

مفردات محاسبة التكاليف المتقدمة – الصف الرابع

ساعات الأسبوعية		السنة	اسم المادة
المجموع	العملي	النظري	
4	3	1	Advanced costs Accounting محاسبة التكاليف المتقدمة

Weeks	Subjects
1	Cost concept, objectives, functions, benefits of cost accounting, the distinction between cost control and cost reduction.
1 - 2	Concept of job costing, basic features of job costing, advantages of job costing, procedure of cost accounting.
2 - 4	Predation of job cost card, meaning of job Ticket, usefulness of job Ticket, format of job cost card and Ticket
4 - 6	Predation cost sheet for job order costing.
6 - 7	Concept of process costing, basic features of process costing, procedure of process costing
7 - 8	Distinction between job costing and Process costing, classification of cost by process
8 - 10	Specimen of process Account, transfers the cost of output, calculate Average cost pre unit
10 - 12	Meaning of normal loss, calculate number of unite of expected normal loss, treatment of normal loss
12 - 14	Meaning of Abnormal loss, calculate number of units of Abnormal loss, calculate the cost of Abnormal loss.
14 - 16	Definition standard, standard cost, estimated costing versus standard costing, Historical cost versus standard costing, standard cost versus budgetary
16 - 17	Advantages of standard costing, limitation of standard costing, determination of standard cost
17 - 19	Material cost variances: <ul style="list-style-type: none"> • Direct material cost variance ((DMCV)) • Direct material Mix variance ((DMMV)) • Direct material price variance ((DMPV))

<p>19 - 21</p>	<p>Labor cost variances:</p> <ul style="list-style-type: none"> • Direct labor cost variance • Direct labor mix variance • Direct labor rate variance
<p>21 - 23</p>	<p>Overhead variance:</p> <ul style="list-style-type: none"> • Total fixed overhead variance • Total variable overhead variance • Variable overhead efficiency variance • Total overhead variance
<p>23 - 25</p>	<p>Sales variance:</p> <ul style="list-style-type: none"> • Sales variance • Sales value volume variance • Sales value price variance
<p>25 - 27</p>	<p>Joint products and by-products, concept and features of joint products</p> <ul style="list-style-type: none"> • Accounting for joint products • methods of Apportioning costs over joint product: <ol style="list-style-type: none"> 1- Physical method 2- Average unit cost method 3- Contribution margin method
<p>27 - 28</p>	<p>By-products Concept and features, distinction between joint product and by-product, Accounting for by-product.</p>
<p>28 - 30</p>	<p>Concept of activity based costing, distinction between traditional approach and activity based costing approach, practical steps in activity based costing.</p>

Chapter1: Introduction to Cost Accounting

After studying this chapter, you should be able to:

1. Explain the uses of cost accounting data.
2. Describe the relationship of cost accounting to financial and management accounting.
3. Identify the three basic elements of manufacturing costs.
4. Illustrate basic cost accounting procedures.
5. Distinguish between the two basic types of cost accounting systems.

Study Objective [1] Explain the uses of cost accounting data.

- Cost accounting provides the detailed cost data that management needs to control current operations and plan for the future.
- Management uses cost accounting information to decide how to allocate resources to the most efficient and profitable areas of the business.

Types of Businesses Entities that Use Cost Accounting

- Manufacturers (Ford, General Motors)
- Merchandisers/Retailers (WalMart, Kmart)
- Wholesalers (Beverage Distributors)
- For-profit Service Businesses (CPAs, Attorneys)
- Not-for-profit Service Agencies (United Way, Red Cross)

The Manufacturing Process

- This process involves the conversion of direct (raw) materials, direct labor, and factory overhead into finished goods.
- Product quality is an important competitive weapon in manufacturing.
- Many companies require their suppliers to be ISO 9000 certified.

Determining Product Costs and Pricing

- Cost accounting is used to determine products costs and help with marketing decisions.
 1. Determining the selling price of a product.
 2. Meeting competition.
 3. Bidding on contracts.
 4. Analyzing profitability.

Planning and Control

- Planning is the process of establishing objectives or goals for the firm and determining the means by which they will be met. Effective planning is facilitated by the following:
 1. Clearly defined objectives of the manufacturing operation.
 2. A production plan that will assist and guide the company in reaching its objectives.
- Control is the process of monitoring the company's operations and determining whether the objectives identified in the planning process are being accomplished. Effective control is achieved through the following:
 1. Assigning responsibility.
 2. Periodically measuring and comparing results.
 3. Taking necessary corrective action.

Responsibility Accounting

- Responsibility accounting is the assignment of accountability for costs or production results to those individuals who have the most authority to influence them.
- A cost center is a unit of activity within the factory to which costs may be practically and equitably assigned. The manager of a cost center is responsible for those costs that the manager controls.

Reporting

- Cost and production reports for a cost center reflect its costs, in dollars, and its production activity.
- The performance report will include only those costs and production data that the center's manager can control.
- A variance is the favorable (F) or unfavorable (U) difference between actual costs and budgeted costs.

Study Objective [2]

Relationship of Cost Accounting to Financial and Managerial Accounting

Cost accounting includes those parts of both financial and managerial accounting that collect and analyze cost information.

Chapter2: Job Order Cost System

After studying this chapter, you should be able to:

1. Explain the characteristics and purposes of cost accounting.
2. Describe the flow of costs in a job order cost system.
3. Explain the nature and importance of a job cost sheet.
4. Indicate how the predetermined overhead rate is determined and used.
5. Prepare entries for jobs completed and sold.
6. Distinguish between under- and overapplied manufacturing overhead.

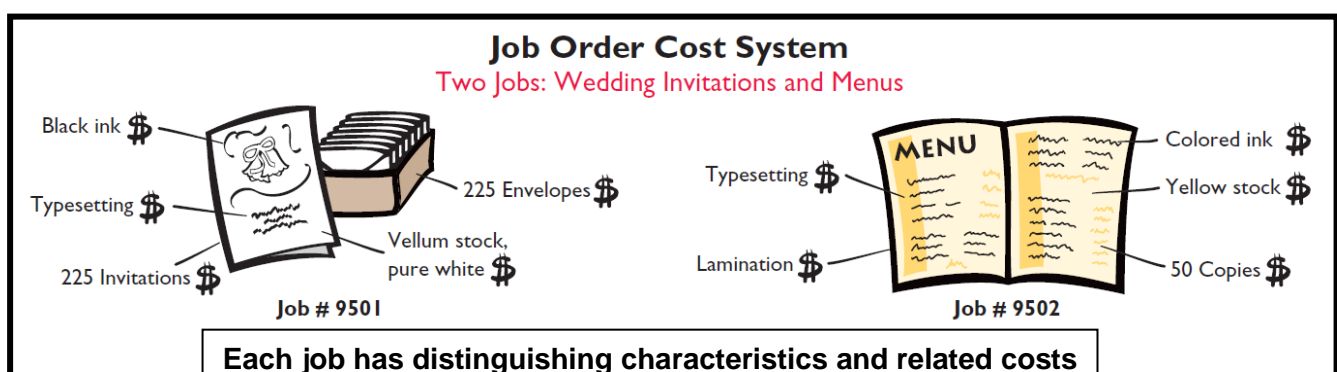
Study Objective [1] Explain the characteristics and purposes of cost accounting

Cost accounting involves measuring, recording, and reporting product costs. Companies determine both the total cost and the unit cost of each product.

- A cost accounting system consists of accounts for the various manufacturing costs. These accounts are fully integrated into the general ledger of a company.
- An important feature of a cost accounting system is the use of a perpetual inventory system. Such a system provides immediate, up-to-date information on the cost of a product.
- There are two basic types of cost accounting systems: (1) a job order cost system and (2) a process cost system. Although cost accounting systems differ widely from company to company, most involve one of these two traditional product costing systems.

Job Order Cost System

- Costs are assigned to each job or batch.
- **Key feature:** Each job or batch has its own distinguishing characteristics.
- **Objective:** Compute the cost per job.
- Measures costs for each job completed – not for set time periods.



Accumulating Manufacturing Costs

Raw Material Costs

Illustration: Wallace Company purchases 2,000 lithium batteries (Stock No. AA2746) at \$5 per unit (\$10,000) and 800 electronic modules (Stock No. AA2850) at \$40 per unit (\$32,000) for a total cost of \$42,000 (\$10,000 + \$32,000).

The entry to record this purchase on January 4 is:

Jan. 4	Raw Materials Inventory	42,000	
	Accounts Payable		42,000

Factory Labor Costs

Consists of three costs:

1. Gross earnings of factory workers,
2. Employer payroll taxes on these earnings, and
3. Fringe benefits incurred by the employer.

Illustration: Wallace incurs \$32,000 of factory labor costs. Of that amount, \$27,000 relates to wages payable and \$5,000 relates to payroll taxes payable in February.

The entry to record factory labor for the month is:

Jan. 31	Factory Labor	32,000	
	Factory Wages Payable		27,000
	Employer Payroll Taxes Payable		5,000

Manufacturing Overhead Costs

- Many types of overhead costs
 - ▶ For example, property taxes, depreciation, insurance, and repairs.
- Costs unrelated to manufacturing process are expensed.
- Costs related to manufacturing process are accumulated in Manufacturing Overhead.
 - ▶ Manufacturing overhead subsequently assigned to work in process.

Illustration: Using assumed data, the summary entry for manufacturing overhead in Wallace Manufacturing Company is:

Jan. 31	Manufacturing Overhead	13,800	
	Utilities Payable		4,800
	Prepaid Insurance		2,000
	Accounts Payable (for repairs)		2,600
	Accumulated Depreciation		3,000
	Property Taxes Payable		1,400

Study Objective [4]

Indicate how the predetermined overhead rate is determined and used

Manufacturing Overhead Costs

- Relates to production operations as a whole.
- Cannot be assigned to specific jobs based on actual costs incurred.
- Companies assign to work in process and to specific jobs on an estimated basis through the use of a ... **Predetermined Overhead Rate**

Predetermined Overhead Rate

- Based on the relationship between estimated annual overhead costs and expected annual operating activity
- Expressed in terms of an activity base such as
 - ▶ Direct labor costs
 - ▶ Direct labor hours
 - ▶ Machine hours
 - ▶ Any other activity that is an equitable base for applying overhead costs to jobs
- Established at the beginning of the year.
- May use a single, company-wide predetermined rate.
- May use a different rate for each department and each department may have a different activity base.
- Formula for computing the predetermined rate overhead rate is:

Estimated Annual Overhead Costs	\div	Expected Annual Operating Activity	$=$	Predetermined Overhead Rate
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- Using a predetermined overhead rate Manufacturing Overhead Costs assigned to Work in Process during the period to get timely information about the cost of a completed job.

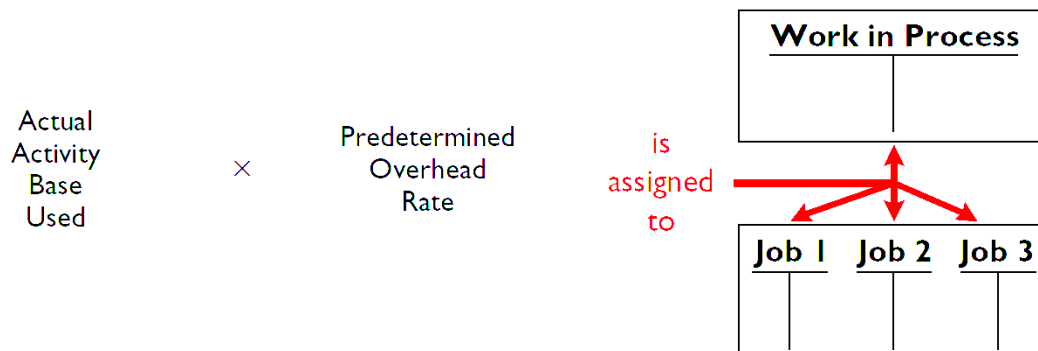


Illustration: Wallace uses direct labor cost as the activity base. Assuming that the company expects annual overhead costs to be \$280,000 and direct labor costs for the year to be \$350,000, **compute the overhead rate.**

$$\$280,000 \div \$350,000 = 80\%$$

This means that for every dollar of direct labor, Wallace will assign 80 cents of manufacturing overhead to a job.

Jan. 31	Accounts Receivable	50,000	
	Sales revenue		50,000
	Cost of Goods Sold	39,000	
	Finished Goods Inventory		39,000

Summary of Job Order Cost Flows

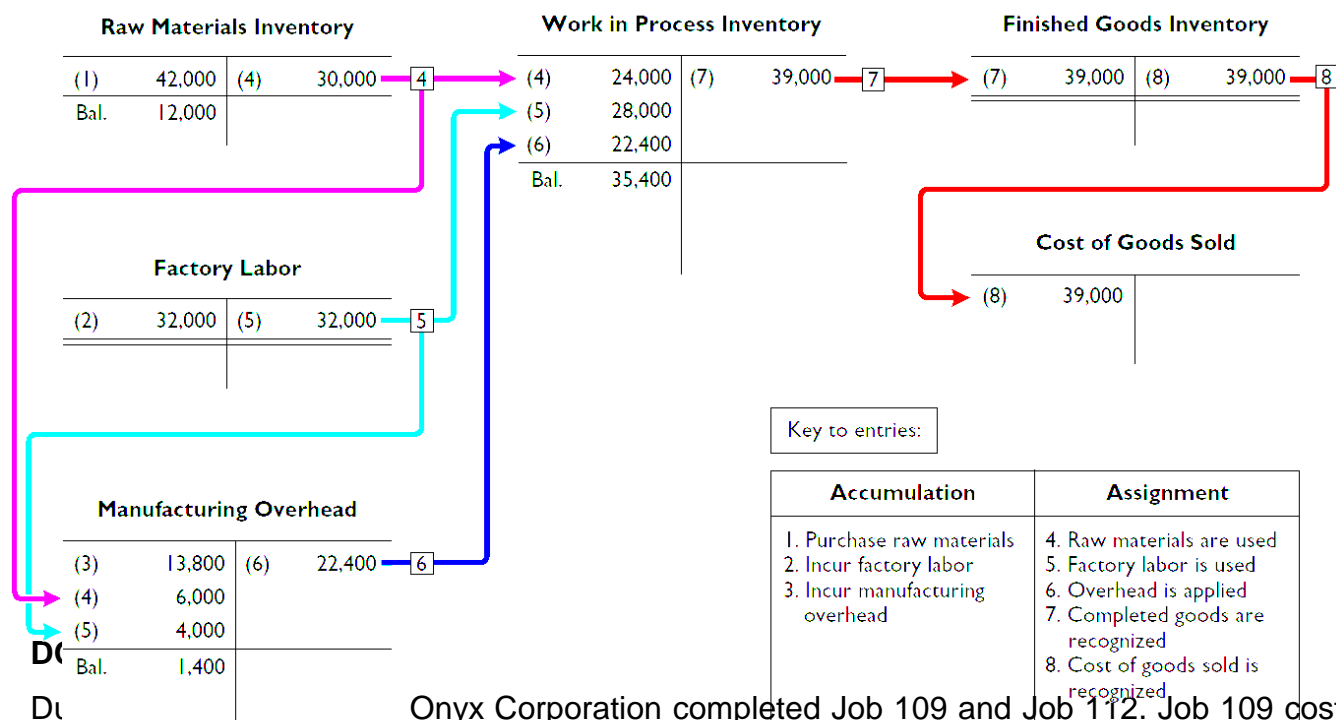
The cost flows can be categorized as one of four types:

- Accumulation:** The Company first accumulates costs by (1) purchasing raw materials, (2) incurring labor costs, and (3) incurring manufacturing overhead costs.
- Assignment to jobs:** Once the company has incurred manufacturing costs, it must assign them to specific jobs. For example, as it uses raw materials on specific jobs (4), it assigns them to work in process, or treats them as manufacturing overhead if the raw materials cannot be associated with a specific job. Similarly, it either assigns factory labor (5) to work in process, or treats it as manufacturing overhead if the factory labor cannot be associated with a specific job. Finally it assigns manufacturing overhead (6) to work in process using a

predetermined overhead rate. This deserves emphasis: Do not assign overhead using actual overhead costs, but instead use a predetermined rate.

- **Completed jobs:** As jobs are completed (7), the company transfers the cost of the completed job out of work in process inventory into finished goods inventory.
- **When goods are sold:** As specific items are sold (8), the company transfers their cost out of finished goods inventory into cost of goods sold.

Flow of Costs



Onyx Corporation completed Job 109 and Job 112. Job 109 cost \$19,000 and Job 112 costs \$27,000. Job 112 was sold on account for \$42,000. Journalize the entries for the completion of the two jobs and the sale of Job 112.

Solution:

Finished Goods Inventory 46,000
 Work in Process Inventory 46,000
 (To record completion of Job 109, costing \$19,000 and Job 112, costing \$27,000)

Accounts Receivable 42,000
 Sales 42,000
 (To record sale of Job 112)

Cost of Goods Sold 27,000
 Finished Goods Inventory 27,000

(To record cost of goods sold for Job 112)



Illustration: Wallace has a \$2,500 credit balance in Manufacturing Overhead at December 31. The adjusting entry for the over-applied overhead is:

Dec. 31	Manufacturing Overhead	2,500	
	Cost of Good Sold		2,500

(To transfer overapplied overhead to cost of goods sold)

DO IT!

For Karr Company, the predetermined overhead rate is 140% of direct labor cost. During the month, Karr incurred \$90,000 of factory labor costs, of which \$80,000 is direct labor and \$10,000 is indirect labor. Actual overhead incurred was \$119,000. Compute the amount of manufacturing overhead applied during the month. Determine the amount of under- or overapplied manufacturing overhead.

Solution:

Manufacturing overhead applied = (140% x \$80,000) = \$112,000

Underapplied manufacturing overhead = (\$119,000 - \$112,000) = \$7,000

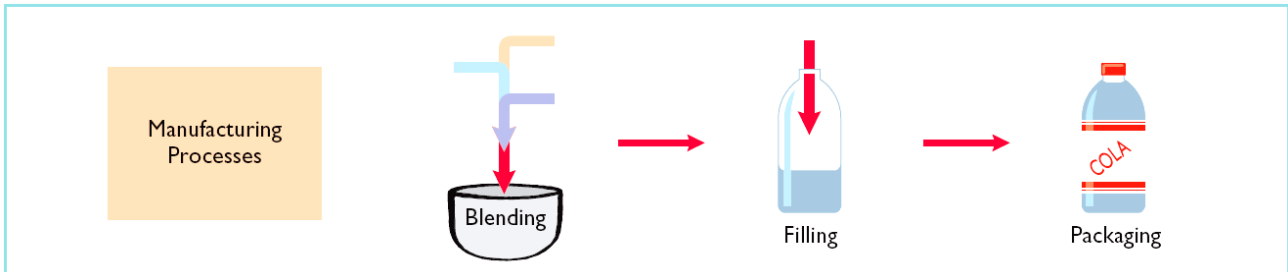
Chapter3: Process Cost System

After studying this chapter, you should be able to:

1. Understand who uses process cost systems.
2. Explain the similarities and differences between job order cost and process cost systems.
3. Explain the flow of costs in a process cost system.
4. Make the journal entries to assign manufacturing costs in a process cost system.
5. Compute equivalent units.
6. Explain the four steps necessary to prepare a production cost report.
7. Prepare a production cost report.
8. Account for units lost in the production process.

Study Objective [1] Understand who uses process cost systems

- Use to apply costs to similar products that are mass-produced in a continuous fashion
- Examples include the production of Cereal, Paint, Manufacturing Steel, Oil Refining and Soft Drinks.
- Illustration below shows the manufacturing process at a bottling company like Coca-Cola



Process Costing for Service Companies

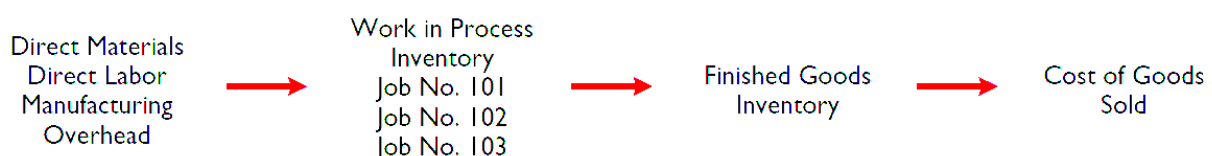
- Service companies that provide specific, nonroutine services will probably benefit from using a job order cost system.
- Those that perform routine, repetitive services will probably be better off with a process cost system.

Study Objective [2] Explain the similarities and differences between job order cost and process cost systems

Job Order Cost	Process Cost
<ul style="list-style-type: none"> • Costs assigned to each job. • Products have unique characteristics. 	<ul style="list-style-type: none"> • Costs tracked through a series of connected manufacturing processes or departments. • Products are uniform or relatively homogeneous and produced in a large volume.

Illustration below shows the basic flow of costs in these two systems:

Job Order Cost Flow



Process Cost Flow

The following analysis highlights the basic similarities and differences between these two systems:

Similarities	Differences
1. Manufacturing cost elements. 2. Accumulation of the costs of materials, labor, and overhead. 3. Flow of costs.	1. Number of work in process accounts used. 2. Documents used to track costs. 3. Point at which costs are totaled. 4. Unit cost computations.

Illustration below summarizes the major differences between a job order cost and a process cost system:

Feature	Job Order Cost System	Process Cost System
Work in process accounts	One work in process account	Multiple work in process accounts
Documents used	Job cost sheets	Production cost reports
Determination of total manufacturing costs	Each job	Each period
Unit-cost computations	$\text{Cost of each job} \div \text{Units produced for the job}$	$\text{Total manufacturing costs} \div \text{Equivalent units produced during the period}$

DO IT!

Indicate whether each of the following statements is true or false.

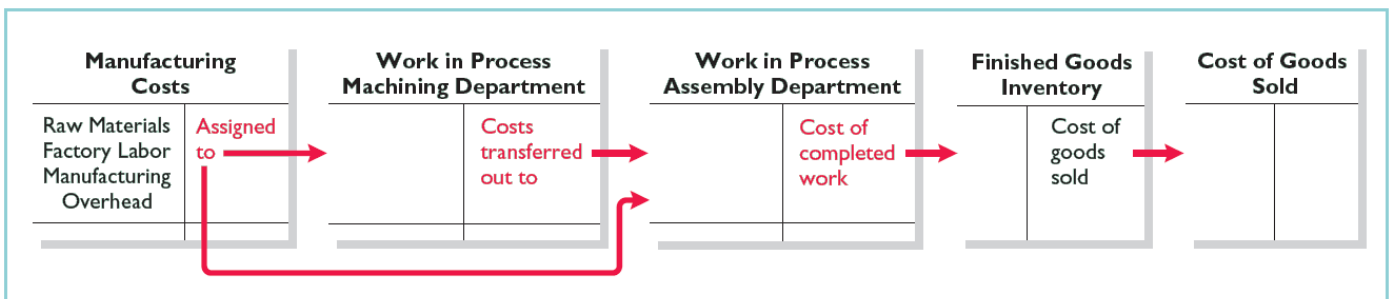
1. A law firm is likely to use process costing for major lawsuits.
2. A manufacturer of paintballs is likely to use process costing.
3. Both job order and process costing determine product costs at the end of a period of time, rather than when a product is completed.
4. Process costing does not keep track of manufacturing overhead.

Solution

1. False. 2. True. 3. False. 4. False.

Study Objective [3] Explain the flow of costs in a process cost system

Illustration below shows the flow of costs in the process cost system for Tyler Company manufactures roller blade and skateboard wheels that it sells to manufactures and retail outlets. Manufacturing consists of two processes: machining and assembly. The Machining Department shapes, hones, and drills the raw materials. The Assembly Department assembles and packages the parts.



Study Objective [4] Make the journal entries to assign manufacturing costs in a process cost system

- Accumulation of materials, labor, and overhead costs is same as in job order costing.
 - ▶ Debit Raw Materials Inventory for purchases of raw materials.
 - ▶ Debit Factory Labor for factory labor incurred.
 - ▶ Debit Manufacturing Overhead for overhead cost incurred.
- Assignment of the three manufacturing cost elements to Work in Process in a process cost system is different from a job order cost system

Material Costs

- A process cost system requires fewer material requisition slips than a job order cost system.
 - ▶ Materials are used for processes and not specific jobs.
 - ▶ Requisitions are for larger quantities of materials.
 - ▶ Journal entry to record materials used:

Work in Process—Machining	XXXX
Work in Process—Assembly	XXXX
Raw Materials Inventory	XXXX

(To record materials used)

Factory Labor Costs

- Time tickets may be used in both systems.
- All labor costs incurred within a production department are a cost of processing.
- The journal entry to record factory labor costs:

Work in Process—Machining	XXXX
Work in Process—Assembly	XXXX
Factory Labor	XXXX

(To assign factory labor to production)

Manufacturing Overhead Costs

- Objective of assigning overhead is to allocate overhead to production departments on objective and equitable basis.
- Use the activity that “drives” or causes the costs.
- Machine time used - primary driver.
- Journal entry to allocate overhead:

Work in Process—Machining	XXXX
Work in Process—Assembly	XXXX
Manufacturing Overhead	XXXX

(To assign overhead to production)

Transfers

Monthly Entry to transfer goods to next department:

Work in Process—Assembly	XXXXX
Work in Process—Machining	XXXXX

(To record transfer of units to the Assembly Department)

Entry to transfer completed goods to Finished Goods:

Finished Goods Inventory	XXXXX
Work in Process—Assembly	XXXXX

(To record transfer of units to finished goods)

Refinements on the Weighted-Average Method

Illustration: Kellogg Company has produced Eggo® Waffles since 1970. Three departments produce these waffles: Mixing, Baking, and Freezing/Packaging. The Mixing Department combines dry ingredients, including flour, salt, and baking powder, with liquid ingredients, including eggs and vegetable oil, to make waffle batter.

Illustration below provides information related to the Mixing Department at the end of June:

Mixing Department			
	<u>Physical Units</u>	<u>Percentage Complete</u>	
		<u>Materials</u>	<u>Conversion Costs</u>
Work in process, June 1	100,000	100%	70%
Started into production	800,000		
Total units	<u>900,000</u>		
Units transferred out	700,000		
Work in process, June 30	<u>200,000</u>	100%	60%
Total units	<u><u>900,000</u></u>		

- Conversion costs are labor costs plus overhead costs.
- Beginning work in process is not part of the equivalent-units-of-production formula.
- The units transferred out to the Baking Department are fully complete as to both materials and conversion costs.
- The ending work in process is fully complete as to materials, but only 60% complete as to conversion costs. We therefore need to make two equivalent unit computations: one for materials, and the other for conversion costs.
- Illustration below shows these computations:

Mixing Department		
	<u>Equivalent Units</u>	
	<u>Materials</u>	<u>Conversion Costs</u>
Units transferred out	700,000	700,000
Work in process, June 30		
200,000 × 100%	200,000	
200,000 × 60%		<u>120,000</u>
Total equivalent units	<u><u>900,000</u></u>	<u><u>820,000</u></u>

DO IT!

The fabricating department has the following production and cost data for the current month:

Beginning	Units	Ending
<u>Work in Process</u>	<u>Transferred Out</u>	<u>Work in Process</u>
–0–	15,000	10,000

Materials are entered at the beginning of the process. The ending work in process units are 30% complete as to conversion costs.

Compute the equivalent units of production for (a) materials and (b) conversion costs.

Solution

(a) Materials

Units transferred out	15,000
Ending work in process units	<u>10,000</u>
	<u>25,000</u>

(b) Conversion costs

Units transferred out	15,000
Equivalent unit in ending WIP (10,000 x 30%)	<u>3,000</u>
	<u>18,000</u>

Study Objective [6] Explain the four steps necessary to prepare a production cost report.

A production cost report is the:

- Key document used to understand activities.
- Prepared for each department and shows Production Quantity and Cost data.
- Four steps in preparation:
 - Step 1: Compute physical unit flow
 - Step 2: Compute equivalent units of production
 - Step 3: Compute unit production costs
 - Step 4: Prepare a cost reconciliation schedule
- Illustration below shows the flow of costs to make an Eggo® Waffle and the related production cost reports for each department:

Compute the Physical Unit Flow (Step 1)

- Physical units - actual units to be accounted for during a period, regardless of work performed.
- Total units to be accounted for - units started (or transferred) into production during the period + units in production at beginning of period.
- Total units accounted for - units transferred out during period + units in process at end of period.
- Illustration below shows the flow of physical units for Kellogg's Mixing Department for the month of June:

Mixing Department	
	<u>Physical Units</u>
Units to be accounted for	
Work in process, June 1	100,000
Started (transferred) into production	<u>800,000</u>
Total units	<u><u>900,000</u></u>
Units accounted for	
Completed and transferred out	700,000
Work in process, June 30	<u>200,000</u>
Total units	<u><u>900,000</u></u>

Compute Equivalent Units of Production (Step 2)

Mixing Department

- Department adds materials at beginning of process and
- Incurs conversion costs uniformly during the process.
- The equivalent unit computation is as follows:

	<u>Equivalent Units</u>	
	<u>Materials</u>	<u>Conversion Costs</u>
Units transferred out	700,000	700,000
Work in process, June 30		
200,000 × 100%	200,000	
200,000 × 60%		<u>120,000</u>
Total equivalent units	<u><u>900,000</u></u>	<u><u>820,000</u></u>

Compute Unit Production Costs (Step 3)

- Costs expressed in terms of equivalent units of production.
- When equivalent units of production are different for materials and for conversion costs, three unit costs are computed:
 1. Materials
 2. Conversion
 3. Total Manufacturing

Compute total materials cost related to Eggo® Waffles:

Work in process, June 1

Direct materials costs \$ 50,000

Cost added to production during June

Direct material cost 400,000

Total material costs **\$450,000**

The computation of unit materials cost is as follows:

Total Materials Cost	÷	Equivalent Units of Materials	=	Unit Materials Cost
\$450,000	÷	900,000	=	\$0.50

Compute total conversion costs related to Eggo® Waffles:

Work in process, June 1

Conversion costs \$ 35,000

Costs added to production during June

Conversion costs 170,000

Total conversion costs **\$205,000**

The computation of unit conversion cost is as follows:

Total Conversion Costs	÷	Equivalent Units of Conversion Costs	=	Unit Conversion Cost
\$205,000	÷	820,000	=	\$0.25

Compute total manufacturing costs per unit:

Unit Materials Cost	+	Unit Conversion Cost	=	Total Manufacturing Cost per Unit
\$0.50	+	\$0.25	=	\$0.75

Prepare a Cost Reconciliation Schedule (Step 4)

Kellogg charged total costs of \$655,000 to the Mixing Department in June, calculated as follows:

Costs to be accounted for

Work in process, June 1	\$ 85,000
Started into production	<u>570,000</u>

Total costs **\$655,000**

The company then prepares a cost reconciliation schedule to assign these costs to (a) units transferred out to the Baking Department and (b) ending work in process:

Mixing Department Cost Reconciliation Schedule		
Costs accounted for		
Transferred out (700,000 × \$0.75)		\$ 525,000
Work in process, June 30		
Materials (200,000 × \$0.50)	\$100,000	
Conversion costs (120,000 × \$0.25)	<u>30,000</u>	<u>130,000</u>
Total costs		<u><u>\$655,000</u></u>

Study Objective [7] Prepare the Production Cost Report

At this point, Kellogg is ready to prepare the production cost report for the Mixing Department. As indicated earlier, this report is an internal document for management that shows production quantity and cost data for a production department.

Production cost reports provide a basis for evaluating the productivity of a department. In addition, managers can use the cost data to assess whether unit costs and total costs are reasonable. By comparing the quantity and cost data with predetermined goals, top management can also judge whether current performance is meeting planned objectives.

Illustration below shows the production cost report for the Mixing Department. The report identifies the four steps.

Mixing Department Production Cost Report For the Month Ended June 30, 2014			
	<u>Equivalent Units</u>		
	Physical Units	Materials	Conversion Costs
<u>QUANTITIES</u>	Step 1	Step 2	
Units to be accounted for			
Work in process, June 1	100,000		
Started into production	800,000		
Total units	<u>900,000</u>		
Units accounted for			
Transferred out	700,000	700,000	700,000
Work in process, June 30	200,000	200,000	120,000 (200,000 × 60%)
Total units	<u>900,000</u>	<u>900,000</u>	<u>820,000</u>
<u>COSTS</u>			
Unit costs Step 3		Materials	Conversion Costs
Total cost	(a)	\$450,000	\$205,000
Equivalent units	(b)	900,000	820,000
Unit costs [(a) ÷ (b)]		<u>\$0.50</u>	<u>\$0.25</u>
Costs to be accounted for			
Work in process, June 1			\$85,000
Started into production			570,000
Total costs			<u>\$655,000</u>
<u>Cost Reconciliation Schedule</u> Step 4			
Costs accounted for			
Transferred out (700,000 × \$0.75)			\$525,000
Work in process, June 30			
Materials (200,000 × \$0.50)		\$100,000	
Conversion costs (120,000 × \$0.25)		30,000	130,000
Total costs			<u>\$655,000</u>

Chapter4: Standard Costs

After studying this chapter, you should be able to:

1. Distinguish between a standard and a budget.
2. Identify the advantages of standard costs.
3. Describe how companies set standards.
4. State the formulas for determining direct materials and direct labor variances.
5. State the formula for determining the total manufacturing overhead variance.
6. Discuss the reporting of variances.
7. Prepare an income statement for management under a standard costing system.
8. Identify the features of a standard cost accounting system.
9. State the formulas for determining Sales-Variance Analysis

Study Objective [1] Distinguish between a standard and a budget

Both **standards** and **budgets** are predetermined costs, and both contribute to management planning and control.

There is a difference:

- A standard is a **unit** amount.
- A budget is a **total** amount

A standard is the budgeted cost per unit of product. A standard is therefore concerned with each individual cost component that makes up the entire budget.

There are important accounting differences between budgets and standards. Except in the application of manufacturing overhead to jobs and processes, budget data are not journalized in cost accounting systems. In contrast, standard costs may be incorporated into cost accounting systems. Also, a company may report its inventories at standard cost in its financial statements, but it would not report inventories at budgeted costs.

Study Objective [2] Identify the advantages of standard costs

Standard costs offer a number of advantages to an organization, as below:

1. Facilitate management planning
2. Promote greater economy by making employees more “cost-conscious”
3. Useful in setting selling prices
4. Contribute to management control by providing basis for evaluation of cost control
5. Useful in highlighting variances in management by exception
6. Simplify costing of inventories and reduce clerical costs

The organization will realize these advantages only when standard costs are carefully established and prudently used.

Study Objective [3] Describe how companies set standards

Setting standard costs requires input from all persons who have responsibility for costs and quantities.

Standards should change whenever managers determine that the existing standard is not a good measure of performance.

Ideal versus Normal Standards

- Ideal standards represent optimum levels of performance under perfect operating conditions.
- Normal standards represent efficient levels of performance that are attainable under expected operating conditions.

Most companies that use standards set them at a normal level. Properly set, normal standards should be rigorous but attainable. Normal standards allow for rest periods, machine breakdowns, and other “normal” contingencies in the production process.

A Case Study

To establish the standard cost of producing a product, it is necessary to establish standards for each manufacturing cost element—

- direct materials,
- direct labor, and
- manufacturing overhead.

The standard for each element is derived from the standard price to be paid and the standard quantity to be used.

To illustrate, Xonic Beverage Company uses standard costs to measure performance at the production facility of its caffeinated energy drink, Xonic Tonic. Xonic produces one-gallon containers of concentrated syrup that it sells to coffee and smoothie shops, and other retail outlets. The syrup is mixed with ice water or ice “slush” before serving. The potency of the beverage varies depending on the amount of concentrated syrup used.

Direct Materials

The **direct materials price standard** is the cost per unit of direct materials that should be incurred.

<u>Item</u>	<u>Price</u>
Purchase price, net of discounts	\$ 2.70
Freight	0.20
Receiving and handling	<u>0.10</u>
Standard direct materials price per pound	<u><u>\$3.00</u></u>

The **direct materials quantity standard** is the quantity of direct materials that should be used per unit of finished goods.

<u>Item</u>	<u>Quantity (Pounds)</u>
Required materials	\$ 3.5
Allowance for waste	0.4
Allowance for spoilage	<u>0.1</u>
Standard direct materials quantity per unit	<u>\$4.0</u>

Standard direct materials cost is \$12.00 (\$3.00 x 4.0 pounds).

Direct Labor

The **direct labor price standard** is the rate per hour that should be incurred for direct labor.

<u>Item</u>	<u>Price</u>
Hourly wage rate	\$ 12.50
Cost of living adjustments	0.25
Payroll taxes	0.75
Fringe benefits	<u>1.50</u>
Standard direct labor rate per hour	<u>\$15.00</u>

The **direct labor quantity standard** is the time that should be required to make one unit of the product.

<u>Item</u>	<u>Quantity (Hours)</u>
Actual production time	\$ 1.5
Rest periods and cleanup	0.2
Setup and downtime	<u>0.3</u>
Standard direct labor hours per unit	<u>\$2.0</u>

The standard direct labor cost is \$20 (\$10.00 x 2.0 hours).

Manufacturing Overhead

For manufacturing overhead, companies use a **standard predetermined overhead rate** in setting the standard.

This overhead rate is determined by dividing budgeted overhead costs by an expected standard activity index, such as standard direct labor hours or standard machine hours.

The company expects to produce 13,200 gallons during the year at normal capacity. It takes 2 direct labor hours for each gallon.

Budgeted Overhead Costs	Amount	÷	Standard Direct Labor Hours	=	Overhead Rate per Direct Labor Hour
Variable	\$ 79,200		26,400		\$3.00
Fixed	52,800		26,400		2.00
Total	\$132,000		26,400		\$5.00

Standard manufacturing overhead rate per gallon is \$10 (\$5 x 2 hours).

Total Standard Cost Per Unit

The total standard cost per unit is the sum of the standard costs of direct materials, direct labor, and manufacturing overhead.

Product: Xonic Tonic

Unit Measure: Gallon

Manufacturing Cost Elements	Standard Quantity	×	Standard Price	=	Standard Cost
Direct materials	4 pounds		\$ 3.00		\$12.00
Direct labor	2 hours		\$15.00		30.00
Manufacturing overhead	2 hours		\$ 5.00		10.00
					<u>\$52.00</u>

The total standard cost per gallon is \$52.

DO IT!

Ridette Inc. accumulated the following standard cost data concerning product Cty31.

Materials per unit: 1.5 pounds at \$4 per pound.

Labor per unit: 0.25 hours at \$13 per hour.

Manufacturing overhead: Predetermined rate is 120% of direct labor cost.

Compute the standard cost of one unit of product Cty31.

Solution

Manufacturing Cost Element	Standard Quantity	×	Standard Price	=	Standard Cost
Direct materials	1.5 pounds		\$4.00		\$6.00
Direct labor	0.25 hours		\$13.00		3.25
Manufacturing overhead	120% of direct labor cost		\$3.25		3.90
Total					<u>\$13.15</u>

Analyzing and Reporting Variances from Standards

Variances are the differences between total actual costs and total standard costs.

Actual costs < Standard costs = Favorable variance.

Actual costs > Standard costs = Unfavorable variance.

Variance must be analyzed to determine the underlying factors.

Analyzing variances begins by determining the cost elements that comprise the variance.

Illustration: Assume that in producing 1,000 gallons of Xonic Tonic in the month of June, Xonic incurred the costs to the right.

Direct materials	\$13,020
Direct labor	31,080
Variable overhead	6,500
Fixed overhead	<u>4,400</u>
Total actual costs	<u>\$55,000</u>

The total standard cost of Xonic Tonic is \$52,000 (1,000 gallons x \$52).

Thus, the total variance is \$3,000, as shown below:

Actual costs	\$55,000
Less: Standard costs	<u>52,000</u>
Total variance	<u>\$ 3,000</u>

When actual costs exceed standard costs, the variance is unfavorable. The \$3,000 variance in June for Xonic Tonic is unfavorable. An unfavorable variance has a negative connotation. It suggests that the company paid too much for one or more of the manufacturing cost elements or that it used the elements inefficiently.

If actual costs are less than standard costs, the variance is favorable. A favorable variance has a positive connotation. It suggests efficiencies in incurring manufacturing costs and in using direct materials, direct labor, and manufacturing overhead.

However, be careful: A favorable variance could be obtained by using inferior materials. In printing wedding invitations, for example, a favorable variance could result from using an inferior grade of paper. Or, a favorable variance might be achieved in installing tires on an automobile assembly line by tightening only half of the lug bolts. A variance is not favorable if the company has sacrificed quality control standards.

To interpret a variance, must analyze its components. A variance can result from differences related to the cost of materials, labor, or overhead. That is the total variance is the sum of the materials, labor, and overhead variances.

Materials Variance + Labor Variance + Overhead Variance = Total Variance

Study Objective [8] Identify the features of a standard cost accounting system.

A **standard cost accounting system** is a double-entry system of accounting. Companies may use a standard cost system with either:

- job order or
- process costing.

The system is based on two important assumptions:

1. Variances from standards are recognized at the earliest opportunity.
2. The Work in Process account is maintained exclusively on the basis of standard costs.

Journal Entries

Illustration:

1. Purchase raw materials on account for \$13,020 when the standard cost is \$12,600.

Raw Materials Inventory	12,600	
Materials Price Variance	420	
Accounts Payable		13,020
(To record purchase of materials)		

2. Incur direct labor costs of \$31,080 when the standard labor cost is \$31,500.

Factory Labor	31,500	
Labor Price Variance	420	
Factory Wages Payable		31,080
(To record direct labor costs)		

3. Incur actual manufacturing overhead costs of \$10,900.

Manufacturing Overhead	10,900	
Accounts Payable/Cash/Acc. Depreciation		10,900
(To record overhead incurred)		

4. Issue raw materials for production at a cost of \$12,600 when the standard cost is \$12,000.

Work in Process Inventory	12,000	
Materials Quantity Variance	600	
Raw Materials Inventory		12,600
(To record issuance of raw materials)		

5. Assign factory labor to production at a cost of \$31,500 when standard cost is \$30,000

Work in Process Inventory	30,000
Labor Quantity Variance	1,500
Factory Labor	31,500

(To assign factory labor to jobs)

6. Applying manufacturing overhead to production \$10,000.

Work in Process Inventory	10,000
Manufacturing Overhead	10,000

(To assign overhead to jobs)

7. Transfer completed work to finished goods \$52,000.

Finished Goods Inventory	52,000
Work in Process Inventory	52,000

(To record transfer of completed work to finished goods)

8. The 1,000 gallons of Xonic Tonic are sold for \$70,000.

Accounts Receivable	70,000
Cost of Goods Sold	52,000
Sales	70,000
Finished Goods Inventory	52,000

(To record sale of finished goods and the cost of goods sold)

9. Recognize unfavorable total overhead variance

Overhead Variance	900
Manufacturing Overhead	900

(To recognize overhead variances)

