 14.490
Total cost per equivalent unit = \$15.524 + \$14.490 = \$30.014			

60

60

Production Report Milling



Section 3: Cost Reconciliation

	Total Cost	Equivalent Units	
		Materials	Conversion
Cost accounted for as follows:			
Transferred out during May		4,800	4,800
Work in process, May 31:			
Materials		160	
Conversion			100
Total work in process, May 31			
Total cost accounted for			

61

61

Production Report Milling



Section 3: Cost Reconciliation

4,800 units @ \$30.014	Total Cost	Equivalent Units	
		Materials	Conversion
Cost accounted for as follows:			
Transferred out during May	\$144,067	4,800	4,800
Work in process, May 31:			
Materials		160	
Conversion			100
Total work in process, May 31			
Total cost accounted for			

62

62

Production Report Milling

Section 3: Cost Reconciliation

	Total Cost	Equivalent Units	
		Materials	Conversion
160 units @ \$15.524			
Cost accounted for as follows:			
Transferred out during May	<u>\$144,067</u>	4,800	4,800
Work in process, May 31:			
Materials	<u>\$2,484</u>	160	
Conversion			100
Total work in process, May 31	<u> </u>		
Total cost accounted for	<u> </u>		

63

63

Production Report Milling

Section 3: Cost Reconciliation

	Total Cost	Equivalent Units	
		Materials	Conversion
100 units @ \$14.490			
Cost accounted for as follows:			
Transferred out during May	<u>\$144,067</u>	4,800	4,800
Work in process, May 31:			
Materials	<u>\$2,484</u>	160	
Conversion	<u>\$1,449</u>		100
Total work in process, May 31	<u>\$3,933</u>		
Total cost accounted for	<u>\$148,000</u>		

64

64

Units to be accounted for:			
Work in process, May 1	200		
Started into production	<u>5,000</u>		
Total units	<u>5,200</u>		
		Equivalent units	
		Materials	Conversion
Units accounted for as follows:			
Completed and transferred	4,800	4,800	4,800
Work in process, May 31	400		
Materials 40% complete		160	
Conversion 25% complete			100
	<u>5,200</u>	<u>4,960</u>	<u>4,900</u>
Cost to be accounted for:			
Work in process, May 1	\$ 4,000	\$ 3,000	\$ 1,000
Costs added in the Milling Dept	<u>144,000</u>	<u>74,000</u>	<u>70,000</u>
Total cost	<u>\$ 148,000</u>	<u>\$ 77,000</u>	<u>\$ 71,000</u>
Cost per equivalent unit	\$ 30.014	\$ 15.524	\$ 14.490
Cost accounted for as follows:			
Transferred out during May	<u>\$ 144,067</u>	4,800	4,800
Work in process, May 31:			
Materials	2,484	160	
Conversion	<u>1,449</u>		100
Total work in process, May 31	<u>3,933</u>		
Total cost accounted for	<u>\$ 148,000</u>		

65