

Chapter 15

Pre-Lecture Videos

1. All of the following are considered phases of the management process *except* **executing**.
2. The process by which managers run day-to-day operations is called **directing**.
3. **Continuous process improvement** is the philosophy of enhancing employees, business processes, and products on a regular basis
4. Which of the following are ways by which managerial accounting provides information and reports for managers to use in operating the business?
 - **Managerial accounting provides the cost of manufacturing a product, which can be used to determine its selling price.**
 - **Managerial accounting allows for comparing the costs of manufacturing products over time and can be used to monitor and control the cost of direct materials, direct labor, and factory overhead.**
 - **Performance reports allow management to identify any large amounts of scrap materials or employee downtime.**
5. Managerial accounting provides performance reports to internal users. Which of the following is considered an advantage of performance reports?
 - **Performance reports allow management to identify any large amounts of scrap materials or employee downtime.**
 - **A report could analyze the potential efficiencies and dollar savings of purchasing computerized equipment to speed up the production process.**
 - **A report could analyze how many units need to be sold to cover operating costs and expenses and used to set monthly selling targets and bonuses for sales personnel.**
6. **Direct costs** are identified with and can be traced to a cost object.
7. **Indirect costs** cannot be identified with or traced to a cost object.
8. **Period costs** consist of selling and administrative costs.
9. Inventory that consists of the costs of the direct and indirect materials that have not yet entered the manufacturing process is known as **materials inventory**.
10. Inventory that consists of the direct materials, direct labor, and factory overhead costs for products that have entered the manufacturing process but are not yet completed is known as **work in process inventory**.
11. The total cost of making products that are available for sale during the period is called **cost of goods manufactured**.

Mini Quiz

1. Managerial accounting information can be used for all of the following except **communicating with shareholders**.
2. Which of the following would not be considered a conversion cost by a baking company?
 - **Depreciation on oven**
3. Which of the following positions would have a salary or wage that is classified as a factory overhead cost by a baking company?
 - **Factory supervisor**

4. Which of the following would be classified as a factory overhead cost by a baking company?

- **Depreciation of factory equipment**

5. Managerial accounting information uses **historical and estimated data**.

6. Ralph's Cafe has the following information for June:

Cost Type	Cost
Cost of materials placed in production	\$30,000
Direct labor	\$25,000
Factory overhead	\$14,000
Work in process inventory, June 1	\$2,900
Work in process inventory, June 30	\$3,500

What is the cost of goods manufactured?

- $2900 + (30000 + 25000 + 14000) - 3500 = 68400$

7. Which of the following would be classified as an indirect cost by a baking company?

- **Salaries of production supervisors**

8. How much of the U.S. economic activity as measured by gross domestic product is represented by services?

- **Nearly 80%**

9. Ultimate Luxury Hotel is a single hotel with 300 rooms. During the month of October, the hotel had 5,000 guests, who each stayed one night. What is the occupancy rate for October (rounded to the nearest whole percent)?

- $\frac{5000}{300 \times 31} = .537 = 54\%$

10. The measure that captures the use of a fixed asset in serving customers relative to the asset's capacity is known as the **utilization** rate.

11. Super Sleep Hotel has 2,000 guests who stayed for two nights and rented 150 rooms. How many guest nights did the hotel have during this period?

- $2000 \times 2 = 4000$

12. Which of the following statements regarding the differences between managerial accounting applications for manufacturing and service companies is true?

- **Service companies may use cost of services on the income statement rather than cost of goods sold.**

Practice Exercises

1. Three phases of the management process are planning, directing, and controlling. Match the following descriptions to the proper phase by clicking on the phase (on the left) and then clicking on the correct description (on the right).

- **Directing** → **Process by which managers, given their assigned levels of responsibilities, run day-to-day operations.**
- **Planning** → **Developing long-range courses of action to achieve goals.**
- **Controlling** → **Isolating significant departures from plans for further investigation and possible remedial action. It may lead to a revision of future plans.**

2. Identify the following costs as direct materials, direct labor, or factory overhead for a magazine publisher:

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Item	Type
Staples used to bind magazines	Direct materials
Wages of printing machine employees	Direct labor
Maintenance on printing machines	Factory overhead
Paper used in the magazine	Direct materials

3. Indicate whether each of the following costs of an automobile manufacturer would be classified as *direct materials cost*, *direct labor cost*, or *factory overhead cost*:

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Item	Type
Automobile engine	Direct materials cost
Brake pads	Direct materials cost
Depreciation of robotic assembly line equipment	Factory overhead cost
Glass for front and rear windshields	Direct materials cost
Safety helmets and masks for assembly line workers	Factory overhead cost
Salary of quality control inspector	Factory overhead cost
Steering wheel	Direct materials cost
Tires	Direct materials cost
Wages of assembly line workers	Direct labor cost

4. Identify the following costs as a prime cost (**P**), conversion cost (**C**), or both (**B**) for a magazine publisher:

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Item	Type
Paper used for the magazine	Prime
Wages of printing machine employees	Both
Glue used to bind magazine	Prime
Maintenance on printing machines	Conversion

5. Identify the following costs as a product cost or a period cost for a magazine publisher:

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Item	Type
Sales salaries	Period
Paper used for the machine	Product
Maintenance on printing machines	Product
Depreciation expense–corporate headquarters	Period

6. For apparel manufacturer Abercrombie & Fitch, Inc. (ANF), classify each of the following costs as either a product cost or a period cost:

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Item	Type
Advertising expenses	Period
CFO's salary	Period
Depreciation on office equipment	Period
Depreciation on sewing machines	Product
Fabric used during production	Product
Factory janitorial supplies	Product
Factory supervisors' salaries	Product
Property taxes on factory building and equipment	Product
Oil used to lubricate sewing machines	Product
Repairs and maintenance costs for sewing machines	Product
Research and development costs	Period
Sales commissions	Period
Salaries of distribution center personnel	Period
Salaries of production quality control supervisors	Product
Travel costs of media relations employees	Period
Utility costs for office building	Period
Wages of sewing machine operators	Product

7. Glenville Company has the following information for April:

Line Item	
<i>Cost of direct materials</i> used in production	280000
<i>Direct labor</i>	324000
<i>Factory overhead</i>	188900
<i>Work in process inventory</i> , April 1	72300
Work in process inventory, April 30	76600
<i>Finished goods inventory</i> , April 1	39600
Finished goods inventory, April 30	41200

1. For April, determine the cost of goods manufactured. Using the data given, prepare a statement of Cost of Goods Manufactured.

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Statement of Cost of Goods Manufactured		
Work in process inventory, April 1		72300
Cost of direct materials used in production	280000	
Direct Labor	324000	
Factory overhead	<u>188900</u>	
Total manufacturing costs incurred in April		<u>792900</u>
Total manufacturing costs		865200
Work in process inventory, April 30		<u>76600</u>
Cost of goods manufactured		<u>788600</u>

2. For April, determine the cost of goods sold. Using the data given, prepare a statement of Cost of Goods Sold.

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Statement of Cost of Goods Sold	
Finished goods inventory, April 1	39600
Cost of goods manufactured	<u>788600</u>
Cost of finished goods available for sale	828200
Finished goods inventory, April 30	<u>41200</u>
Cost of goods sold	<u>787000</u>

8. The following information is available for Fuller Manufacturing Company for the month ending October 31:

Line Item	
Cost of direct materials used in production	1323600
Direct labor	1680000
Work in process inventory, October 1	455300
Work in process inventory, October 31	378100
Total factory overhead	3544200

Determine Fuller Manufacturing's cost of goods manufactured for the month ended October 31.

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Statement of Cost of Goods Manufactured For the Month Ended October 31		
Work in process inventory, October 1		455300
Manufacturing costs incurred during October:		
Cost of direct materials used in production	1323600	
Direct labor	1680000	
Factory overhead	<u>3544200</u>	
Total manufacturing costs incurred		<u>6547800</u>
Total manufacturing costs		7003100
Work in process inventory, October 31		<u>378100</u>
Cost of goods manufactured		<u>6625000</u>

9. Jake's Cabins is a small motel chain with locations near the national parks of Utah, Wyoming, and Montana. The chain has a total of 500 guest rooms. The following operating data are available for June:

Number of Guests	Nights per Visit	Guest Nights
4400	1	4400
1800	2	3600
750	3	2250
600	4	2400
20	5	100

1. Determine the guest nights for June

$$\blacksquare (4400 * 1) + (1800 * 2) + (750 * 3) + (600 * 4) + (20 * 5) = 12750$$

2. Determine the available room nights for June

- $500 * 30 = 15000$

3. Determine the occupancy rate for June

- $\frac{12750}{15000} = .85 = 85\%$

4. Assume that the occupancy rate for June of the prior year was 82%. Has the utilization rate for Jake's Cabins improved or declined?

- **Improved**

10. The following information is available for Shanika Company for 20Y6:

Inventories	January 1	December 31
Materials	77350	95550
Work in process	109200	96200
Finished goods	113750	100100

Line Item	
Advertising expense	\$68,250
Depreciation expense-office equipment	22,750
Depreciation expense-factory equipment	14,560
Direct labor	186,550
Heat, light, and power-factory	5,850
Indirect labor	23,660
Materials purchased	123,500
Office salaries expense	77,350
Property taxes-factory	4,095
Property taxes-headquarters building	13,650
Rent expense-factory	6,825
Sales	864,500
Sales salaries expense	136,500
Supplies-factory	3,250
Miscellaneous costs-factory	4,420

1. Prepare the 20Y6 statement of cost of goods manufactured.

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Statement of Cost of Goods Manufactured For the Year Ended December 31, 20Y6			
Work in process inventory, January 1, 20Y6			109200
Direct materials:			
Materials inventory, January 1, 20Y6	77350		
Purchases	<u>123500</u>		
Cost of materials available for use	200850		
Materials inventory, December 31, 20Y6	<u>95550</u>		
Cost of Direct Materials used in Production		105300	
Direct Labor		186550	
Factory Overhead:			
Indirect labor	23660		
Depreciation expense-factory equipment	14560		
Heat, light, and power-factory	5850		
Property taxes-factory	4096		
Rent expense-factory	6825		
Supplies-factory	3250		
Miscellaneous costs-factory	<u>4420</u>		
Total factory overhead		<u>62660</u>	
Total manufacturing costs incurred in 20Y6			<u>354510</u>
Total manufacturing costs			463710
Work in process inventory, December 31, 20Y6			<u>96200</u>
Cost of goods manufactured			<u>367510</u>

2. Prepare the 20Y6 income statement

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Income Statement For the Year Ended December 31, 20Y6			
Sales			864500
Cost of good sold:			
Finished goods inventory, January 1, 20Y6		113750	
Cost of goods manufactured		<u>367510</u>	
Cost of finished goods available for sale		481260	
Finished goods inventory, December 31, 20Y6		<u>100100</u>	
Cost of goods sold			381160
Gross profit			483340
Operating expenses:			
Administrative expenses:			
Office salaries expense	77350		
Depreciation expense-office equipment	22750		
Property taxes-headquarters building	<u>13650</u>	113750	
Selling expenses:			
Advertising expense	68250		
Sales salaries expense	<u>136500</u>	<u>204750</u>	
Total operating expenses			<u>318500</u>
Net income			<u>164840</u>

Homework Exercises

- Which of the following items are properly classified as part of factory overhead for Ford Motor Company (F), a maker of heavy automobiles and trucks?
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Item	Part of Factory Overhead
Air conditioner units for installation in vehicles	No
Consultant fees for a study of production line efficiency	Yes
dealership sales incentives	No
Depreciation on headquarters building in Dearborn, Michigan	No
Depreciation on mechanical robots used on the assembly line	Yes
Leather to be used on vehicles that have leather interiors	No
Machine lubricant used to maintain the assembly line at the Louisville, Kentucky, assembly plant	Yes
Plant manager's salary at Buffalo, New York, stamping plant, which manufactures auto and truck subassemblies	Yes
Property taxes on the Dearborn, Michigan, headquarters building	No
Vice president of human resource's salary	No

2. From the choices presented in parentheses, choose the appropriate term for completing each of the following sentences:

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Sentence	Appropriate term for completing sentence
A product, sales territory, department, or activity to which costs are traced is called a (direct cost, cost object).	cost object
Advertising costs are usually viewed as (period, product) costs.	period
Factory overhead costs combined with direct labor costs are called (prime, conversion) costs.	conversion
Feedback is often used to (improve, direct) operations.	improve
A sacrifice made to obtain some benefit is a (cost, expense).	cost
The balance sheet of a manufacturer would include an account for (cost of goods sold, work in process inventory).	work in process inventory
The implementation of automatic, robotic factory equipment normally (increases, decreases) the direct labor component of product costs.	decreases

3. From the choices presented in parentheses, choose the appropriate term for completing each of the following sentences:

o

Sentence	Appropriate term for completing sentence
An example of factory overhead is (electricity used to run assembly line, CEO salary).	electricity used to run assembly line
Direct materials costs combined with direct labor costs are called (prime, conversion) costs.	prime
Long-term plans are called (strategic, operational) plans.	strategic
Materials for use in production are called (supplies, materials inventory).	materials inventory
The phase of the management process that uses process information to eliminate the source of problems in a process so that the process delivers the correct product in the correct quantities is called (directing, improving).	improving
The plant manager's salary would be considered (direct, indirect) to the product.	indirect
The salaries of salespeople are normally considered a (period, product) cost.	period

4. The following information is available for Fuller Manufacturing Company for the month ending October 31:

Line Item	
Cost of direct materials used in production	\$129,000
Direct labor	154,800
Work in process inventory, October 1	58,100
Work in process inventory, October 31	78,700
Total factory overhead	71,000

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Statement of Cost of Goods Manufactured For the Month Ended October 31		
Work in process inventory, October 1		58100
Manufacturing costs incurred during October:		
Cost of direct materials used in production	129000	
Direct labor	154800	
Factory overhead	<u>71000</u>	
Total manufacturing costs incurred		<u>354800</u>
Total manufacturing costs		412900
Work in process inventory, October 31		<u>78700</u>
Cost of goods manufactured		<u>334200</u>

Quiz

1. Factory overhead includes **indirect labor and indirect materials**.
2. Costs other than direct materials cost and direct labor cost incurred in the manufacturing process are classified as **factory overhead cost**.
3. Managers use managerial information for all of the following purposes *except* **to evaluate the company's stock performance**.
4. Indirect costs incurred in a manufacturing environment that cannot be traced directly to a product are treated as **product costs and expensed when the goods are sold**.
5. If the cost of a direct material is a small portion of total production cost, it may be classified as part of **factory overhead cost**.
6. A company manufactured 50,000 units of a product at a cost of \$450,000. It sold 45,000 units at \$15 each. The gross profit is:
 - $(45000 * 15) - (\frac{450000}{50000} * 45000) = 270000$
7. Which of the following would be least likely to be considered a managerial accounting report?
 - **statement of stockholders' equity**
8. Which of the following statements is false?
 - **There is no overlap between financial and managerial accounting.**
9. Jensen Company reports the following:

Line Item	
Direct materials used	345,000
Direct labor incurred	250,000
Factory overhead incurred	400,000
Operating expenses	175,000

Jensen Company's period costs are

- 175000

10. Which of the following is *not* a prime cost?

- **plant janitor's wages**

11. Finished goods inventory is reported on the **balance sheet as a current asset**.

12. In order to be useful to managers, managerial accounting reports should possess all of the following characteristics *except* **be prepared in accordance with generally accepted accounting principles**.

13. Prime costs are **direct materials and direct labor**.

14. On the income statement of a manufacturing company, which of the following replaces purchases in the "Cost of goods sold" section of a retail company?

- **cost of goods manufactured**

15. Which of the following is part of factory overhead cost?

- **depreciation of factory equipment and machines**

16. Which of the following accounts will be found on the income statement?

- **cost of goods sold**

17. Which of the following is the principal reason for preparing managerial accounting reports?

- **usefulness to management**

18. Which of the following is an example of direct materials cost for an automobile manufacturer?

- **cost of interior upholstery**

19. Which of the following terms is used to describe the process of developing the organization's objectives and translating those into courses of action?

- **planning**

20. Which of the following terms is used to describe the process of monitoring operating results and comparing actual results with the expected results?

- **controlling**

Chapter 16

Pre-Lecture Videos

1. The two main types of cost accounting systems for manufacturing businesses are the **process** cost system and the **job order** cost system.
2. A **job order** cost system provides product costs for each quantity of product that is manufactured.

3. The journal entry to record the direct materials used for the month is **a debit to Work in Process and a credit to Materials.**
4. The journal entry to record the direct labor costs for the month is **a debit to Work in Process and a credit to Wages Payable.**
5. Which of the following accounts are NOT likely appear in a job order cost system of a service business?
 - **Finished goods**
6. The primary costs for a service business includes **direct labor.**
7. Starfish Enterprises produces men's sports coats that are sold by popular department stores. Each retail order is treated as a job that accumulates materials, labor, and overhead costs for a batch of sports coats. Management has obtained data on the labor costs for four selected jobs over a six-month period. Each selected job represents a similar style and size of sports coat. The data are as follows:

	Count	Direct Labor Hour	Direct Labor Rate per Hour	Total Direct Labor Cost
Job 107	10	4.50	14.00	63.00
Job 125	14	7.00	14.00	98.00
Job 160	16	8.80	14.00	123.20
Job 190	8	3.20	14.00	51.20

The direct labor cost per unit for Job 125 is **\$7.00.**

8. Starfish Enterprises produces men's sports coats that are sold by popular department stores. Each retail order is treated as a job that accumulates materials, labor, and overhead costs for a batch of sports coats. Management has obtained data on the labor costs for four selected jobs over a six-month period. Each selected job represents a similar style and size of sports coat. The data are as follows:

	Count	Direct Labor Hour	Direct Labor Rate per Hour	Total Direct Labor Cost
Job 107	10	4.50	14.00	63.00
Job 125	14	7.00	14.00	98.00
Job 160	16	8.80	14.00	123.20
Job 190	8	3.20	14.00	51.20

The direct labor hour per unit for Job 190 is **0.40** hours.

Mini Quiz

1. For services, billing a customer can be done **at the end of the month, in advance, or once the work is completed.**
2. During July, Jamal Company incurred factory overhead as follows: utilities, \$6,500; accumulated depreciation, \$2,500; and indirect salaries, \$3,600. Which of the following journal entries is correct?
 - **Factory Overhead, \$12,600 Dr.; Utilities Payable, \$6,500 Cr.; Accumulated Depreciation, \$2,500 Cr.; Wages Payable, \$3,600 Cr.**

3. A job order system will be used by which of the following manufacturing companies?
 - **Custom limousine factory**
4. Which of the following is the correct flow of manufacturing costs?
 - **Materials, work in process, finished goods, cost of goods sold**
5. A hotel will use a job order cost system for which of the following expenses?
 - **Room service**
6. Job cost sheets can be used to determine **product costs**.
7. An accounting firm, Shultz & Worsk, accumulates costs associated with individual cases using a job order cost system. For the upcoming year, the firm estimates that it will use 30,000 hours of direct labor for professional staff at an hourly rate of \$150 per hour. Estimated total overhead costs are \$900,000. The firm allocates overhead costs to individual client services on the basis of direct labor hours of its professional staff. What is the firm's predetermined overhead rate for the upcoming year?
 - **\$30**
8. A cost accounting system that accumulates costs for each manufacturing department or process is called a **process cost system**.
9. A process cost system will be used by all of the following manufacturing companies except a(n) **custom sailboat factory**.
10. Which of the following products or services would most likely be accounted for using a job order cost system?
 - **Custom aircraft manufacturer**
11. The purpose of a cost accounting system is to **measure, record, and report product costs**.
12. The job order cost system for a service business includes all of the following except **materials and supplies inventory**.
13. A law firm, Morris & Morris, accumulates costs associated with individual cases using a job order cost system. On August 5, the firm charged 200 hours of professional (lawyer) time to the Micro Systems Co. breach of contract suit to prepare for the trial, at a rate of \$340 per hour. What is the journal entry for this transaction?
 - **Debit Work in Process and credit Salaries Payable for \$68,000**

Practice Exercises

1. On May 7, Bergan Company purchased on account 10,000 units of raw materials at \$8 per unit. During May, raw materials were requisitioned for production as follows: 7,500 units for Job 200 at \$8 per unit and 1,480 units for Job 305 at \$5 per unit.

Journalize the entry on May 7 to record the purchase. If an amount box does not require an entry, leave it blank.

◦

Line item	Debt	Credit
Materials	80000	
Accounts Payable		80000

Journalize the entry on May 31 to record the requisition from the materials storeroom. If an amount box does not require an entry, leave it blank.

◦

Line item	Debt	Credit
Work in process	67400	
Materials		67400

2. During May, Bergan Company accumulated 2,500 hours of direct labor costs on Job 200 and 3,000 hours on Job 305. The total direct labor was incurred at a rate of \$28 per direct labor hour for Job 200 and \$24 per direct labor hour for Job 305.

Journalize the entry to record the flow of labor costs into production during May. If an amount box does not require an entry, leave it blank.

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Line item	Debt	Credit
Work in process	142000	
Wages payable		142000

3. During May, Bergan Company incurred factory overhead costs as follows: indirect materials, \$8,800; indirect labor, \$6,600; utilities cost, \$4,800; and factory depreciation, \$9,000.

Journalize the entry to record the factory overhead incurred during May.

If an amount box does not require an entry, leave it blank.

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Line item	Debt	Credit
Factory overhead	29200	
Materials		8800
Wages payable		6600
Utilities Payable		4800
Accumulated Depreciation-Factory		9000

4. Bergan Company estimates that total factory overhead costs will be \$620,000 for the year. Direct labor hours are estimated to be 80,000.

- For Bergan Company, determine the *predetermined factory overhead rate* using direct labor hours as the activity base. *If required, round your answer to two decimal places.*

■ $\frac{\$620000}{80000} = 7.75$ per direct labor hour

- During May, Bergan Company accumulated 2,500 hours of direct labor costs on Job 200 and 3,000 hours on Job 305. Determine the amount of factory overhead applied to Jobs 200 and 305 in May.

■ $2500 + 3000 = 5500 * \$7.75 = \42625

- Prepare the journal entry to apply factory overhead to both jobs in May according to the predetermined overhead rate. If an amount box does not require an entry, leave it blank.

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Line item	Debt	Credit
Work in process	42625	
Factory overhead		42625

5. Factory Overhead Rates, Entries, and Account Balance

Eclipse Solar Company operates two factories. The company applies factory overhead to jobs on the basis of machine hours in Factory 1 and on the basis of direct labor hours in Factory 2. Estimated factory overhead costs, direct labor hours, and machine hours are as follows:

	Factory 1	Factory 2
Estimated factory overhead cost for fiscal year beginning August 1	\$18,500,000	\$44,000,000
Estimated direct labor hours for year		800,000
Estimated machine hours for year	1,250,000	
Actual factory overhead costs for August	\$1,515,800	\$3,606,300
Actual direct labor hours for August		64,500
Actual machine hours August	105,000	

1. Determine the factory overhead rate for Factory 1. *Round your answer to two decimal places.*

- $\frac{\$18,500,000}{1,250,000} = \14.80 per machine hour

2. Determine the factory overhead rate for Factory 2.

- $\frac{\$44,000,000}{800,000} = \55 per direct labor hour

3. Journalize the entries to apply factory overhead to production in each factory for August. If an amount box does not require an entry, leave it blank.

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Factory 1	Debt	Credit
Work in process	105000 * \$14.80 = \$1554000	
Factory overhead		1554000

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Factory 2	Debt	Credit
Work in process	64500 * \$55 = \$3547500	
Factory overhead		3547500

4. Determine the balances of the factory overhead accounts for each factory as of August 31, and indicate whether the amounts represent *overapplied factory overhead* or *underapplied factory overhead*.

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Factory			
Factory 1	$1554000 - 1515800 = 38200$	Credit	Overapplied
Factory 2	$3606300 - 3547500 = 58800$	Debit	Underapplied

6. Exotic Engine Shop uses a *job order cost system* to determine the cost of performing engine repair work. Estimated costs and expenses for the coming period are as follows:

Line item	Value
Engine parts	\$380,000
Shop direct labor	1,872,000
Shop and repair equipment depreciation	62,500
Shop supervisor salaries	240,000
Shop property taxes	36,940
Shop supplies	10,000
Advertising expense	28,000
Administrative office salaries	150,000
Administrative office depreciation expense	<u>8,000</u>
Total costs and expenses	<u>\$2787440</u>

The average shop direct labor rate is \$37.50 per hour.

Determine the predetermined shop overhead rate per direct labor hour.

$$\frac{1872000}{\$37.50} = \$49920 \quad (1)$$

$$\circ \quad 62500 + 240000 + 36940 + 10000 = 349440$$

$$\frac{349440}{49920} = \$7$$

7. At the end of May, Bergan Company had completed Jobs 200 and 305. Job 200 is for 2,390 units, and Job 305 is for 2,053 units.

The following data relate to these two jobs:

On May 7, Bergan Company purchased on account 10,000 units of raw materials at \$8 per unit. During May, raw materials were requisitioned for production as follows: 7,500 units for Job 200 at \$8 per unit and 1,480 units for Job 305 at \$5 per unit.

During May, Bergan Company accumulated 2,500 hours of direct labor costs on Job 200 and 3,000 hours on Job 305. The total direct labor was incurred at a rate of \$28 per direct labor hour for Job 200 and \$24 per direct labor hour for Job 305.

Bergan Company estimates that total factory overhead costs will be \$620,000 for the year. Direct labor hours are estimated to be 80,000.

- Determine the balance on the *job cost sheets* for Jobs 200 and 305 at the end of May.

Job	Balance at the end of May
Job 200	$8 * 7500 = 60000$ $28 * 2500 = 70000$ $7.75 * 2500 = 19375$ $60000 + 70000 + 19375 = 149375$
Job 305	$5 * 1480 = 7400$ $24 * 3000 = 72000$ $7.75 * 3000 = 23250$ $7400 + 72000 + 23250 = 102650$

2. Determine the cost per unit for Jobs 200 and 305 at the end of May. If required, round your answers to two decimal places.

Job	Cost per unit at the end of May
Job 200	$\frac{149375}{2390} = \$62.50$
Job 305	$\frac{102650}{2053} = \$50.00$

8. Pine Creek Company completed 200,000 units during the year at a cost of \$3,000,000. The beginning finished goods inventory was 25,000 units at \$310,000. Determine the cost of goods sold for 210,000 units, assuming a FIFO cost flow.

◦ Beginning inventory: $\frac{\$310000}{25000} = \12.40

Completed Units: $\frac{\$3000000}{200000} = \15

Cost of goods: $(25000 * 12.40) + [(210000 - 25000) * 15] = 310000 + 2775000 = \3085000

9. Ginocera Inc. is a designer, manufacturer, and distributor of custom gourmet kitchen knives. A new kitchen knife series called the Kitchen Ninja was released for production in early 20Y8. In January, the company spent \$600,000 to develop a late-night advertising infomercial for the new product. During 20Y8, the company spent an additional \$1,400,000 promoting the product through these infomercials, and \$800,000 in legal costs. The knives were ready for manufacture on January 1, 20Y8.

Ginocera uses a job order cost system to accumulate costs associated with the Kitchen Ninja Knife. The unit direct materials cost for the knife is:

Line item	
Hardened steel blanks (used for knife shaft and blade)	\$4.00
Wood (for handle)	1.50
Packaging	0.50

The production process is straightforward. First, the hardened steel blanks, which are purchased directly from a raw material supplier, are stamped into a single piece of metal that includes both the blade and the shaft. The stamping machine requires one hour per 250 knives.

After the knife shafts are stamped, they are brought to an assembly area where an employee attaches the handle to the shaft and packs the knife into a decorative box. The direct labor cost is \$0.50 per unit.

The knives are sold to stores. Each store is given promotional materials, such as posters and aisle displays. Promotional materials cost \$60 per store. In addition, shipping costs average \$0.20 per knife.

Total completed production was 1,200,000 units during the year. Other information is as follows:

Line item	
Number of customers (stores)	60,000
Number of knives sold	1,120,000
Wholesale price (to store) per knife	\$16

Factory overhead cost is applied to jobs at the rate of \$800 per stamping machine hour after the knife blanks are stamped. There were an additional 25,000 stamped knives, handles, and cases in process and waiting to be assembled on December 31, 20Y8.

In your computations, if required, round interim per unit costs to two decimal places.

1. Prepare an annual income statement for the Kitchen Ninja knife series.

■

Income Statement for the Year Ended December 31, 20Y8			
Sales			$1120000 * \$16 = \17920000
Cost of goods sold			$1120000 * \$9.70 = \underline{\$10864000}$
Gross profit			$17920000 - 10864000 = \$7056000$
Selling and admin expenses:			
Selling expenses:			
Infomercial campaign	2000000		
Promo materials	$60000 * \$60 = \3600000		
Shipping expenses	$1120000 * \$0.20 = \underline{\$224000}$		
Total selling expenses		$2000000 + 3600000 + 224000 = 5824000$	
Admin expenses:			
Legal expenses		<u>800000</u>	
Total selling and admin expenses			<u>6624000</u>
Operating income			<u>432000</u>

2. Determine the balances in the work in process and finished goods inventories for the Kitchen Ninja knife series on December 31, 20Y8.

■

Type	Value
Finished goods	$80000 * [(1200000 - 1120000) * \$9.70] = \$776000$
Work in process	$25000 * (\$6.00 + \$3.20) = \$230000$

10. Technology Accessories Inc. is a designer, manufacturer, and distributor of accessories for consumer electronic products. Early in 20Y3, the company began production of a leather cover for tablet computers, called the iLeather. The cover is made of stitched leather with a velvet interior and fits snugly around most tablet computers. In January, \$750,000 was spent on developing marketing and advertising materials. For the first six months of 20Y3, the company spent an additional \$1,400,000 promoting the iLeather. The product was ready for manufacture on January 21, 20Y3.

Technology Accessories Inc. uses a *job order cost system* to accumulate costs for the iLeather. Direct materials unit costs for the iLeather are as follows:

Item	Value
Leather	\$10.00
Velvet	5.00
Packaging	<u>0.40</u>
Total	<u>\$15.40</u>

The actual production process for the iLeather is fairly straightforward. First, leather is brought to a cutting and stitching machine. The machine cuts the leather and stitches an exterior edge into the product. The machine requires one hour per 125 iLeathers.

After the iLeather is cut and stitched, it is brought to assembly, where assembly personnel affix the velvet interior and pack the iLeather for shipping. The direct labor cost for this work is \$0.50 per unit.

The completed packages are then sold to retail outlets through a sales force. The sales force is compensated by a 20% commission on the wholesale price for all sales.

Total completed production was 500,000 units during the year. Other information is as follows:

Item	Value
Number of iLeather units sold in 20Y3	460,000
Wholesale price per unit	\$40

Factory overhead cost is applied to jobs at the rate of \$1,250 per machine hour. There were an additional 22,000 cut and stitched iLeathers waiting to be assembled on December 31, 20Y3.

In your computations, if required, round interim per unit costs to two decimal places.

1. Prepare an annual income statement for the iLeather product.

Income Statement For the Year Ended December 31, 20Y3		
Sales		$\$40 \times 460000 = \18400000
Cost of goods sold		$\$25.90 \times 460000 = \underline{\$11914000}$
Gross profit		$18400000 - 11914000 = 6486000$
Selling expenses:		
Salesperson commissions	$20\% \times 18400000 = 2680000$	
Advertising design	750000	
Advertising expenses	<u>1400000</u>	
Total selling expenses		$2680000 + 750000 + 1400000 = \underline{\$5830000}$
Income from operations		$6486000 - 5830000 = \underline{\$656000}$

2. Determine the balances in the finished goods and work in process inventories for the iLeather product on December 31, 20Y3.

■

Type	Value
Finished goods	$40000 * \$25.90 = \1036000
Work in process	$22000 * (15.4 + \$10) = \558800

Homework Exercises

1. On May 7, Keenan Company purchased on account 670 units of raw materials at \$25 per unit. During May, raw materials were requisitioned for production as follows: 241 units for Job 200 at \$22 per unit and 301 units for Job 305 at \$25 per unit.

Journalize the entry on May 7 to record the purchase. If an amount box does not require an entry, leave it blank.

○

May 7	Debt	Credit
Materials	$670 * 25 = \$16750$	
Accounts Payable		\$16750

Journalize the entry on May 31 to record the requisition from the materials storeroom. If an amount box does not require an entry, leave it blank.

○

May 31	Debt	Credit
Work in process	$(22 * 241) + (25 * 301) = \12827	
Materials		\$12827

2. During May, Jernigan Company accumulated 630 hours of direct labor costs on Job 200 and 530 hours on Job 305. The total direct labor was incurred at a rate of \$21 per direct labor hour for Job 200 and \$25 per direct labor hour for Job 305.

Journalize the entry to record the flow of labor costs into production during May. If an amount box does not require an entry, leave it blank.

○

	Debt	Credit
Work in process	$(630 * 21) + (530 * 25) = \26480	
Wages payable		\$26480

3. During May, Jernigan Company incurred factory overhead costs as follows: indirect materials, \$3,780; indirect labor, \$3,220; utilities cost, \$1,840; and factory depreciation, \$5,340.

Journalize the entry to record the factory overhead incurred during May.

If an amount box does not require an entry, leave it blank.

o

Line item	Debt	Credit
Factory overhead	$3780 + 3220 + 1840 + 5340 = 14180$	
Materials		3780
Wages payable		3220
Utilities Payable		1840
Accumulated Depreciation-Factory		5340

4. Hatch Company estimates that total factory overhead costs will be \$432,000 for the year. Direct labor hours are estimated to be 27,000.

- For Hatch Company, determine the *predetermined factory overhead rate* using direct labor hours as the activity base. *If required, round your answer to two decimal places.*
 - $\frac{432000}{27000} = \$16$ per direct labor hour
- During May, Hatch Company accumulated 760 hours of direct labor costs on Job 200 and 860 hours on Job 305. Determine the amount of factory overhead applied to Jobs 200 and 305 in May.
 - $(760 + 860) * 16 = \$25920$
- Prepare the journal entry to apply factory overhead to both jobs in May according to the predetermined overhead rate. If an amount box does not require an entry, leave it blank.

■

	Debt	Credit
Work in process	25920	
Factory overhead		25920

5. Eclipse Solar Company operates two factories. The company applies factory overhead to jobs on the basis of machine hours in Factory 1 and on the basis of direct labor hours in Factory 2. Estimated factory overhead costs, direct labor hours, and machine hours are as follows:

	Factory 1	Factory 2
Estimated factory overhead cost for fiscal year beginning August 1	\$420,400	\$600,600
Estimated direct labor hours for year		9,100
Estimated machine hours for year	21,020	
Actual factory overhead costs for August	\$33,620	\$51,960
Actual direct labor hours for August		820
Actual machine hours August	1,640	

- Determine the factory overhead rate for Factory 1.

- $\frac{420400}{21020} = \$20$ per machine hour

2. Determine the factory overhead rate for Factory 2.

■ $\frac{600600}{9100} = \$66$ per direct labor hour

3. Journalize the entries to apply factory overhead to production in each factory for August. If an amount box does not require an entry, leave it blank.

■

Factory 1	Debt	Credit
Work in process	$1640 * 20 = \$32800$	
Factory overhead		32800

■

Factory 2	Debt	Credit
Work in process	$820 * \$66 = \54120	
Factory overhead		54120

4. Determine the balances of the factory overhead accounts for each factory as of August 31, and indicate whether the amounts represent *overapplied factory overhead* or *underapplied factory overhead*.

■

Factory			
Factory 1	$32800 - 33620 = -820$	Debit	Underapplied
Factory 2	$54120 - 51960 = 2160$	Credit	Overapplied

6. Exotic Engine Shop uses a *job order cost system* to determine the cost of performing engine repair work. Estimated costs and expenses for the coming period are as follows:

Line item	Value
Engine parts	\$861,700
Shop direct labor	629,000
Shop and repair equipment depreciation	36,400
Shop supervisor salaries	101,300
Shop property taxes	18,400
Shop supplies	18,400
Advertising expense	14,100
Administrative office salaries	17,200
Administrative office depreciation expense	<u>9500</u>
Total costs and expenses	<u>\$1761700</u>

The average shop direct labor rate is \$17.00 per hour.

Determine the predetermined shop overhead rate per direct labor hour. *Round the answer to nearest whole cent.*

$$\frac{629000}{\$17} = \$37000 \quad (2)$$

o

$$36400 + 101300 + 18400 + 14100 = 170200$$

$$\frac{170200}{37000} = \$4.60$$

7. Poehling Medical Center has a single operating room that is used by local physicians to perform surgical procedures. The cost of using the operating room is accumulated by each patient procedure and includes the direct materials costs (drugs and medical devices), physician surgical time, and operating room overhead. On January 1 of the current year, the annual operating room overhead is estimated to be:

Item	Value
Disposable supplies	\$179300
Depreciation expense	32300
Utilities	18800
Nurse salaries	269300
Technician wages	<u>88300</u>
Total operating room overhead	<u>\$588000</u>

The overhead costs will be assigned to procedures, based on the number of surgical room hours. Poehling Medical Center expects to use the operating room an average of eight hours per day, seven days per week. In addition, the operating room will be shut down two weeks per year for general repairs.

- Determine the predetermined operating room overhead rate for the year.
 - $\frac{588000}{8 \times 7 \times 50} = \210 per hour
 - Bill Harris had a 7-hour procedure on January 22. How much operating room overhead would be charged to his procedure, using the rate determined in part (a)?
 - $210 \times 7 = \$1470$
 - During January, the operating room was used 186 hours. The actual overhead costs incurred for January were \$38,200. Determine the *overapplied operating overhead* or *underapplied operating overhead* for the period.
 - $38200 - (210 \times 186) = 860$ **overapplied**
8. Technology Accessories Inc. is a designer, manufacturer, and distributor of accessories for consumer electronic products. Early in 20Y3, the company began production of a leather cover for tablet computers, called the iLeather. The cover is made of stitched leather with a velvet interior and fits snugly around most tablet computers. In January, \$779,000 was spent on developing marketing and advertising materials. For the first six months of 20Y3, the company spent an additional \$1,405,000 promoting the iLeather. The product was ready for manufacture on January 21, 20Y3.

Technology Accessories Inc. uses a job order cost system to accumulate costs for the iLeather. Direct materials unit costs for the iLeather are as follows:

Item	Value
Leather	\$10.00
Velvet	5.00
Packaging	0.40
Total	\$15.40

The actual production process for the iLeather is fairly straightforward. First, leather is brought to a cutting and stitching machine. The machine cuts the leather and stitches an exterior edge into the product. The machine requires one hour per 130 iLeathers.

After the iLeather is cut and stitched, it is brought to assembly, where assembly personnel affix the velvet interior and pack the iLeather for shipping. The direct labor cost for this work is \$0.50 per unit.

The completed packages are then sold to retail outlets through a sales force. The sales force is compensated by a 20% commission on the wholesale price for all sales.

Total completed production was 540,000 units during the year. Other information is as follows:

Item	Value
Number of iLeather units sold in 20Y3	500,000
Wholesale price per unit	\$40

Factory overhead cost is applied to jobs at the rate of \$1,300 per machine hour. There were an additional 21,000 cut and stitched iLeathers waiting to be assembled on December 31, 20Y3.

In your computations, if required, round interim per unit costs to two decimal places and final answers to the nearest whole dollar.

1. Prepare an annual income statement for the iLeather product.

Income Statement For the Year Ended December 31, 20Y3		
Sales		$\$40 * 500000 = \20000000
Cost of goods sold		$(15.40 + .50 + \frac{1300}{130}) * 500000 =$ <u>\$12950000</u>
Gross profit		$20000000 - 12950000 = 7050000$
Selling expenses:		
Salesperson commissions	$20\% * 20000000 = 4000000$	
Advertising design	779000	
Advertising expenses	<u>1405000</u>	
Total selling expenses		$4000000 + 779000 + 1405000 =$ <u>\$6184000</u>
Income from operations		$7050000 - 6184000 =$ <u>\$866000</u>

2. Determine the balances in the finished goods and work in process inventories for the iLeather product on December 31, 20Y3.

■

Type	Value
Finished goods	$40000 * \$25.90 = \1036000
Work in process	$21000 * (15.4 + \$10) = \533400

9. Cost accounting systems measure, record, and report product costs.
- **True**
10. A process cost accounting system provides product costs for each of the departments or processes within the factory.
- **True**
11. A job order cost system would be appropriate for a crude oil refining business.
- **False**
12. The materials requisition serves as the source document for debiting the accounts in the materials ledger.
- **False**
13. Depreciation expense on factory equipment is part of factory overhead cost.
- **True**
14. If factory overhead applied exceeds the actual costs, overhead is said to be underapplied.
- **False**
15. Each account in the work in process subsidiary ledger in a job order costing system is called a job cost sheet.
- **True**
16. Generally accepted accounting principles require companies to use only one factory overhead rate for product costing.
- **False**
17. The debit to Factory Overhead for the cost of indirect materials is obtained from the summary of the materials requisitions.
- **True**
18. The current year's advertising costs are normally considered period costs.
- **True**