

# Chapter 20

## Job Order Costing

### STUDY OBJECTIVES

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 costing 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.



### The Navigator

Scan <b>Study Objectives</b>	■
Read <b>Feature Story</b>	■
Read <b>Preview</b>	■
Read text and answer <b>DO IT!</b> p. 893 ■ p. 899 ■ p. 903 ■ p. 905 ■	
Work <b>Comprehensive DO IT!</b> p. 907	■
Review <b>Summary of Study Objectives</b>	■
Answer <b>Self-Study Questions</b>	■
Complete <b>Assignments</b>	■

### Feature Story

#### " . . . AND WE'D LIKE IT IN RED"

**Western States Fire Apparatus, Inc.**, of Cornelius, Oregon, is one of the few U.S. companies that makes fire trucks. The company builds about 25 trucks per year. Founded in 1941, the company is run by the children and grandchildren of the original founder.

"We buy the chassis, which is the cab and the frame," says Susan Scott, the company's bookkeeper. "In our computer, we set up an account into which all of the direct material that is purchased for that particular job is charged." Other direct materials include the water pump—which can cost \$10,000—the lights, the siren, ladders, and hoses.

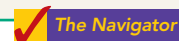
As for direct labor, the production workers fill out time tickets that tell what jobs they worked on. Usually, the company is building four trucks at any one

time. On payday, the controller allocates the payroll to the appropriate job record.

The company allocates indirect materials, such as nuts and bolts, wiring, lubricants, and abrasives, to each job in proportion to direct material dollars. It allocates other costs, such as insurance and supervisors' salaries, based on direct labor hours. "We need to allocate overhead in order to know what kind of price we have to charge when we submit our bids," she says.

Western gets orders through a "blind-bidding" process. That is, Western submits its bid without knowing the bid prices made by its competitors. "If we bid too low, we won't make a profit. If we bid too high, we don't get the job."

Regardless of the final price for the truck, the quality had better be first-rate. "The fire departments let you know if they don't like what you did, and you usually end up fixing it."



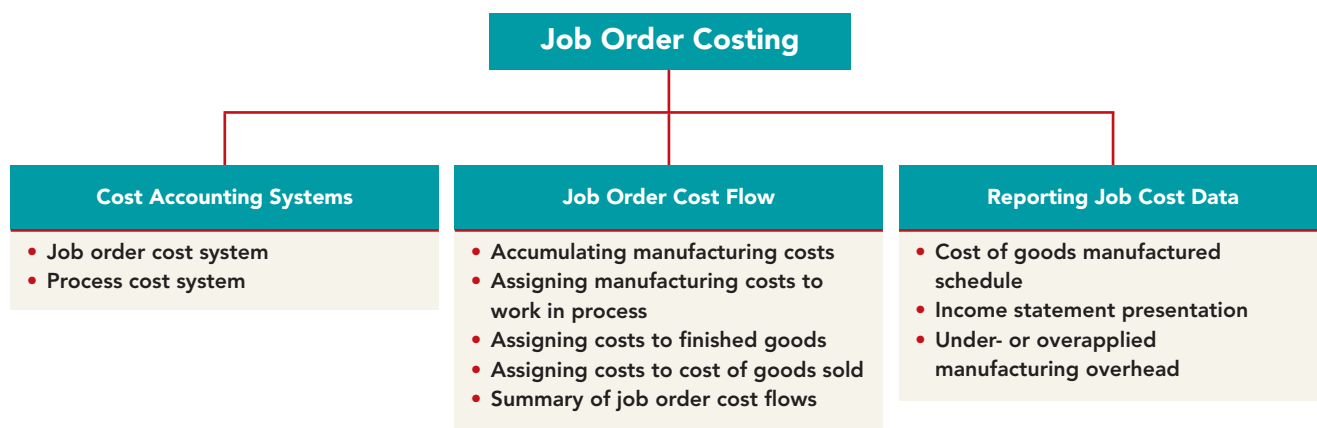
## ***Inside Chapter 20***

- **Jobs Won, Money Lost** (p. 890)
- **Working a 25-Hour Day** (p. 905)
- **All About You: Minding Your Own Business** (p. 906)

## Preview of Chapter 20

The Feature Story about **Western States Fire Apparatus** describes the manufacturing costs used in making a fire truck. It demonstrates that accurate costing is critical to the company's success. For example, in order to submit accurate bids on new jobs and to know whether it profited from past jobs, the company needs a good costing system. This chapter illustrates how these manufacturing costs are assigned to specific jobs, such as the manufacture of individual fire trucks. We begin the discussion in this chapter with an overview of the flow of costs in a job order cost accounting system. We then use a case study to explain and illustrate the documents, entries, and accounts in this type of cost accounting system.

The content and organization of Chapter 20 are as follows.



## COST ACCOUNTING SYSTEMS

### STUDY OBJECTIVE 1

Explain the characteristics and purposes of cost accounting.

**Cost accounting** involves the measuring, recording, and reporting of product costs. From the data accumulated, companies determine both the total cost and the unit cost of each product. The accuracy of the product cost information produced by the cost accounting system is critical to the success of the company. Companies use this information to determine which products to produce, what price to charge, and the amounts to produce. Accurate product cost information is also vital for effective evaluation of employee performance.

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.

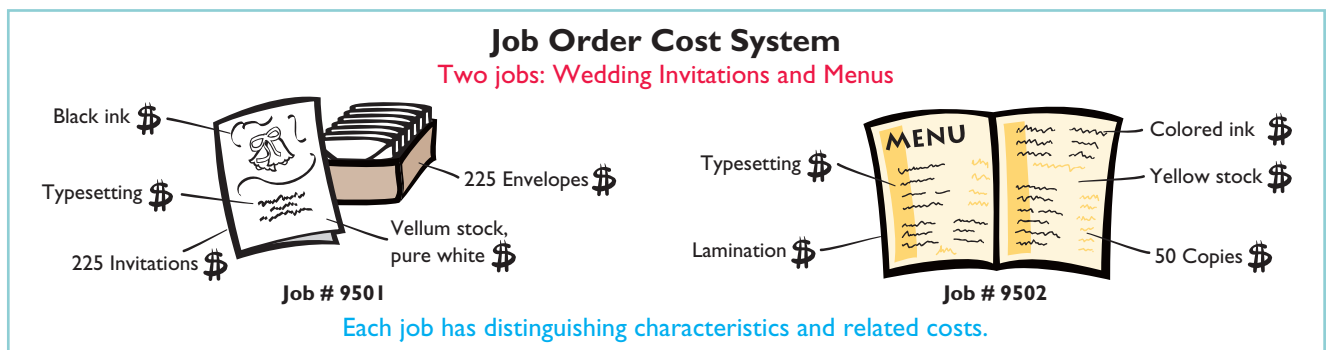
### Job Order Cost System

Under a **job order cost system**, the company assigns costs to each **job** or to each **batch** of goods. An example of a job is the manufacture of a mainframe computer

by **IBM**, the production of a movie by **Disney**, or the making of a fire truck by **Western States**. An example of a batch is the printing of 225 wedding invitations by a local print shop, or the printing of a weekly issue of *Fortune* magazine by a hi-tech printer such as **Quad Graphics**. Companies may complete jobs or batches to fill a specific customer order or to replenish inventory.

An important feature of job order costing is that each job or batch has its own distinguishing characteristics. For example, each house is custom built, each consulting engagement by a CPA firm is unique, and each printing job is different. **The objective is to compute the cost per job.** At each point in manufacturing a product or providing a service, the company can identify the job and its associated costs. A job order cost system measures costs for each completed job, rather than for set time periods. Illustration 20-1 shows the recording of costs in a job order cost system.

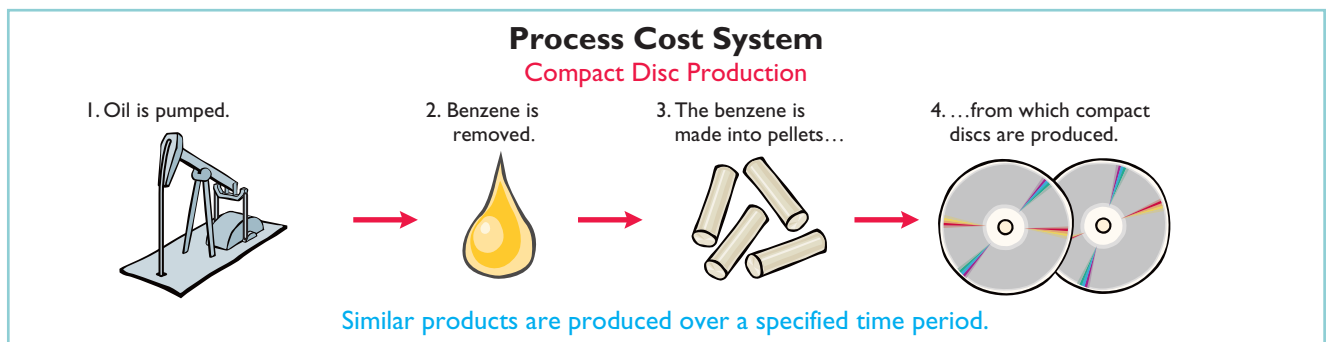
Illustration 20-1  
Job order cost system



## Process Cost System

A company uses a **process cost system** when it manufactures a large volume of similar products. Production is continuous. Examples of a process cost system are the manufacture of cereal by **Kellogg**, the refining of petroleum by **ExxonMobil**, and the production of automobiles by **General Motors**. Process costing accumulates product-related costs **for a period of time** (such as a week or a month) instead of assigning costs to specific products or job orders. In process costing, companies assign the costs to departments or processes for the specified period of time. Illustration 20-2 shows examples of the use of a process cost system. We will discuss the process cost system further in Chapter 21.

Illustration 20-2  
Process cost system



Can a company use both types of cost systems? Yes. For example, **General Motors** uses process cost accounting for its standard model cars, such as Saturns

and Corvettes, and job order cost accounting for a custom-made limousine for the President of the United States. The objective of both cost accounting systems is to provide unit cost information for product pricing, cost control, inventory valuation, and financial statement presentation.

## MANAGEMENT INSIGHT



### Jobs Won, Money Lost

Many companies suffer from poor cost accounting. As a result, they sometimes make products they should not be selling at all, or they buy other products that they could more profitably make themselves. Also, inaccurate cost data lead companies to misallocate capital and frustrate efforts by plant managers to improve efficiency.

For example, consider the case of a diversified company in the business of rebuilding diesel locomotives. The managers thought they were making money, but a consulting firm found that the company had seriously underestimated costs. The company bailed out of the business, and not a moment too soon. Says the consultant who advised the company, "The more contracts it won, the more money it lost." Given that situation, a company cannot stay in business very long!



What type of costs do you think the company had been underestimating?



## JOB ORDER COST FLOW

### STUDY OBJECTIVE 2

Describe the flow of costs in a job order costing system.

The flow of costs (direct materials, direct labor, and manufacturing overhead) in job order cost accounting parallels the physical flow of the materials as they are converted into finished goods. As shown in Illustration 20-3, companies assign manufacturing costs to the Work in Process Inventory account. When a job is completed, the company transfers the cost of the job to Finished Goods Inventory. Later when the goods are sold, the company transfers their cost to Cost of Goods Sold.

Illustration 20-3

Flow of costs in job order costing

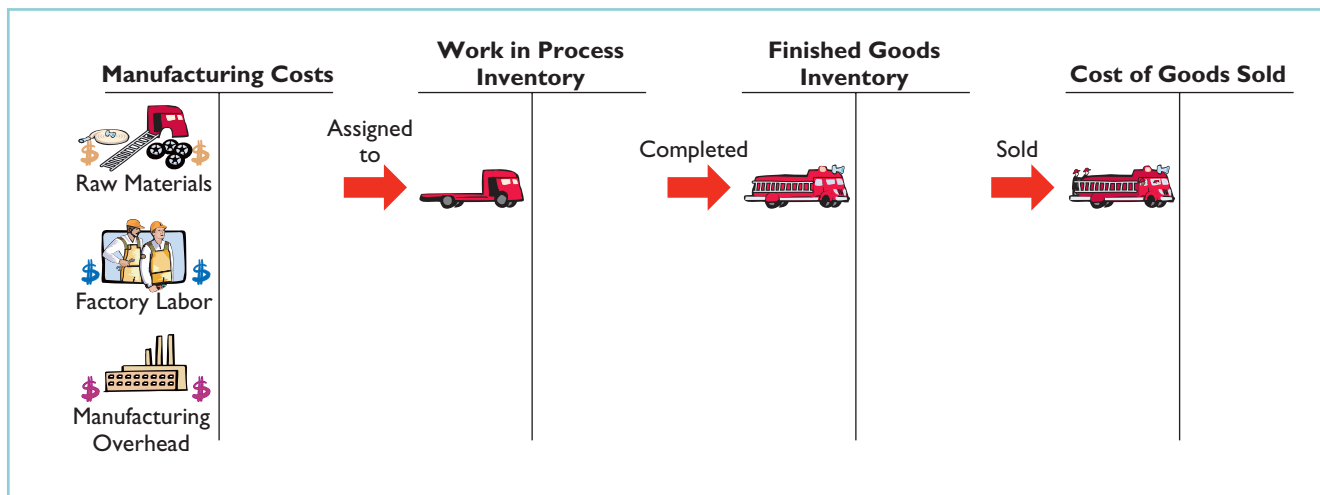
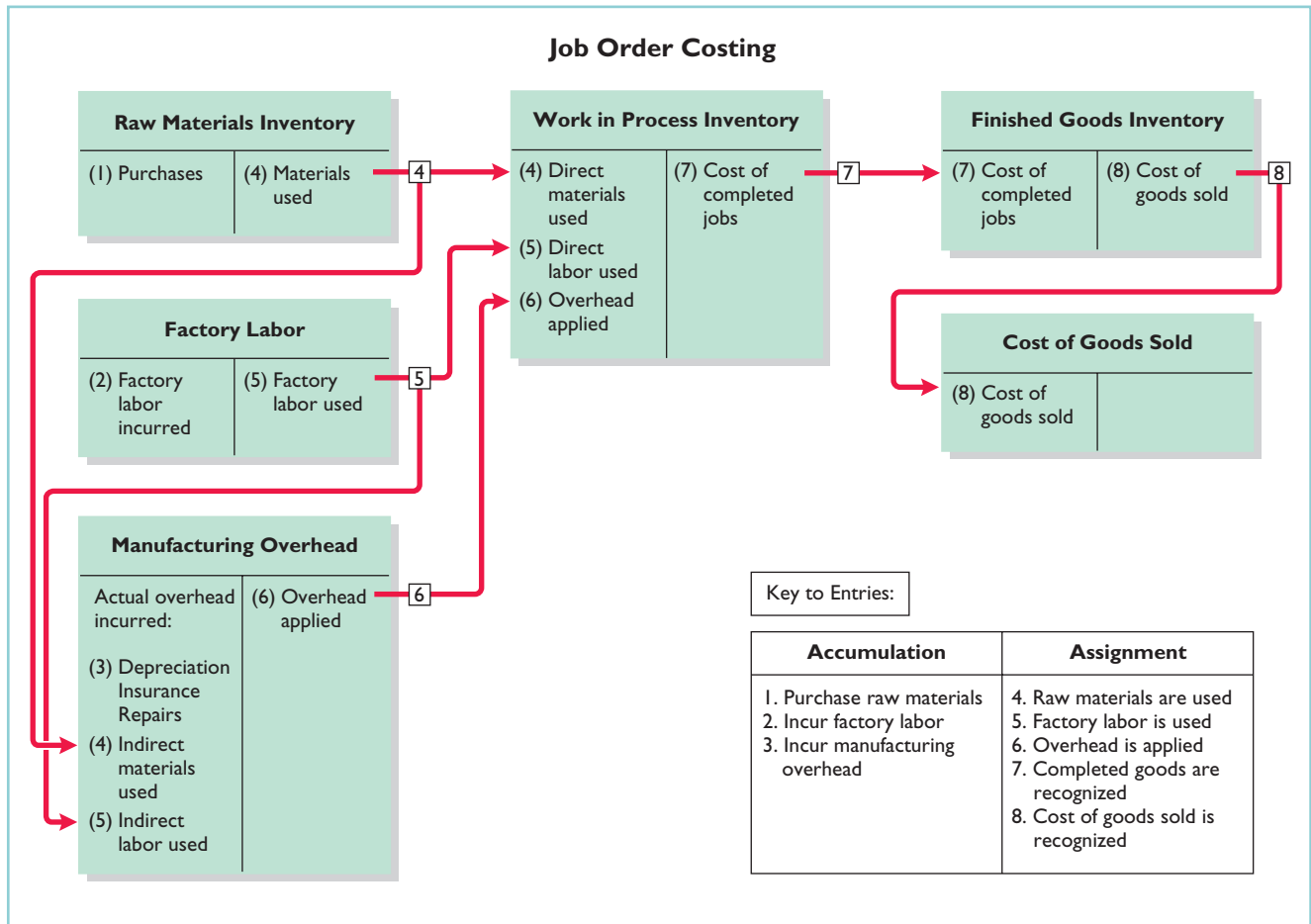


Illustration 20-3 provides a basic overview of the flow of costs in a manufacturing setting. A more detailed presentation of the flow of costs is shown in Illustration 20-4. The box in the lower corner of Illustration 20-4 indicates two

Illustration 20-4  
Job order costing system



major steps in the flow of costs: (1) *accumulating* the manufacturing costs incurred, and (2) *assigning* the accumulated costs to the work done. As shown, the company accumulates manufacturing costs incurred in entries 1–3 by debits to Raw Materials Inventory, Factory Labor, and Manufacturing Overhead. When the company incurs these costs, it does not attempt to associate the costs with specific jobs. The remaining entries (entries 4–8) assign manufacturing costs incurred. In the remainder of this chapter, we will use a case study to explain how a job order system operates.

## Accumulating Manufacturing Costs

To illustrate a job order cost system, we will use the January transactions of Wallace Manufacturing Company, which makes machine tools.

### RAW MATERIALS COSTS

When Wallace receives the raw materials it has purchased, **it debits the costs of the materials to Raw Materials Inventory**. The company would debit this account for the invoice cost of the raw materials and freight costs chargeable to the purchaser. It would credit the account for purchase discounts taken and purchase returns and allowances. Wallace makes **no effort at this point to associate the cost of materials with specific jobs or orders**.

To illustrate, assume that Wallace Manufacturing purchases 2,000 handles (Stock No. AA2746) at \$5 per unit (\$10,000) and 800 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:

(1)			
Jan. 4	Raw Materials Inventory	42,000	
	Accounts Payable		42,000
	(Purchase of raw materials on account)		

As we will explain later in the chapter, the company subsequently assigns raw materials inventory to work in process and manufacturing overhead.

### FACTORY LABOR COSTS

In a manufacturing company, the cost of factory labor consists of three costs: (1) gross earnings of factory workers, (2) employer payroll taxes on these earnings, and (3) fringe benefits (such as sick pay, pensions, and vacation pay) incurred by the employer. **Companies debit labor costs to Factory Labor as they incur those costs.**

To illustrate, assume that Wallace Manufacturing 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 January. The entry to record factory labor for the month is:

(2)			
Jan. 31	Factory Labor	32,000	
	Factory Wages Payable		27,000
	Employer Payroll Taxes Payable		5,000
	(To record factory labor costs)		

The company subsequently assigns factory labor to work in process and manufacturing overhead.

### MANUFACTURING OVERHEAD COSTS

A company has many types of overhead costs. It may recognize these costs **daily**, as in the case of machinery repairs and the use of indirect materials and indirect labor. Or, it may record overhead costs **periodically** through adjusting entries. Companies record property taxes, depreciation, and insurance periodically, for example. This is done using a **summary entry**, which summarizes the totals from multiple transactions.

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

(3)			
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
	(To record overhead costs)		

The company subsequently assigns manufacturing overhead to work in process.

## DO IT!

During the current month, Ringling Company incurs the following manufacturing costs:

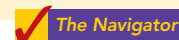
- (a) Raw material purchases of \$4,200 on account.
- (b) Incurs factory labor of \$18,000. Of that amount, \$15,000 relates to wages payable and \$3,000 relates to payroll taxes payable.
- (c) Factory utilities of \$2,200 are payable, prepaid factory insurance of \$1,800 has expired, and depreciation on the factory building is \$3,500.

Prepare journal entries for each type of manufacturing cost.

### Solution

(a) Raw Materials Inventory	4,200		4,200
Accounts Payable			
(Purchases of raw materials on account)			
(b) Factory Labor	18,000		
Factory Wages Payable			15,000
Employer Payroll Taxes Payable			3,000
(To record factory labor costs)			
(c) Manufacturing Overhead	7,500		
Utilities Payable			2,200
Prepaid Insurance			1,800
Accumulated Depreciation			3,500
(To record overhead costs)			

Related exercise material: BE20-1, BE20-2; E20-1, E20-7, E20-8, E20-11, and **DO IT!** 20-1.



### MANUFACTURING COSTS

### action plan

- ✓ In accumulating manufacturing costs, debit at least one of three accounts: Raw Materials Inventory, Factory Labor, and Manufacturing Overhead.
- ✓ Manufacturing overhead costs may be recognized daily. Or manufacturing overhead may be recorded periodically through a summary entry.

## Assigning Manufacturing Costs to Work in Process

As Illustration 20-4 (page 891) shows, assigning manufacturing costs to work in process results in the following entries:

1. **Debits** made to Work in Process Inventory.
2. **Credits** made to Raw Materials Inventory, Factory Labor, and Manufacturing Overhead.

An essential accounting record in assigning costs to jobs is a **job cost sheet**, shown in Illustration 20-5 (page 894). A **job cost sheet** is a form used to record the costs chargeable to a specific job and to determine the total and unit costs of the completed job.

Companies keep a separate job cost sheet for each job. The job cost sheets constitute the subsidiary ledger for the Work in Process Inventory account. A **subsidiary ledger** consists of individual records for each individual item—in this case, each job. The Work in Process account is referred to as a **control account** because it summarizes the detailed data regarding specific jobs contained in the job cost sheets. **Each entry to Work in Process Inventory must be accompanied by a corresponding posting to one or more job cost sheets.**

### STUDY OBJECTIVE 3

Explain the nature and importance of a job cost sheet.



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**Illustration 20-5**  
Job cost sheet

**HELPFUL HINT**  
In today's electronic environment, companies typically maintain job cost sheets as computer files.

Job Cost Sheet			
Job No. _____	Quantity _____		
Item _____	Date Requested _____		
For _____	Date Completed _____		
Date	Direct Materials	Direct Labor	Manufacturing Overhead
Cost of completed job			
Direct materials			\$ _____
Direct labor			_____
Manufacturing overhead			_____
Total cost			\$ _____
Unit cost (total dollars ÷ quantity)			\$ _____

**RAW MATERIALS COSTS**

Companies assign raw materials costs when their materials storeroom issues the materials. Requests for issuing raw materials are made on a prenumbered **materials requisition slip**. The materials issued may be used directly on a job, or they may be considered indirect materials. As Illustration 20-6 shows, the requisition should indicate the quantity and type of materials withdrawn and the account to be charged. The company will charge direct materials to Work in Process Inventory, and indirect materials to Manufacturing Overhead.

**Illustration 20-6**  
Materials requisition slip

Wallace Manufacturing Company Materials Requisition Slip								
Deliver to: <u>Assembly Department</u>			Req. No. <u>R247</u>					
Charge to: <u>Work in Process—Job No. 101</u>			Date: <u>1/6/10</u>					
Quantity	Description	Stock No.	Cost per Unit	Total				
200	Handles	AA2746	\$5.00	\$1,000				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">Requested by <u>Bruce Howard</u></td> <td style="width: 50%;">Received by <u>Herb Crowley</u></td> </tr> <tr> <td>Approved by <u>Kap Shin</u></td> <td>Costed by <u>Heather Remmers</u></td> </tr> </table>					Requested by <u>Bruce Howard</u>	Received by <u>Herb Crowley</u>	Approved by <u>Kap Shin</u>	Costed by <u>Heather Remmers</u>
Requested by <u>Bruce Howard</u>	Received by <u>Herb Crowley</u>							
Approved by <u>Kap Shin</u>	Costed by <u>Heather Remmers</u>							

The company may use any of the inventory costing methods (FIFO, LIFO, or average-cost) in costing the requisitions **to the individual job cost sheets**.

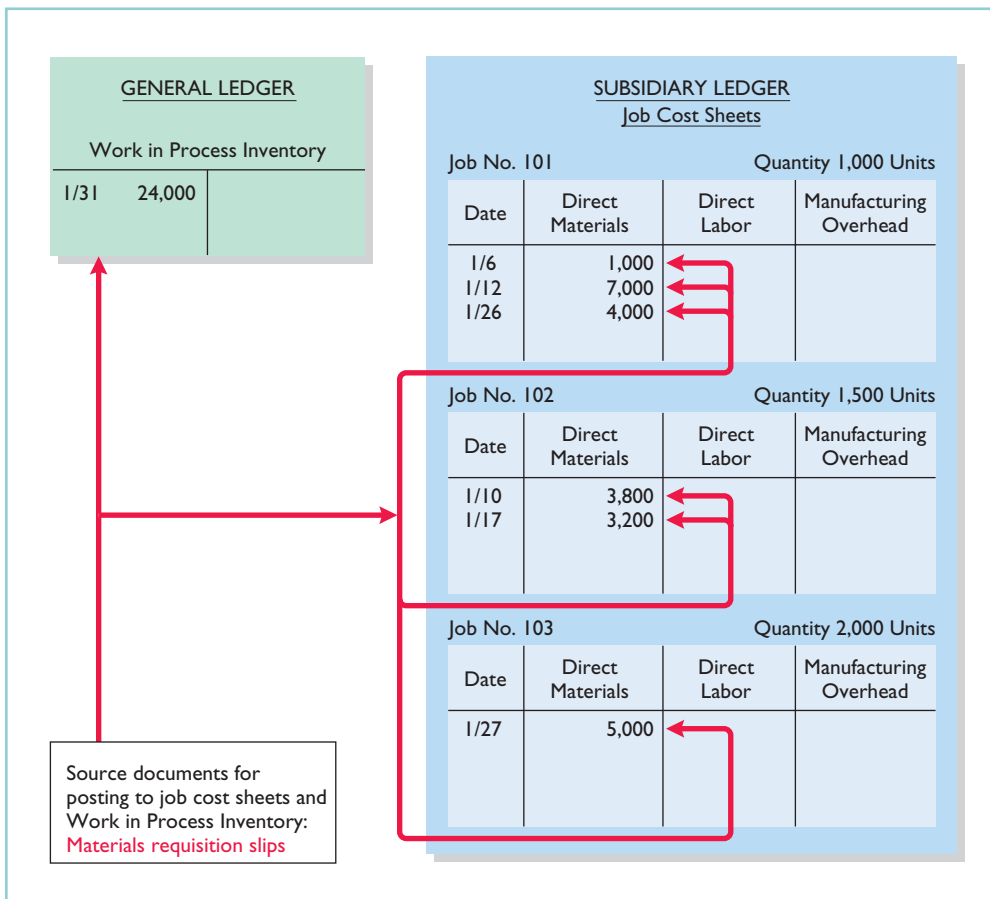
Periodically, the company journalizes the requisitions. For example, if Wallace Manufacturing uses \$24,000 of direct materials and \$6,000 of indirect materials in January, the entry is:

	(4)			
Jan. 31	Work in Process Inventory Manufacturing Overhead Raw Materials Inventory (To assign materials to jobs and overhead)	24,000 6,000		30,000

ETHICS NOTE

The internal control principle of documentation includes prenumbering to enhance accountability.

The requisition slips show total direct materials costs of \$12,000 for Job No. 101, \$7,000 for Job No. 102, and \$5,000 for Job No. 103. Illustration 20-7 shows the posting of requisition slip R247 and other assumed postings to the job cost sheets for materials. After the company has completed all postings, the sum of the direct materials columns of the job cost sheets (the subsidiary accounts) should equal the direct materials debited to Work in Process Inventory (the control account).



**Illustration 20-7**  
Job cost sheets—direct materials

HELPFUL HINT

Companies post to control accounts monthly and post to job cost sheets daily.

### FACTORY LABOR COSTS

Companies assign factory labor costs to jobs on the basis of time tickets prepared when the work is performed. The **time ticket** indicates the employee, the hours worked, the account and job to be charged, and the total labor cost. Many companies

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accumulate these data through the use of bar coding and scanning devices. When they start and end work, employees scan bar codes on their identification badges and bar codes associated with each job they work on. When direct labor is involved, the time ticket must indicate the job number, as shown in Illustration 20-8. The employee's supervisor should approve all time tickets.

**Illustration 20-8**  
Time ticket

**HELPFUL HINT**  
Some companies use different colored time tickets for direct and for indirect labor.

Wallace Manufacturing Company Time Ticket				
Employee <u>John Nash</u>			Date: <u>1/6/10</u>	
Charge to: <u>Work in Process</u>			Employee No. <u>124</u>	
			Job No. <u>101</u>	
Time			Hourly Rate	Total Cost
Start	Stop	Total Hours		
0800	1200	4	10.00	40.00
Approved by <u>Bob Kadler</u>			Costed by <u>M Chen</u>	

The time tickets are later sent to the payroll department, which applies the employee's hourly wage rate and computes the total labor cost. Finally, the company journalizes the time tickets. It debits the account Work in Process Inventory for direct labor, and debits Manufacturing Overhead for indirect labor. For example, if the \$32,000 total factory labor cost consists of \$28,000 of direct labor and \$4,000 of indirect labor, the entry is:

	(5)			
Jan. 31	Work in Process Inventory Manufacturing Overhead Factory Labor (To assign labor to jobs and overhead)	28,000 4,000		32,000

As a result of this entry, Factory Labor has a zero balance, and gross earnings are assigned to the appropriate manufacturing accounts.

Let's assume that the labor costs chargeable to Wallace's three jobs are \$15,000, \$9,000, and \$4,000. Illustration 20-9 (next page) shows the Work in Process Inventory and job cost sheets after posting. As in the case of direct materials, the postings to the direct labor columns of the job cost sheets should equal the posting of direct labor to Work in Process Inventory.

**MANUFACTURING OVERHEAD COSTS**

**STUDY OBJECTIVE 4**

Indicate how the predetermined overhead rate is determined and used.

Companies charge the actual costs of direct materials and direct labor to specific jobs. In contrast, manufacturing **overhead** relates to production operations **as a whole**. As a result, overhead costs cannot be assigned to specific jobs on the basis of actual costs incurred. Instead, companies

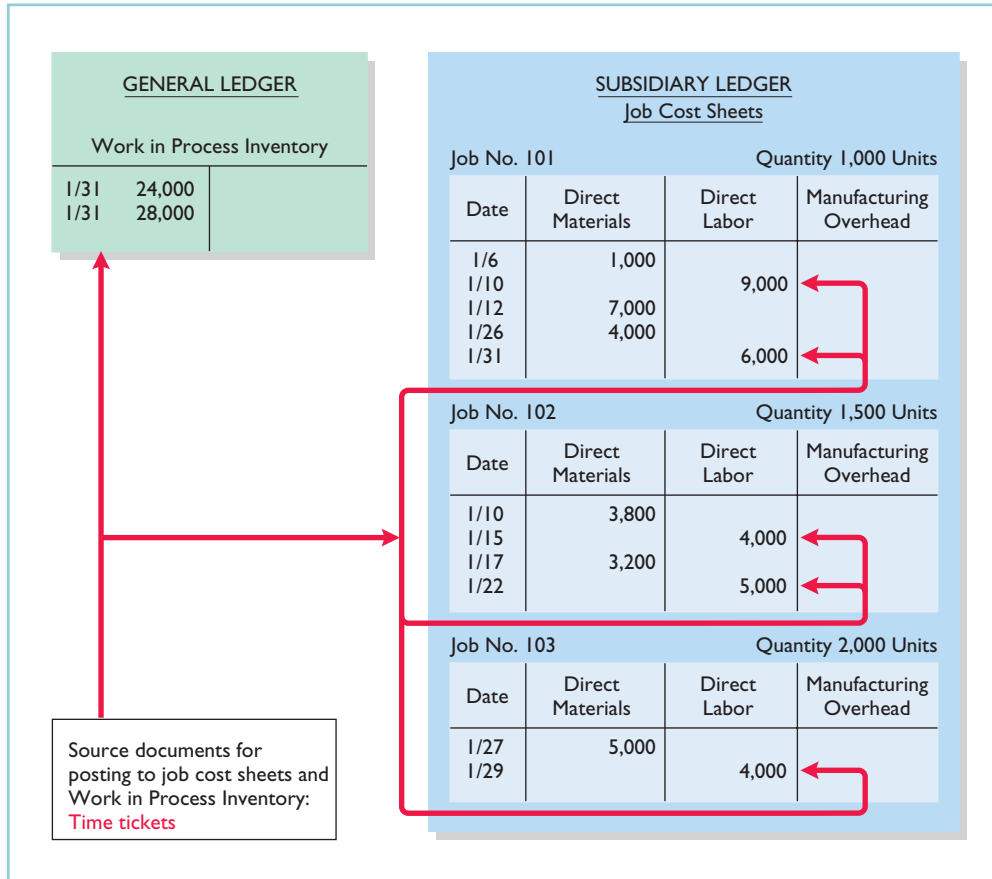


Illustration 20-9

Job cost sheets—direct labor

**HELPFUL HINT**

Prove the \$28,000 by totaling the charges by jobs:

101	\$15,000
102	9,000
103	4,000
	<u>\$28,000</u>

assign manufacturing overhead to work in process and to specific jobs **on an estimated basis through the use of a predetermined overhead rate.**

The **predetermined overhead rate** is based on the relationship between estimated annual overhead costs and expected annual operating activity, expressed in terms of a common **activity base**. The company may state the activity in terms of direct labor costs, direct labor hours, machine hours, or any other measure that will provide an equitable basis for applying overhead costs to jobs. Companies establish the predetermined overhead rate at the beginning of the year. Small companies often use a single, company-wide predetermined overhead rate. Large companies often use rates that vary from department to department. The formula for a predetermined overhead rate is as follows.

$$\text{Estimated Annual Overhead Costs} \div \text{Expected Annual Operating Activity} = \text{Predetermined Overhead Rate}$$

Illustration 20-10

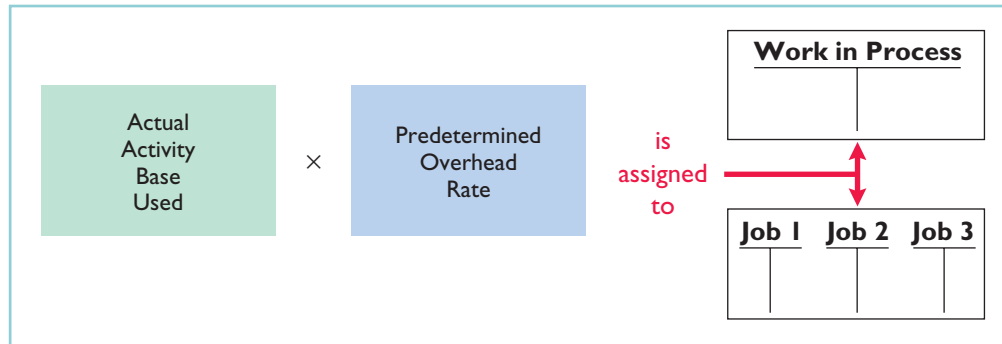
Formula for predetermined overhead rate

Overhead relates to production operations as a whole. To know what “the whole” is, the logical thing is to wait until the end of the year’s operations. At that time the company knows all of its costs for the period. As a practical matter, though, managers cannot wait until the end of the year. To price products accurately, they need information about product costs of specific jobs completed during

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the year. Using a predetermined overhead rate enables a cost to be determined for the job immediately. Illustration 20-11 indicates how manufacturing overhead is assigned to work in process.

**Illustration 20-11**  
Using predetermined overhead rates



Wallace Manufacturing 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, the overhead rate is 80%, computed as follows:

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

This means that for every dollar of direct labor, Wallace will assign 80 cents of manufacturing overhead to a job. The use of a predetermined overhead rate enables the company to determine the approximate total cost of each job **when it completes the job**.

Historically, companies used direct labor costs or direct labor hours as the activity base. The reason was the relatively high correlation between direct labor and manufacturing overhead. Today more companies are using **machine hours as the activity base, due to increased reliance on automation in manufacturing operations**. Or, as mentioned in Chapter 19, many companies now use activity-based costing in an attempt to more accurately allocate overhead costs based on the activities that give rise to the costs.

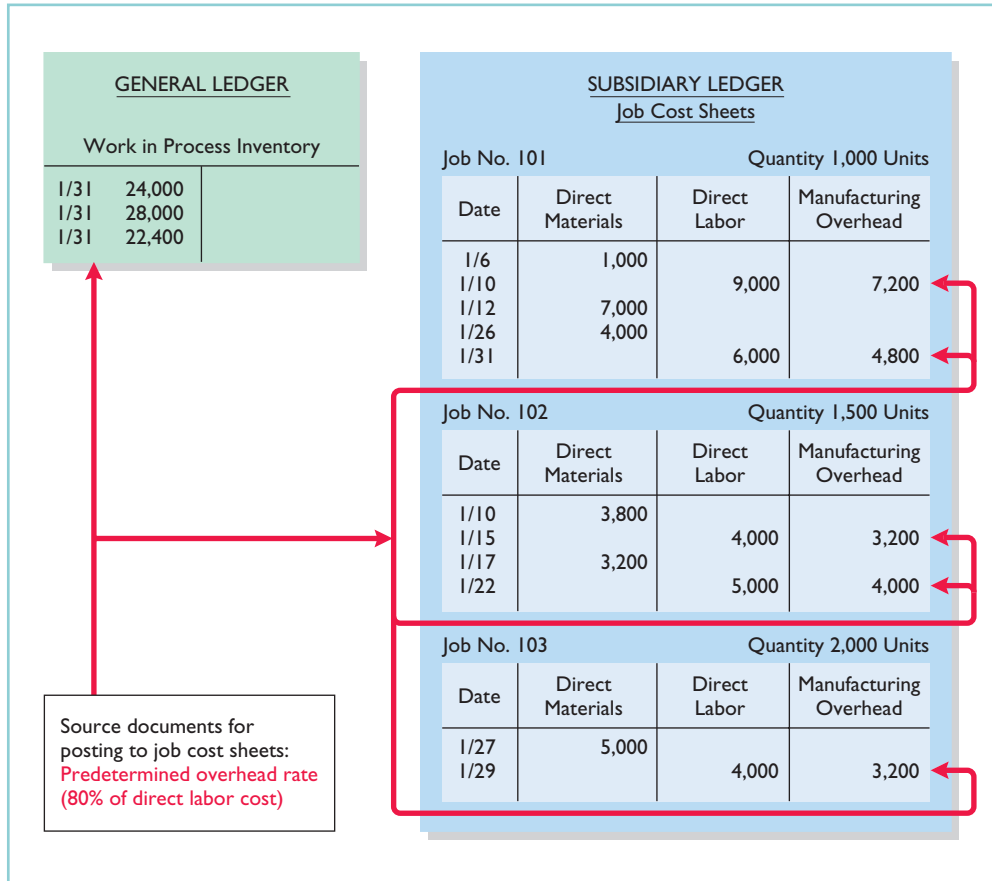
A company may use more than one activity base. For example, if a job is manufactured in more than one factory department, each department may have its own overhead rate. In the Feature Story about fire trucks, **Western States Fire Apparatus** uses two bases in assigning overhead to jobs: direct materials dollars for indirect materials, and direct labor hours for such costs as insurance and supervisors' salaries.

Companies apply manufacturing overhead to work in process when they assign direct labor costs. They also apply manufacturing overhead to specific jobs at the same time. For Wallace Manufacturing, overhead applied for January is \$22,400 (direct labor cost of \$28,000 × 80%). The following entry records this application.

**HELPFUL HINT**  
Service industries also use job order costing systems extensively. A service company will report actual direct labor and apply overhead using a predetermined rate. Although service companies do not produce inventory, many incur significant materials costs that are charged to each job.

	(6)		
Jan. 31	Work in Process Inventory Manufacturing Overhead (To assign overhead to jobs)	22,400	22,400

The overhead that Wallace applies to each job will be 80% of the direct labor cost of the job for the month. Illustration 20-12 shows the Work in Process Inventory account and the job cost sheets after posting. Note that the debit of \$22,400 to Work in Process Inventory equals the sum of the overhead applied to jobs: Job 101 \$12,000 + Job 102 \$7,200 + Job 103 \$3,200.



**Illustration 20-12**  
Job cost sheets—  
manufacturing overhead  
applied

At the end of each month, **the balance in Work in Process Inventory should equal the sum of the costs shown on the job cost sheets of unfinished jobs.** Illustration 20-13 presents proof of the agreement of the control and subsidiary accounts in Wallace Manufacturing. (It assumes that all jobs are still in process.)

Work in Process Inventory		Job Cost Sheets	
Jan. 31	24,000	No. 101	\$39,000
31	28,000	102	23,200
31	22,400	103	12,200
	<b>74,400</b>		<b>\$74,400</b>

**Illustration 20-13**  
Proof of job cost sheets to  
work in process inventory

**DO IT!**

Danielle Company is working on two job orders. The job cost sheets show the following:

- Direct materials—Job 120 \$6,000, Job 121 \$3,600
- Direct labor—Job 120 \$4,000, Job 121 \$2,000
- Manufacturing overhead—Job 120 \$5,000, Job 121 \$2,500

Prepare the three summary entries to record the assignment of costs to Work in Process from the data on the job cost sheets.

**WORK IN PROCESS**

**action plan**

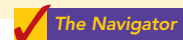
- ✓ Recognize that Work in Process Inventory is the control account for all unfinished job cost sheets.
- ✓ Debit Work in Process Inventory for the materials, labor, and overhead charged to the job cost sheets.
- ✓ Credit the accounts that were debited when the manufacturing costs were accumulated.

**Solution**

The three summary entries are:

Work in Process Inventory (\$6,000 + \$3,600)	9,600	9,600
Raw Materials Inventory (To assign materials to jobs)		
Work in Process Inventory (\$4,000 + \$2,000)	6,000	6,000
Factory Labor (To assign labor to jobs)		
Work in Process Inventory (\$5,000 + \$2,500)	7,500	7,500
Manufacturing Overhead (To assign overhead to jobs)		

Related exercise material: BE20-3, BE20-4, BE20-5, E20-1, E20-2, E20-7, E20-8, and **DO IT!** 20-2.



## Assigning Costs to Finished Goods

**STUDY OBJECTIVE 5**

Prepare entries for jobs completed and sold.

**When a job is completed**, Wallace summarizes the costs and completes the lower portion of the applicable job cost sheet. For example, if we assume that Wallace completes Job No. 101 on January 31, the job cost sheet appears as shown in Illustration 20-14.

**Illustration 20-14**

Completed job cost sheet

Job Cost Sheet			
Job No.	101	Quantity	1,000
Item	Magnetic Sensors	Date Requested	February 5
For	Tanner Company	Date Completed	January 31
Date	Direct Materials	Direct Labor	Manufacturing Overhead
1/6	\$ 1,000		
1/10		\$ 9,000	\$ 7,200
1/12	7,000		
1/26	4,000		
1/31		6,000	4,800
	\$ 12,000	\$ 15,000	\$ 12,000
<b>Cost of completed job</b>			
		\$ 12,000	
		15,000	
		12,000	
		\$ 39,000	
		\$ 39.00	

When a job is finished, Wallace makes an entry to transfer its total cost to finished goods inventory. The entry is as follows:

	(7)		
Jan. 31	Finished Goods Inventory Work in Process Inventory (To record completion of Job No. 101)	39,000	39,000

**Finished Goods Inventory is a control account. It controls individual finished goods records** in a finished goods subsidiary ledger. The company posts directly from completed job cost sheets to the receipts columns. Illustration 20-15 shows the finished goods inventory record for Job No. 101.

Finished Goods.xls										
File Edit View Insert Format Tools Data Window Help										
A	B	C	D	E	F	G	H	I	J	
1	Item: Magnetic Sensors								Job No: 101	
2	Receipts			Issues			Balance			
3	Date	Units	Cost	Total	Units	Cost	Total	Units	Cost	Total
4	1/31	1,000	\$39	\$39,000				1,000	\$39	\$39,000
5	1/31				1,000	\$39	\$39,000			- 0 -
6										
7										

**Illustration 20-15**  
Finished goods record

## Assigning Costs to Cost of Goods Sold

Companies recognize cost of goods sold when each sale occurs. To illustrate the entries a company makes when it sells a completed job, assume that on January 31 Wallace Manufacturing sells on account Job 101. The job cost \$39,000, and it sold for \$50,000. The entries to record the sale and recognize cost of goods sold are:

	(8)			
Jan. 31		Accounts Receivable	50,000	
		Sales		50,000
		(To record sale of Job No. 101)		
31		Cost of Goods Sold	39,000	
		Finished Goods Inventory		39,000
		(To record cost of Job No. 101)		

As Illustration 20-15 above shows, Wallace records, in the issues section of the finished goods record, the units sold, the cost per unit, and the total cost of goods sold for each job sold.

## Summary of Job Order Cost Flows

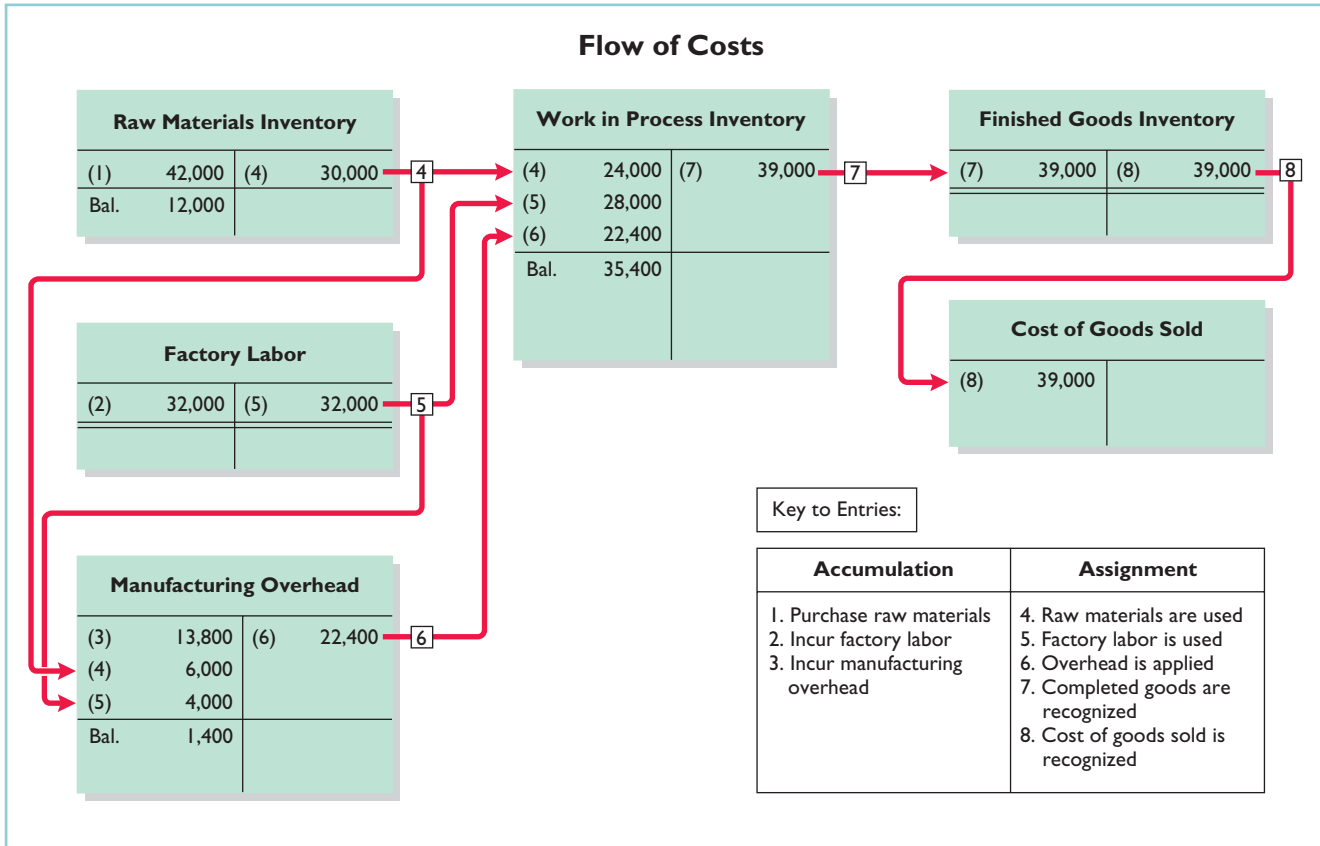
Illustration 20-16 (page 902) shows a completed flow chart for a job order cost accounting system. All postings are keyed to entries 1–8 in Wallace Manufacturing's accounts presented in the cost flow graphic in Illustration 20-4 (page 891).

The cost flows in the diagram 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.**



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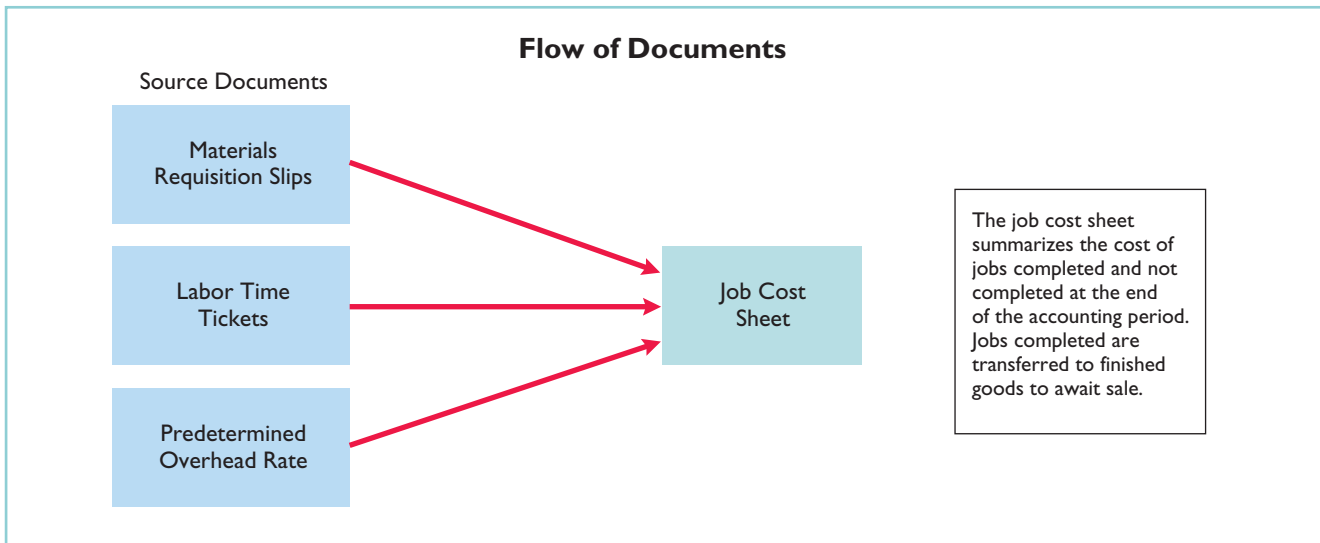


**Illustration 20-16**  
Flow of costs in a job order cost system

- **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.

Illustration 20-17 summarizes the flow of documents in a job order cost system.

**Illustration 20-17**  
Flow of documents in a job order cost system



**DO IT!**

During the current month, 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.

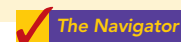
**COMPLETION AND SALE OF JOBS****Solution**

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)		

**action plan**

- ✓ Debit Finished Goods for the cost of completed jobs.
- ✓ Debit Cost of Goods Sold for the cost of jobs sold.

Related exercise material: BE20-8, E20-2, E20-3, E20-4, E20-6, E20-7, E20-10, and **DO IT!** 20-3.

**REPORTING JOB COST DATA**

At the end of a period, companies prepare financial statements that present aggregate data on all jobs manufactured and sold. The cost of goods manufactured schedule in job order costing is the same as in Chapter 19 with one exception: **The schedule shows manufacturing overhead applied, rather than actual overhead costs. The company adds manufacturing overhead applied to direct materials and direct labor to determine total manufacturing costs.**

Companies prepare the cost of goods manufactured schedule directly from the Work in Process Inventory account. Illustration 20-18 shows a condensed schedule for Wallace Manufacturing Company for January.

**HELPFUL HINT**

Monthly financial statements are usually prepared for management use only.

**WALLACE MANUFACTURING COMPANY**

Cost of Goods Manufactured Schedule  
For the Month Ended January 31, 2010

Work in process, January 1		\$ -0-
Direct materials used	\$24,000	
Direct labor	28,000	
<b>Manufacturing overhead applied</b>	<b>22,400</b>	
Total manufacturing costs		74,400
Total cost of work in process		74,400
Less: Work in process, January 31		35,400
Cost of goods manufactured		<u>\$39,000</u>

**Illustration 20-18**

Cost of goods manufactured schedule

Note that the cost of goods manufactured (\$39,000) agrees with the amount transferred from Work in Process Inventory to Finished Goods Inventory in journal entry no. 7 in Illustration 20-16 (page 902).

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The income statement and balance sheet are the same as those illustrated in Chapter 19. For example, Illustration 20-19 shows the partial income statement for Wallace Manufacturing for the month of January.

Illustration 20-19  
Partial income statement

WALLACE MANUFACTURING COMPANY			
Income Statement (partial)			
For the Month Ending January 31, 2010			
Sales			\$50,000
Cost of goods sold			
Finished goods inventory, January 1		\$ -0-	
<b>Cost of goods manufactured</b> (See Illustration 20-18)		<b>39,000</b>	
Cost of goods available for sale		39,000	
Less: Finished goods inventory, January 31		-0-	
Cost of goods sold		<u>39,000</u>	
Gross profit			<u>\$11,000</u>


## Under- or Overapplied Manufacturing Overhead

### STUDY OBJECTIVE 6

Distinguish between under- and overapplied manufacturing overhead.

When Manufacturing Overhead has a **debit balance**, overhead is said to be underapplied. **Underapplied overhead** means that the overhead assigned to work in process is less than the overhead incurred. Conversely, when manufacturing overhead has a **credit balance**, overhead is overapplied. **Overapplied overhead** means that the overhead assigned to work in process is greater than the overhead incurred. Illustration 20-20 shows these concepts.

Illustration 20-20  
Under- and overapplied overhead



Manufacturing Overhead

**Manufacturing Overhead**

Actual (Costs incurred)	Applied (Costs assigned)
----------------------------	-----------------------------

If actual is **greater** than applied,  
manufacturing overhead is underapplied.

If actual is **less** than applied,  
manufacturing overhead is overapplied.

### YEAR-END BALANCE

At the end of the year, all manufacturing overhead transactions are complete. There is no further opportunity for offsetting events to occur. At this point, Wallace eliminates any balance in Manufacturing Overhead by an adjusting entry. It considers under- or overapplied overhead to be an **adjustment to cost of goods sold**. Thus, Wallace **debits underapplied overhead to Cost of Goods Sold**. It **credits overapplied overhead to Cost of Goods Sold**.

To illustrate, assume that Wallace Manufacturing has a \$2,500 credit balance in Manufacturing Overhead at December 31. The adjusting entry for the overapplied overhead is:

Dec. 31	Manufacturing Overhead Cost of Goods Sold (To transfer overapplied overhead to cost of goods sold)	2,500	2,500
---------	---	-------	-------

After Wallace posts this entry, Manufacturing Overhead has a zero balance. In preparing an income statement for the year, Wallace reports cost of goods sold **after adjusting it** for either under- or overapplied overhead.

Conceptually, some argue, under- or overapplied overhead at the end of the year should be allocated among ending work in process, finished goods, and cost of goods sold. The discussion of this possible allocation approach is left to more advanced courses.

## ETHICS INSIGHT



### Working a 25-Hour Day

In some industries, companies bill jobs on a “cost plus profit” basis. For example, law offices bill their customers based upon the “billable hours” incurred by their legal staff. This creates an incentive for law offices to pad their bills—that is, to overstate the costs incurred on particular jobs so as to inflate their bills. In one survey, two-thirds of attorneys reported knowledge of bill padding.

Similarly, suppliers to the government have often been accused of overbilling by misstating their cost accounting records. For example, the government recently filed a lawsuit against **Northrop Grumman**. This suit accused the company of intentionally concealing cost-accounting and material-tracking problems related to radar-jamming devices that the company made for the U.S. government more than 20 years before. These problems, the suit alleged, resulted in the government overpaying by \$27 million. Company memos discussed strategies for training cost-accounting managers on how to conceal the problem from the government. One memo stated, “We can’t tell the truth.”

**Sources:** Nathan Koppel, “Lawyer’s Charge Opens Window on Bill Padding,” *Wall Street Journal*, August 30, 2006; and Andy Pasztor and Jonathan Karp, “Northrup Papers Indicate Coverup,” *Wall Street Journal*, April 19, 2004.



What feature of these businesses creates an incentive to misstate cost accounting data on particular jobs? What can customers do to protect themselves from overbilling?



## 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 =  $(140\% \times \$80,000) = \$112,000$

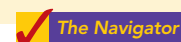
Underapplied manufacturing overhead =  $(\$119,000 - \$112,000) = \$7,000$

Related exercise material: **BE20-9, E20-5, E20-12, E20-13,** and **DO IT! 20-4.**

### APPLIED MANUFACTURING OVERHEAD

#### action plan

- ✓ Calculate the amount of overhead applied by multiplying the predetermined overhead rate by actual activity.
- ✓ If actual manufacturing overhead is greater than applied, manufacturing overhead is underapplied.
- ✓ If actual manufacturing overhead is less than applied, manufacturing overhead is overapplied.



Be sure to read **ALL ABOUT YOU: Minding Your Own Business** on page 906 for information on how topics in this chapter apply to your personal life.

## Minding Your Own Business

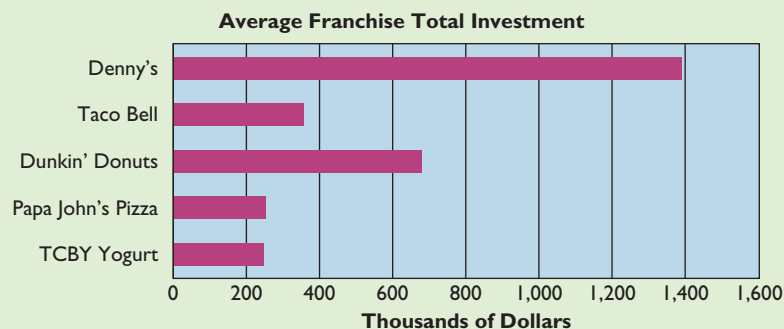
After graduating you might decide to start a small business. As discussed in this chapter, owners of any business need to know how to calculate the cost of their products. In fact, many small businesses fail because they do not accurately calculate their product costs, so they don't know if they are making money or losing money—until it is too late.

### Some Facts

- \* There are about 17.6 million sole proprietorships in the U.S. The most common type of sole proprietorship is construction contractor.
- \* During a recent year, 25% of all sole proprietorships reported losses. The safest business is surveying and mapping, with only 6% of firms reporting losses. The riskiest business is hunting and trapping, with 76% of firms reporting losses.
- \* *Inc.* Magazine ranked the following as the top ten best places to start a business in 2006: Yuma, AZ; St. George, UT; Cape Coral–Fort Myers, FL; Fort Walton Beach–Crestview–Destin, FL; Coeur d'Alene, ID; Bellingham, WA; Port St. Lucie–Fort Pierce, FL; Naples–Marco Island, FL; Las Vegas–Paradise, NV; Idaho Fall, ID.
- \* About.com ranked the top ten business opportunities for 2005: business coach (motivates managers); business broker (brings together buyers and sellers of businesses); garage-organizing service; designing and producing smart (customized) clothes; medical transcription; trash removal; anti-aging spas; college admissions consulting; translation services; gaming-related businesses.

### About the Numbers

Instead of starting your own business from scratch, perhaps you think it makes more sense to purchase a franchise. Initial investment varies, and annual franchise fees range from about \$20,000 up to \$80,000. The nearby chart of some well-known franchises shows the investment you typically need to make for these franchises. As you can see, you have to generate considerable revenue to cover the investment and related franchise fees. That's a lot of overhead.



Source: AllBusiness.com, [www.allbusiness.com/franchise/listings.asp?cat=4933&sub=4970](http://www.allbusiness.com/franchise/listings.asp?cat=4933&sub=4970) (accessed June 2006).

### What Do You Think?

Suppose that you decide to start a landscape business. You use an old pickup truck that you've fully paid for. You store the truck and other equipment in your parents' barn, and you store trees and shrubs on their land. Your parents will not charge you for the use of these facilities for the first two years, but beginning in the third year they will charge a reasonable rent. Your mother helps you by answering phone calls and providing customers with information. She doesn't charge you for this service, but she plans on doing it for only your first two years in business.

In pricing your services, should you include charges for the truck, the barn, the land, and your mother's services when calculating your product cost?

**YES:** If you don't include charges for these costs, your costs are understated and your profitability is overstated.

**NO:** At this point you are not actually incurring costs related to these activities, therefore you shouldn't record charges.

Sources: [www.bizstats.com](http://www.bizstats.com); Darrel Zahorsky, "10 Best Small Business Opportunities for 2005," *sbinformation.about.com* (accessed June 2006); Joel Kotkin, "Boomtowns '06," *Inc.* Magazine, May 2006, p. 97.

**Comprehensive DO IT!**



During February, Cardella Manufacturing works on two jobs: A16 and B17. Summary data concerning these jobs are as follows.

**Manufacturing Overhead**

Cardella Manufacturing uses a predetermined overhead rate with direct labor costs as the activity base. It expects annual overhead costs to be \$760,000 and direct labor costs for the year to be \$950,000.

**Manufacturing Costs Incurred**

Purchased \$54,000 of raw materials on account.  
 Factory labor \$76,000, plus \$4,000 employer payroll taxes.  
 Manufacturing overhead exclusive of indirect materials and indirect labor \$59,800.

**Assignment of Costs**

Direct materials: Job A16 \$27,000, Job B17 \$21,000  
 Indirect materials: \$3,000  
 Direct labor: Job A16 \$52,000, Job B17 \$26,000  
 Indirect labor: \$2,000

Job A16 was completed and sold on account for \$150,000. Job B17 was only partially completed.

**Instructions**

- (a) Compute the predetermined overhead rate.
- (b) Journalize the February transactions in the sequence followed in the chapter.
- (c) What was the amount of under- or overapplied manufacturing overhead?

**action plan**

- ✓ Predetermined overhead rate = Estimated annual overhead costs ÷ Expected annual operating activity.
- ✓ In accumulating costs, debit three accounts: Raw Materials Inventory, Factory Labor, and Manufacturing Overhead.
- ✓ When Work in Process Inventory is debited, credit one of the three accounts listed above.
- ✓ Debit Finished Goods Inventory for the cost of completed jobs. Debit Cost of Goods Sold for the cost of jobs sold.
- ✓ Overhead is underapplied when Manufacturing Overhead has a debit balance.

**Solution to Comprehensive DO IT!**

<b>(a)</b> Estimated annual overhead costs	÷	Expected annual operating activity	=	Predetermined overhead rate
\$760,000	÷	\$950,000	=	80%

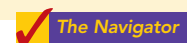
<b>(b) 1.</b>				
Feb. 28	Raw Materials Inventory Accounts Payable (Purchase of raw materials on account)	54,000		54,000
<b>2.</b>				
28	Factory Labor Factory Wages Payable Employer Payroll Taxes Payable (To record factory labor costs)	80,000		76,000 4,000
<b>3.</b>				
28	Manufacturing Overhead Accounts Payable, Accumulated Depreciation, and Prepaid Insurance (To record overhead costs)	59,800		59,800
<b>4.</b>				
28	Work in Process Inventory Manufacturing Overhead Raw Materials Inventory (To assign raw materials to production)	48,000 3,000		51,000

<b>5.</b>			
Feb. 28	Work in Process Inventory Manufacturing Overhead Factory Labor (To assign factory labor to production)	78,000 2,000	80,000
<b>6.</b>			
28	Work in Process Inventory Manufacturing Overhead (To assign overhead to jobs— 80% × \$78,000)	62,400	62,400
<b>7.</b>			
28	Finished Goods Inventory Work in Process Inventory (To record completion of Job A16: direct materials \$27,000, direct labor \$52,000, and manufacturing overhead \$41,600)	120,600	120,600
<b>8.</b>			
28	Accounts Receivable Sales (To record sale of Job A16)	150,000	150,000
28	Cost of Goods Sold Finished Goods Inventory (To record cost of sale for Job A16)	120,600	120,600

(c) Manufacturing Overhead has a debit balance of \$2,400 as shown below.

Manufacturing Overhead			
(3)	59,800	(6)	62,400
(4)	3,000		
(5)	2,000		
Bal.	2,400		

Thus, manufacturing overhead is underapplied for the month.



## SUMMARY OF STUDY OBJECTIVES



- 1 Explain the characteristics and purposes of cost accounting.** Cost accounting involves the procedures for measuring, recording, and reporting product costs. From the data accumulated, companies determine the total cost and the unit cost of each product. The two basic types of cost accounting systems are job order cost and process cost.
- 2 Describe the flow of costs in a job order costing system.** In job order costing, manufacturing costs are first accumulated in three accounts: Raw Materials Inventory, Factory Labor, and Manufacturing Overhead. The accumulated costs are then assigned to Work in Process Inventory and eventually to Finished Goods Inventory and Cost of Goods Sold.
- 3 Explain the nature and importance of a job cost sheet.** A job cost sheet is a form used to record the costs chargeable to a specific job and to determine the total and unit costs of the completed job. Job cost sheets constitute the subsidiary ledger for the Work in Process Inventory control account.
- 4 Indicate how the predetermined overhead rate is determined and used.** The predetermined overhead rate is based on the relationship between estimated annual overhead costs and expected annual operating activity. This is expressed in terms of a common activity base, such as direct labor cost. The rate is used in assigning overhead costs to work in process and to specific jobs.

- 5 Prepare entries for jobs completed and sold.** When jobs are completed, the cost is debited to Finished Goods Inventory and credited to Work in Process Inventory. When a job is sold the entries are: (a) Debit Cash or Accounts Receivable and credit Sales for the selling price. And (b) debit Cost of Goods Sold and credit Finished Goods Inventory for the cost of the goods.
- 6 Distinguish between under- and overapplied manufacturing overhead.** Underapplied manufacturing overhead means that the overhead assigned to work in process is less than the overhead incurred. Overapplied overhead means that the overhead assigned to work in process is greater than the overhead incurred.



## GLOSSARY



- Cost accounting** An area of accounting that involves measuring, recording, and reporting product costs. (p. 888)
- Cost accounting system** Manufacturing cost accounts that are fully integrated into the general ledger of a company. (p. 888)
- Job cost sheet** A form used to record the costs chargeable to a specific job and to determine the total and unit costs of the completed job. (p. 893)
- Job order cost system** A cost accounting system in which costs are assigned to each job or batch. (p. 888)
- Materials requisition slip** A document authorizing the issuance of raw materials from the storeroom to production. (p. 894)
- Overapplied overhead** A situation in which overhead assigned to work in process is greater than the overhead incurred. (p. 904)
- Predetermined overhead rate** A rate based on the relationship between estimated annual overhead costs and expected annual operating activity, expressed in terms of a common activity base. (p. 897)
- Process cost system** A system of accounting used when a large quantity of similar products are manufactured. (p. 889)
- Summary entry** A journal entry that summarizes the totals from multiple transactions. (p. 892)
- Time ticket** A document that indicates the employee, the hours worked, the account and job to be charged, and the total labor cost. (p. 895)
- Underapplied overhead** A situation in which overhead assigned to work in process is less than the overhead incurred. (p. 904)

## SELF-STUDY QUESTIONS



Answers are at the end of the chapter.

- (SO 1) 1. Cost accounting involves the measuring, recording, and reporting of:
- product costs.
  - future costs.
  - manufacturing processes.
  - managerial accounting decisions.
- (SO 1) 2. A company is more likely to use a job costing system if:
- it manufactures a large volume of similar products.
  - its production is continuous.
  - it manufactures products with unique characteristics.
  - it uses a periodic inventory system.
- (SO 2) 3. In accumulating raw materials costs, the cost of raw materials purchased in a perpetual system is debited to:
- Raw Materials Purchases.
  - Raw Materials Inventory.
  - Purchases.
  - Work in Process.
- (SO 2) 4. When incurred, factory labor costs are debited to:
- Work in Process.
  - Factory Wages Expense.
  - Factory Labor.
  - Factory Wages Payable.
5. The flow of costs in job order costing: (SO 2)
- begins with work in process inventory and ends with finished goods inventory.
  - begins as soon as a sale occurs.
  - parallels the physical flow of materials as they are converted into finished goods.
  - is necessary to prepare the cost of goods manufactured schedule.
6. Raw materials are assigned to a job when: (SO 3)
- the job is sold.
  - the materials are purchased.
  - the materials are received from the vendor.
  - the materials are issued by the materials storeroom.
7. The source documents for assigning costs to job cost sheets are: (SO 3)
- invoices, time tickets, and the predetermined overhead rate.
  - materials requisition slips, time tickets, and the actual overhead costs.
  - materials requisition slips, payroll register, and the predetermined overhead rate.
  - materials requisition slips, time tickets, and the predetermined overhead rate.



## 910 Chapter 20 Job Order Costing

- (SO 3) 8. In recording the issuance of raw materials in a job order cost system, it would be *incorrect* to:
- debit Work in Process Inventory.
  - debit Finished Goods Inventory.
  - debit Manufacturing Overhead.
  - credit Raw Materials Inventory.
- (SO 3) 9. The entry when direct factory labor is assigned to jobs is a debit to:
- Work in Process Inventory and a credit to Factory Labor.
  - Manufacturing Overhead and a credit to Factory Labor.
  - Factory Labor and a credit to Manufacturing Overhead.
  - Factory Labor and a credit to Work in Process Inventory.
- (SO 4) 10. The formula for computing the predetermined manufacturing overhead rate is estimated annual overhead costs divided by an expected annual operating activity, expressed as:
- direct labor cost.
  - direct labor hours.
  - machine hours.
  - any of the above.
- (SO 4) 11. In Crawford Company, the predetermined overhead rate is 80% of direct labor cost. During the month, \$210,000 of factory labor costs are incurred, of which \$180,000 is direct labor and \$30,000 is indirect labor. Actual overhead incurred was \$200,000. The amount of overhead debited to Work in Process Inventory should be:
- \$120,000.
  - \$144,000.
  - \$168,000.
  - \$160,000.
- (SO 5) 12. In Mynex Company, Job No. 26 is completed at a cost of \$4,500 and later sold for \$7,000 cash. A correct entry is:
- Debit Finished Goods Inventory \$7,000 and credit Work in Process Inventory \$7,000.
  - Debit Cost of Goods Sold \$7,000 and credit Finished Goods Inventory \$7,000.
  - Debit Finished Goods Inventory \$4,500 and credit Work in Process Inventory \$4,500.
  - Debit Accounts Receivable \$7,000 and credit Sales \$7,000.
13. At the end of an accounting period, a company using a job costing system prepares the cost of goods manufactured:
- from the job cost sheet.
  - from the Work in Process Inventory account.
  - by adding direct materials used, direct labor incurred, and manufacturing overhead incurred.
  - from the Cost of Goods Sold account.
14. At end of the year a company has a \$1,200 debit balance in Manufacturing Overhead. The company:
- makes an adjusting entry by debiting Manufacturing Overhead Applied for \$1,200 and crediting Manufacturing Overhead for \$1,200.
  - makes an adjusting entry by debiting Manufacturing Overhead Expense for \$1,200 and crediting Manufacturing Overhead for \$1,200.
  - makes an adjusting entry by debiting Cost of Goods Sold for \$1,200 and crediting Manufacturing Overhead for \$1,200.
  - makes no adjusting entry because differences between actual overhead and the amount applied are a normal part of job costing and will average out over the next year.
15. Manufacturing overhead is underapplied if:
- actual overhead is less than applied.
  - actual overhead is greater than applied.
  - the predetermined rate equals the actual rate.
  - actual overhead equals applied overhead.

Go to the book's companion website, [www.wiley.com/college/weygandt](http://www.wiley.com/college/weygandt), for Additional Self-Study questions.



## QUESTIONS

- (a) Joe DeLong is not sure about the difference between cost accounting and a cost accounting system. Explain the difference to Joe. (b) What is an important feature of a cost accounting system?
- (a) Distinguish between the two types of cost accounting systems. (b) May a company use both types of cost accounting systems?
- What type of industry is likely to use a job order cost system? Give some examples.
- What type of industry is likely to use a process cost system? Give some examples.
- Your roommate asks your help in understanding the major steps in the flow of costs in a job order cost system. Identify the steps for your roommate.
- There are two inventory control accounts in a job order system. Identify the control accounts and their subsidiary ledgers.
- What source documents are used in accumulating direct labor costs?
- "Entries to Manufacturing Overhead normally are only made daily." Do you agree? Explain.
- Tony Andres is confused about the source documents used in assigning materials and labor costs. Identify the documents and give the entry for each document.
- What is the purpose of a job cost sheet?
- Indicate the source documents that are used in charging costs to specific jobs.
- Explain how a "materials requisition slip" is used in a job order cost system.
- Mel Finney believes actual manufacturing overhead should be charged to jobs. Do you agree? Why or why not?
- What relationships are involved in computing a predetermined overhead rate?
- How can the agreement of Work in Process Inventory and job cost sheets be verified?

16. Tina Birk believes that the cost of goods manufactured schedule in job order cost accounting is the same as shown in Chapter 19. Is Tina correct? Explain.
17. Jeff Gillum is confused about under- and overapplied manufacturing overhead. Define the terms for Jeff, and indicate the balance in the manufacturing overhead account applicable to each term.
18. “At the end of the year, under- or overapplied overhead is closed to Income Summary.” Is this correct? If not, indicate the customary treatment of this amount.

## BRIEF EXERCISES



- BE20-1** Reyes Tool & Die begins operations on January 1. Because all work is done to customer specifications, the company decides to use a job order cost accounting system. Prepare a flow chart of a typical job order system with arrows showing the flow of costs. Identify the eight transactions.
- Prepare a flowchart of a job order cost accounting system, and identify transactions.*  
(SO 2)
- BE20-2** During January, its first month of operations, Reyes Tool & Die accumulated the following manufacturing costs: raw materials \$4,000 on account, factory labor \$5,000 of which \$4,200 relates to factory wages payable and \$800 relates to payroll taxes payable, and utilities payable \$2,000. Prepare separate journal entries for each type of manufacturing cost.
- Prepare entries in accumulating manufacturing costs.*  
(SO 2)
- BE20-3** In January, Reyes Tool & Die requisitions raw materials for production as follows: Job 1 \$900, Job 2 \$1,200, Job 3 \$700, and general factory use \$600. Prepare a summary journal entry to record raw materials used.
- Prepare entry for the assignment of raw materials costs.*  
(SO 3)
- BE20-4** Factory labor data for Reyes Tool & Die is given in BE20-2. During January, time tickets show that the factory labor of \$5,000 was used as follows: Job 1 \$1,200, Job 2 \$1,600, Job 3 \$1,400, and general factory use \$800. Prepare a summary journal entry to record factory labor used.
- Prepare entry for the assignment of factory labor costs.*  
(SO 3)
- BE20-5** Data pertaining to job cost sheets for Reyes Tool & Die are given in BE20-3 and BE20-4. Prepare the job cost sheets for each of the three jobs. (*Note:* You may omit the column for Manufacturing Overhead.)
- Prepare job cost sheets.*  
(SO 3)
- BE20-6** Marquis Company estimates that annual manufacturing overhead costs will be \$800,000. Estimated annual operating activity bases are: direct labor cost \$500,000, direct labor hours 50,000, and machine hours 100,000. Compute the predetermined overhead rate for each activity base.
- Compute predetermined overhead rates.*  
(SO 4)
- BE20-7** During the first quarter, Diaz Company incurs the following direct labor costs: January \$40,000, February \$30,000, and March \$50,000. For each month, prepare the entry to assign overhead to production using a predetermined rate of 90% of direct labor cost.
- Assign manufacturing overhead to production.*  
(SO 4)
- BE20-8** In March, Hollaway Company completes Jobs 10 and 11. Job 10 cost \$25,000 and Job 11 \$30,000. On March 31, Job 10 is sold to the customer for \$35,000 in cash. Journalize the entries for the completion of the two jobs and the sale of Job 10.
- Prepare entries for completion and sale of completed jobs.*  
(SO 5)
- BE20-9** At December 31, balances in Manufacturing Overhead are: Lott Company—debit \$1,500, Perez Company—credit \$900. Prepare the adjusting entry for each company at December 31, assuming the adjustment is made to cost of goods sold.
- Prepare adjusting entries for under- and overapplied overhead.*  
(SO 6)

## DO IT! REVIEW



- DO IT! 20-1** During the current month, Barnum Company incurs the following manufacturing costs:
- Purchased raw materials of \$13,000 on account.
  - Incurred factory labor of \$40,000. Of that amount, \$31,000 relates to wages payable and \$9,000 relates to payroll taxes payable.
- Prepare journal entries for manufacturing costs.*  
(SO 2)

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- c. Factory utilities of \$3,100 are payable, prepaid factory property taxes of \$2,400 have expired, and depreciation on the factory building is \$9,500.

Prepare journal entries for each type of manufacturing cost. (Use a summary entry to record manufacturing overhead.)

Assign costs to work in process.  
(SO 3, 4)

**DO IT! 20-2** Fishel Company is working on two job orders. The job cost sheets show the following:

	<u>Job 201</u>	<u>Job 202</u>
Direct materials	\$7,200	\$9,000
Direct labor	4,000	6,000
Manufacturing overhead	5,200	7,800

Prepare the three summary entries to record the assignment of costs to Work in Process from the data on the job cost sheets.

Prepare entries for completion and sale of jobs.  
(SO 5)

**DO IT! 20-3** During the current month, Seeza Corporation completed Job 310 and Job 312. Job 310 cost \$60,000 and Job 312 cost \$40,000. Job 312 was sold on account for \$90,000. Journalize the entries for the completion of the two jobs and the sale of Job 312.

Apply manufacturing overhead and determine under- or overapplication.  
(SO 6)

**DO IT! 20-4** For KnightRider Company, the predetermined overhead rate is 150% of direct labor cost. During the month, KnightRider incurred \$100,000 of factory labor costs, of which \$85,000 is direct labor and \$15,000 is indirect labor. Actual overhead incurred was \$120,000.

Compute the amount of manufacturing overhead applied during the month. Determine the amount of under- or overapplied manufacturing overhead.

## EXERCISES



Prepare entries for factory labor.  
(SO 2, 3)



**E20-1** The gross earnings of the factory workers for Brantley Company during the month of January are \$60,000. The employer's payroll taxes for the factory payroll are \$8,000. The fringe benefits to be paid by the employer on this payroll are \$4,000. Of the total accumulated cost of factory labor, 85% is related to direct labor and 15% is attributable to indirect labor.

### Instructions

- Prepare the entry to record the factory labor costs for the month of January.
- Prepare the entry to assign factory labor to production.

Prepare journal entries for manufacturing costs.  
(SO 3, 4, 5)

**E20-2** Milner Manufacturing uses a job order cost accounting system. On May 1, the company has a balance in Work in Process Inventory of \$3,200 and two jobs in process: Job No. 429 \$2,000, and Job No. 430 \$1,200. During May, a summary of source documents reveals the following.

Job Number	Materials		Labor	
	Requisition Slips		Time Tickets	
429	\$2,500		\$1,900	
430	3,500		3,000	
431	4,400	\$10,400	7,600	\$12,500
General use		800		1,200
		\$11,200		\$13,700

Milner Manufacturing applies manufacturing overhead to jobs at an overhead rate of 80% of direct labor cost. Job No. 429 is completed during the month.

### Instructions

- Prepare summary journal entries on May 31 to record: (i) the requisition slips, (ii) the time tickets, (iii) the assignment of manufacturing overhead to jobs, and (iv) the completion of Job No. 429.
- Post the entries to Work in Process Inventory, and prove the agreement of the control account with the job cost sheets of the unfinished jobs.


**E20-3** A job order cost sheet for Rolan Company is shown below.

Analyze a job cost sheet and prepare entries for manufacturing costs.

(SO 3, 4, 5)

Job No. 92		For 2,000 Units		
Date	Direct Materials	Direct Labor	Manufacturing Overhead	
Beg. bal. Jan. 1	5,000	6,000	4,500	
8	6,000			
12		8,000	6,400	
25	2,000			
27		4,000	3,200	
	13,000	18,000	14,100	
Cost of completed job:				
	Direct materials		\$13,000	
	Direct labor		18,000	
	Manufacturing overhead		14,100	
	Total cost		<u>\$45,100</u>	
	Unit cost (\$45,100 ÷ 2,000)		<u>\$22.55</u>	

**Instructions**

- (a)  On the basis of the foregoing data answer the following questions.
- What was the balance in Work in Process Inventory on January 1 if this was the only unfinished job?
  - If manufacturing overhead is applied on the basis of direct labor cost, what overhead rate was used in each year?
- (b) Prepare summary entries at January 31 to record the current year's transactions pertaining to Job No. 92.

**E20-4** Manufacturing cost data for Pena Company, which uses a job order cost system, are presented below.

Analyze costs of manufacturing and determine missing amounts.

(SO 5)

	Case A	Case B	Case C
Direct materials used	\$ (a)	\$ 83,000	\$ 63,150
Direct labor	50,000	120,000	(h)
Manufacturing overhead applied	42,500	(d)	(i)
Total manufacturing costs	155,650	(e)	213,000
Work in process 1/1/10	(b)	15,500	18,000
Total cost of work in process	201,500	(f)	(j)
Work in process 12/31/10	(c)	11,800	(k)
Cost of goods manufactured	192,300	(g)	222,000

**Instructions**

Indicate the missing amount for each letter. Assume that in all cases manufacturing overhead is applied on the basis of direct labor cost and the rate is the same.

**E20-5** Renteria Company applies manufacturing overhead to jobs on the basis of machine hours used. Overhead costs are expected to total \$305,000 for the year, and machine usage is estimated at 125,000 hours.

Compute the manufacturing overhead rate and under- or overapplied overhead.

For the year, \$322,000 of overhead costs are incurred and 130,000 hours are used.

(SO 4, 6)



**Instructions**

- Compute the manufacturing overhead rate for the year.
- What is the amount of under- or overapplied overhead at December 31?
- Assuming the under- or overapplied overhead for the year is not allocated to inventory accounts, prepare the adjusting entry to assign the amount to cost of goods sold.

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Analyze job cost sheet and prepare entry for completed job.

(SO 2, 3, 4, 5)

**E20-6** A job cost sheet of Nilson Company is given below.

<b>Job Cost Sheet</b>			
JOB NO. <u>469</u>			Quantity <u>2,000</u>
ITEM <u>White Lion Cages</u>			Date Requested <u>7/2</u>
FOR <u>Tesla Company</u>			Date Completed <u>7/31</u>
Date	Direct Materials	Direct Labor	Manufacturing Overhead
7/10	825		
12	900		
15		440	550
22		380	475
24	1,600		
27	1,500		
31		540	675
Cost of completed job:			
	Direct materials		_____
	Direct labor		_____
	Manufacturing overhead		_____
	Total cost		=====
	Unit cost		=====

### Instructions

- (a)  Answer the following questions.
- What are the source documents for direct materials, direct labor, and manufacturing overhead costs assigned to this job?
  - What is the predetermined manufacturing overhead rate?
  - What are the total cost and the unit cost of the completed job?
- (b) Prepare the entry to record the completion of the job.

Prepare entries for manufacturing costs.

(SO 2, 3, 4, 5)

**E20-7** Elder Corporation incurred the following transactions.

- Purchased raw materials on account \$46,300.
- Raw Materials of \$36,000 were requisitioned to the factory. An analysis of the materials requisition slips indicated that \$6,800 was classified as indirect materials.
- Factory labor costs incurred were \$53,900, of which \$49,000 pertained to factory wages payable and \$4,900 pertained to employer payroll taxes payable.
- Time tickets indicated that \$48,000 was direct labor and \$5,900 was indirect labor.
- Overhead costs incurred on account were \$80,500.
- Manufacturing overhead was applied at the rate of 150% of direct labor cost.
- Goods costing \$88,000 were completed and transferred to finished goods.
- Finished goods costing \$75,000 to manufacture were sold on account for \$103,000.

### Instructions

Journalize the transactions. (Omit explanations.)

Prepare entries for manufacturing costs.

(SO 2, 3, 4, 5)

**E20-8** Garnett Printing Corp. uses a job order cost system. The following data summarize the operations related to the first quarter's production.

- Materials purchased on account \$192,000, and factory wages incurred \$87,300.
- Materials requisitioned and factory labor used by job:

<u>Job Number</u>	<u>Materials</u>	<u>Factory Labor</u>
A20	\$ 35,240	\$18,000
A21	42,920	22,000
A22	36,100	15,000
A23	39,270	25,000
General factory use	4,470	7,300
	<u>\$158,000</u>	<u>\$87,300</u>

3. Manufacturing overhead costs incurred on account \$39,500.
4. Depreciation on machinery and equipment \$14,550.
5. Manufacturing overhead rate is 80% of direct labor cost.
6. Jobs completed during the quarter: A20, A21, and A23.

**Instructions**

Prepare entries to record the operations summarized above. (Prepare a schedule showing the individual cost elements and total cost for each job in item 6.)

**E20-9** At May 31, 2010, the accounts of Hannifan Manufacturing Company show the following.

1. May 1 inventories—finished goods \$12,600, work in process \$14,700, and raw materials \$8,200.
2. May 31 inventories—finished goods \$9,500, work in process \$17,900, and raw materials \$7,100.
3. Debit postings to work in process were: direct materials \$62,400, direct labor \$32,000, and manufacturing overhead applied \$40,000.
4. Sales totaled \$200,000.

*Prepare a cost of goods manufactured schedule and partial financial statements.*

(SO 2, 5)



**Instructions**

- (a) Prepare a condensed cost of goods manufactured schedule.
- (b) Prepare an income statement for May through gross profit.
- (c) Indicate the balance sheet presentation of the manufacturing inventories at May 31, 2010.

**E20-10** Tomlin Company begins operations on April 1. Information from job cost sheets shows the following.

*Compute work in process and finished goods from job cost sheets.*

(SO 3, 5)

Job Number	Manufacturing Costs Assigned			Month Completed
	April	May	June	
10	\$5,200	\$4,400		May
11	4,100	3,900	\$3,000	June
12	1,200			April
13		4,700	4,500	June
14		4,900	3,600	Not complete

Job 12 was completed in April. Job 10 was completed in May. Jobs 11 and 13 were completed in June. Each job was sold for 25% above its cost in the month following completion.

**Instructions**

- (a) What is the balance in Work in Process Inventory at the end of each month?
- (b) What is the balance in Finished Goods Inventory at the end of each month?
- (c) What is the gross profit for May, June, and July?

**E20-11** Shown below are the job cost related accounts for the law firm of Barnes, King, and Morton and their manufacturing-company equivalents:

*Prepare entries for costs of services provided.*

(SO 2, 4, 5)

Law Firm Accounts	Manufacturing-Company Accounts
Supplies	Raw Materials
Salaries Payable	Factory Wages Payable
Operating Overhead	Manufacturing Overhead
Work in Process	Work in Process
Cost of Completed Work	Cost of Goods Sold

Cost data for the month of March follow.

1. Purchased supplies on account \$1,500.
2. Issued supplies \$1,200 (60% direct and 40% indirect).
3. Time cards for the month indicated labor costs of \$50,000 (80% direct and 20% indirect).
4. Operating overhead costs incurred for cash totaled \$40,000.
5. Operating overhead is applied at a rate of 90% of direct attorney cost.
6. Work completed totaled \$70,000.

**Instructions**

- (a) Journalize the transactions for March. Omit explanations.
- (b) Determine the balance of the Work in Process account. Use a T account.

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Determine cost of jobs and ending balance in work in process and overhead accounts. (SO 3, 4, 6)

**E20-12** Pedro Morales and Associates, a C.P.A. firm, uses job order costing to capture the costs of its audit jobs. There were no audit jobs in process at the beginning of November. Listed below are data concerning the three audit jobs conducted during November.

	<u>Gonzalez</u>	<u>Navarro</u>	<u>Rojas</u>
Direct materials	\$600	\$400	\$200
Auditor labor costs	\$5,400	\$6,600	\$3,375
Auditor hours	72	88	45

Overhead costs are applied to jobs on the basis of auditor hours, and the predetermined overhead rate is \$55 per auditor hour. The Gonzalez job is the only incomplete job at the end of November. Actual overhead for the month was \$12,000.

### Instructions

- Determine the cost of each job.
- Indicate the balance of the Work in Process account at the end of November.
- Calculate the ending balance of the Manufacturing Overhead account for November.

Determine predetermined overhead rate, apply overhead and determine whether balance under- or overapplied. (SO 4, 6)

**E20-13** Easy Decorating uses a job order costing system to collect the costs of its interior decorating business. Each client's consultation is treated as a separate job. Overhead is applied to each job based on the number of decorator hours incurred. Listed below are data for the current year.

Budgeted overhead	\$960,000
Actual overhead	\$982,800
Budgeted decorator hours	40,000
Actual decorator hours	40,500

The company uses Operating Overhead in place of Manufacturing Overhead.

### Instructions

- Compute the predetermined overhead rate.
- Prepare the entry to apply the overhead for the year.
- Determine whether the overhead was under- or overapplied and by how much.

## EXERCISES: SET B

Visit the book's companion website at [www.wiley.com/college/weygandt](http://www.wiley.com/college/weygandt), and choose the Student Companion site, to access Exercise Set B.



## PROBLEMS: SET A

Prepare entries in a job cost system and job cost sheets. (SO 2, 3, 4, 5, 6)

**P20-1A** Garcia Manufacturing uses a job order cost system and applies overhead to production on the basis of direct labor costs. On January 1, 2010, Job No. 50 was the only job in process. The costs incurred prior to January 1 on this job were as follows: direct materials \$20,000, direct labor \$12,000, and manufacturing overhead \$16,000. As of January 1, Job No. 49 had been completed at a cost of \$90,000 and was part of finished goods inventory. There was a \$15,000 balance in the Raw Materials Inventory account.

During the month of January, Garcia Manufacturing began production on Jobs 51 and 52, and completed Jobs 50 and 51. Jobs 49 and 50 were also sold on account during the month for \$122,000 and \$158,000, respectively. The following additional events occurred during the month.

- Purchased additional raw materials of \$90,000 on account.
- Incurred factory labor costs of \$65,000. Of this amount \$16,000 related to employer payroll taxes.
- Incurred manufacturing overhead costs as follows: indirect materials \$17,000; indirect labor \$15,000; depreciation expense \$19,000, and various other manufacturing overhead costs on account \$20,000.



4. Assigned direct materials and direct labor to jobs as follows.

<u>Job No.</u>	<u>Direct Materials</u>	<u>Direct Labor</u>
50	\$10,000	\$ 5,000
51	39,000	25,000
52	30,000	20,000

**Instructions**

- (a) Calculate the predetermined overhead rate for 2010, assuming Garcia Manufacturing estimates total manufacturing overhead costs of \$1,050,000, direct labor costs of \$700,000, and direct labor hours of 20,000 for the year.
- (b) Open job cost sheets for Jobs 50, 51, and 52. Enter the January 1 balances on the job cost sheet for Job No. 50.
- (c) Prepare the journal entries to record the purchase of raw materials, the factory labor costs incurred, and the manufacturing overhead costs incurred during the month of January.
- (d) Prepare the journal entries to record the assignment of direct materials, direct labor, and manufacturing overhead costs to production. In assigning manufacturing overhead costs, use the overhead rate calculated in (a). Post all costs to the job cost sheets as necessary.
- (e) Total the job cost sheets for any job(s) completed during the month. Prepare the journal entry (or entries) to record the completion of any job(s) during the month.
- (f) Prepare the journal entry (or entries) to record the sale of any job(s) during the month.
- (g) What is the balance in the Finished Goods Inventory account at the end of the month? What does this balance consist of?
- (h) What is the amount of over- or underapplied overhead?

(e) Job 50, \$70,500  
Job 51, \$101,500

**P20-2A** For the year ended December 31, 2010, the job cost sheets of DeVoe Company contained the following data.

*Prepare entries in a job cost system and partial income statement.*

<u>Job Number</u>	<u>Explanation</u>	<u>Direct Materials</u>	<u>Direct Labor</u>	<u>Manufacturing Overhead</u>	<u>Total Costs</u>
7640	Balance 1/1	\$25,000	\$24,000	\$28,800	\$ 77,800
	Current year's costs	30,000	36,000	43,200	109,200
7641	Balance 1/1	11,000	18,000	21,600	50,600
	Current year's costs	43,000	48,000	57,600	148,600
7642	Current year's costs	48,000	55,000	66,000	169,000

(SO 2, 3, 4, 5, 6)

Other data:

- 1. Raw materials inventory totaled \$15,000 on January 1. During the year, \$140,000 of raw materials were purchased on account.
- 2. Finished goods on January 1 consisted of Job No. 7638 for \$87,000 and Job No. 7639 for \$92,000.
- 3. Job No. 7640 and Job No. 7641 were completed during the year.
- 4. Job Nos. 7638, 7639, and 7641 were sold on account for \$530,000.
- 5. Manufacturing overhead incurred on account totaled \$120,000.
- 6. Other manufacturing overhead consisted of indirect materials \$14,000, indirect labor \$20,000, and depreciation on factory machinery \$8,000.

**Instructions**

- (a) Prove the agreement of Work in Process Inventory with job cost sheets pertaining to unfinished work. *Hint:* Use a single T account for Work in Process Inventory. Calculate each of the following, then post each to the T account: (1) beginning balance, (2) direct materials, (3) direct labor, (4) manufacturing overhead, and (5) completed jobs.
- (b) Prepare the adjusting entry for manufacturing overhead, assuming the balance is allocated entirely to Cost of Goods Sold.
- (c) Determine the gross profit to be reported for 2010.

(a) \$169,000; Job 7642: \$169,000

(b) Amount = \$4,800

(c) \$156,600

*Prepare entries in a job cost system and cost of goods manufactured schedule.*

**P20-3A** Enos Inc. is a construction company specializing in custom patios. The patios are constructed of concrete, brick, fiberglass, and lumber, depending upon customer preference. On June 1, 2010, the general ledger for Enos Inc. contains the following data.

(SO 2, 3, 4, 5)

Raw Materials Inventory	\$4,200	Manufacturing Overhead Applied	\$32,640
Work in Process Inventory	\$5,540	Manufacturing Overhead Incurred	\$31,650





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Subsidiary data for Work in Process Inventory on June 1 are as follows.

Cost Element	Customer Job		
	Fowler	Haines	Krantz
Direct materials	\$ 600	\$ 800	\$ 900
Direct labor	320	540	580
Manufacturing overhead	400	675	725
	<u>\$1,320</u>	<u>\$2,015</u>	<u>\$2,205</u>

During June, raw materials purchased on account were \$3,900, and all wages were paid. Additional overhead costs consisted of depreciation on equipment \$700 and miscellaneous costs of \$400 incurred on account.

A summary of materials requisition slips and time tickets for June shows the following.

Customer Job	Materials Requisition Slips	Time Tickets
Fowler	\$ 800	\$ 450
Elgin	2,000	800
Haines	500	360
Krantz	1,300	1,600
Fowler	300	390
	<u>4,900</u>	<u>3,600</u>
General use	1,500	1,200
	<u>\$6,400</u>	<u>\$4,800</u>

Overhead was charged to jobs at the same rate of \$1.25 per dollar of direct labor cost. The patios for customers Fowler, Haines, and Krantz were completed during June and sold for a total of \$18,900. Each customer paid in full.

**Instructions**

- (a) Journalize the June transactions: (i) for purchase of raw materials, factory labor costs incurred, and manufacturing overhead costs incurred; (ii) assignment of raw materials, labor, and overhead to production; and (iii) completion of jobs and sale of goods.
- (b) Post the entries to Work in Process Inventory.
- (c) Reconcile the balance in Work in Process Inventory with the costs of unfinished jobs.
- (d) Prepare a cost of goods manufactured schedule for June.

(d) Cost of goods manufactured \$14,740

Compute predetermined overhead rates, apply overhead and calculate under- or overapplied overhead.

(SO 4, 6)

**P20-4A** Mabry Manufacturing Company uses a job order cost system in each of its three manufacturing departments. Manufacturing overhead is applied to jobs on the basis of direct labor cost in Department D, direct labor hours in Department E, and machine hours in Department K.

In establishing the predetermined overhead rates for 2010 the following estimates were made for the year.

	Department		
	D	E	K
Manufacturing overhead	\$1,050,000	\$1,500,000	\$840,000
Direct labor costs	\$1,500,000	\$1,250,000	\$450,000
Direct labor hours	100,000	125,000	40,000
Machine hours	400,000	500,000	120,000

During January, the job cost sheets showed the following costs and production data.

	Department		
	D	E	K
Direct materials used	\$140,000	\$126,000	\$78,000
Direct labor costs	\$120,000	\$110,000	\$37,500
Manufacturing overhead incurred	\$ 89,000	\$124,000	\$74,000
Direct labor hours	8,000	11,000	3,500
Machine hours	34,000	45,000	10,400

**Instructions**

- (a) Compute the predetermined overhead rate for each department.
- (b) Compute the total manufacturing costs assigned to jobs in January in each department.
- (c) Compute the under- or overapplied overhead for each department at January 31.

- (a) 70%, \$12, \$7.00
- (b) \$344,000, \$368,000  
\$188,300
- (c) \$5,000, \$(8,000), \$1,200

**P20-5A** Vargas Corporation's fiscal year ends on November 30. The following accounts are found in its job order cost accounting system for the first month of the new fiscal year.

Analyze manufacturing accounts and determine missing amounts.  
(SO 2, 3, 4, 5, 6)



Raw Materials Inventory					
Dec. 1	Beginning balance	(a)	Dec. 31	Requisitions	18,850
31	Purchases	19,225			
Dec. 31	Ending balance	7,975			

Work in Process Inventory					
Dec. 1	Beginning balance	(b)	Dec. 31	Jobs completed	(f)
31	Direct materials	(c)			
31	Direct labor	8,800			
31	Overhead	(d)			
Dec. 31	Ending balance	(e)			

Finished Goods Inventory					
Dec. 1	Beginning balance	(g)	Dec. 31	Cost of goods sold	(i)
31	Completed jobs	(h)			
Dec. 31	Ending balance	(j)			

Factory Labor					
Dec. 31	Factory wages	12,465	Dec. 31	Wages assigned	(k)

Manufacturing Overhead					
Dec. 31	Indirect materials	1,900	Dec. 31	Overhead applied	(m)
31	Indirect labor	(l)			
31	Other overhead	1,245			

Other data:

1. On December 1, two jobs were in process: Job No. 154 and Job No. 155. These jobs had combined direct materials costs of \$9,750 and direct labor costs of \$15,000. Overhead was applied at a rate that was 80% of direct labor cost.
2. During December, Job Nos. 156, 157, and 158 were started. On December 31, Job No. 158 was unfinished. This job had charges for direct materials \$3,800 and direct labor \$4,800, plus manufacturing overhead. All jobs, except for Job No. 158, were completed in December.
3. On December 1, Job No. 153 was in the finished goods warehouse. It had a total cost of \$5,000. On December 31, Job No. 157 was the only job finished that was not sold. It had a cost of \$4,000.
4. Manufacturing overhead was \$230 overapplied in December.

- (c) \$16,950
- (f) \$57,100
- (i) \$58,100

**Instructions**

List the letters (a) through (m) and indicate the amount pertaining to each letter.

**PROBLEMS: SET B**

**P20-1B** Weinrich Manufacturing uses a job order cost system and applies overhead to production on the basis of direct labor hours. On January 1, 2010, Job No. 25 was the only job in process. The costs incurred prior to January 1 on this job were as follows: direct materials \$10,000; direct labor \$6,000; and manufacturing overhead \$9,000. Job No. 23 had been completed at a cost of \$42,000 and was part of finished goods inventory. There was a \$5,000 balance in the Raw Materials Inventory account.

Prepare entries in a job cost system and job cost sheets.  
(SO 2, 3, 4, 5, 6)

During the month of January, the company began production on Jobs 26 and 27, and completed Jobs 25 and 26. Jobs 23 and 25 were sold on account during the month for \$63,000 and \$74,000, respectively. The following additional events occurred during the month.

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1. Purchased additional raw materials of \$40,000 on account.
2. Incurred factory labor costs of \$31,500. Of this amount \$7,500 related to employer payroll taxes.
3. Incurred manufacturing overhead costs as follows: indirect materials \$10,000; indirect labor \$7,500; depreciation expense \$12,000; and various other manufacturing overhead costs on account \$11,000.
4. Assigned direct materials and direct labor to jobs as follows.

Job No.	Direct Materials	Direct Labor
25	\$ 5,000	\$ 3,000
26	17,000	12,000
27	13,000	9,000

5. The company uses direct labor hours as the activity base to assign overhead. Direct labor hours incurred on each job were as follows: Job No. 25, 200; Job No. 26, 800; and Job No. 27, 600.

**Instructions**

- (a) Calculate the predetermined overhead rate for the year 2010, assuming Weinrich Manufacturing estimates total manufacturing overhead costs of \$480,000, direct labor costs of \$300,000, and direct labor hours of 20,000 for the year.
- (b) Open job cost sheets for Jobs 25, 26, and 27. Enter the January 1 balances on the job cost sheet for Job No. 25.
- (c) Prepare the journal entries to record the purchase of raw materials, the factory labor costs incurred, and the manufacturing overhead costs incurred during the month of January.
- (d) Prepare the journal entries to record the assignment of direct materials, direct labor, and manufacturing overhead costs to production. In assigning manufacturing overhead costs, use the overhead rate calculated in (a). Post all costs to the job cost sheets as necessary.
- (e) Total the job cost sheets for any job(s) completed during the month. Prepare the journal entry (or entries) to record the completion of any job(s) during the month.
- (f) Prepare the journal entry (or entries) to record the sale of any job(s) during the month.
- (g) What is the balance in the Work in Process Inventory account at the end of the month? What does this balance consist of?
- (h) What is the amount of over- or underapplied overhead?

(e) Job 25, \$37,800  
Job 26, \$48,200

Prepare entries in a job cost system and partial income statement.

(SO 2, 3, 4, 5, 6)

**P20-2B** For the year ended December 31, 2010, the job cost sheets of Moxie Company contained the following data.

Job Number	Explanation	Direct Materials	Direct Labor	Manufacturing Overhead	Total Costs
7650	Balance 1/1	\$18,000	\$20,000	\$25,000	\$ 63,000
	Current year's costs	32,000	36,000	45,000	113,000
7651	Balance 1/1	12,000	16,000	20,000	48,000
	Current year's costs	30,000	40,000	50,000	120,000
7652	Current year's costs	45,000	68,000	85,000	198,000

Other data:

1. Raw materials inventory totaled \$20,000 on January 1. During the year, \$100,000 of raw materials were purchased on account.
2. Finished goods on January 1 consisted of Job No. 7648 for \$93,000 and Job No. 7649 for \$62,000.
3. Job No. 7650 and Job No. 7651 were completed during the year.
4. Job Nos. 7648, 7649, and 7650 were sold on account for \$490,000.
5. Manufacturing overhead incurred on account totaled \$135,000.
6. Other manufacturing overhead consisted of indirect materials \$12,000, indirect labor \$18,000 and depreciation on factory machinery \$19,500.

**Instructions**

- (a) Prove the agreement of Work in Process Inventory with job cost sheets pertaining to unfinished work. (*Hint:* Use a single T account for Work in Process Inventory.) Calculate each of the following, then post each to the T account: (1) beginning balance, (2) direct materials, (3) direct labor, (4) manufacturing overhead, and (5) completed jobs.

(a) (1) \$111,000  
(4) \$180,000  
Unfinished job 7652,  
\$198,000

- (b) Prepare the adjusting entry for manufacturing overhead, assuming the balance is allocated entirely to cost of goods sold.
- (c) Determine the gross profit to be reported for 2010.

(b) Amount = \$4,500

(c) \$154,500

**P20-3B** Michael Ortiz is a contractor specializing in custom-built jacuzzis. On May 1, 2010, his ledger contains the following data.

Raw Materials Inventory	\$30,000
Work in Process Inventory	12,200
Manufacturing Overhead	2,500 (dr.)

Prepare entries in a job cost system and cost of goods manufactured schedule.

(SO 2, 3, 4, 5)



The Manufacturing Overhead account has debit totals of \$12,500 and credit totals of \$10,000. Subsidiary data for Work in Process Inventory on May 1 include:

<b>Job Cost Sheets</b>			
<u>Job by Customer</u>	<u>Direct Materials</u>	<u>Direct Labor</u>	<u>Manufacturing Overhead</u>
Taylor	\$2,500	\$2,000	\$1,400
Baker	2,000	1,200	840
Joiner	900	800	560
	\$5,400	\$4,000	\$2,800

During May, the following costs were incurred: (a) raw materials purchased on account \$4,000, (b) labor paid \$7,600, (c) manufacturing overhead paid \$1,400.

A summary of materials requisition slips and time tickets for the month of May reveals the following.

<u>Job by Customer</u>	<u>Materials Requisition Slips</u>	<u>Time Tickets</u>
Taylor	\$ 500	\$ 400
Baker	600	1,000
Joiner	2,300	1,300
Smith	1,900	2,900
	5,300	5,600
General use	1,500	2,000
	\$6,800	\$7,600

Overhead was charged to jobs on the basis of \$0.70 per dollar of direct labor cost.

The jacuzzis for customers Taylor, Baker, and Joiner were completed during May. Each jacuzzi was sold for \$12,000 cash.

**Instructions**

- (a) Prepare journal entries for the May transactions: (i) for purchase of raw materials, factory labor costs incurred, and manufacturing overhead costs incurred; (ii) assignment of raw materials, labor, and overhead to production; and (iii) completion of jobs and sale of goods.
- (b) Post the entries to Work in Process Inventory.
- (c) Reconcile the balance in Work in Process Inventory with the costs of unfinished jobs.
- (d) Prepare a cost of goods manufactured schedule for May.

(d) Cost of goods manufactured \$20,190.

**P20-4B** Elliott Manufacturing uses a job order cost system in each of its three manufacturing departments. Manufacturing overhead is applied to jobs on the basis of direct labor cost in Department A, direct labor hours in Department B, and machine hours in Department C.

Compute predetermined overhead rates, apply overhead, and calculate under- or overapplied overhead.

(SO 4, 6)

In establishing the predetermined overhead rates for 2010 the following estimates were made for the year.

	<b>Department</b>		
	<u>A</u>	<u>B</u>	<u>C</u>
Manufacturing overhead	\$780,000	\$640,000	\$750,000
Direct labor cost	\$600,000	\$100,000	\$600,000
Direct labor hours	50,000	40,000	40,000
Machine hours	100,000	120,000	150,000

**922 Chapter 20 Job Order Costing**

During January, the job cost sheets showed the following costs and production data.

	Department		
	A	B	C
Direct materials used	\$92,000	\$86,000	\$64,000
Direct labor cost	\$48,000	\$35,000	\$50,400
Manufacturing overhead incurred	\$66,000	\$60,000	\$62,100
Direct labor hours	4,000	3,500	4,200
Machine hours	8,000	10,500	12,600

- (a) 130%, \$16, \$5
- (b) \$202,400, \$177,000  
\$177,400
- (c) \$3,600 \$4,000, \$(900)

Analyze manufacturing accounts and determine missing amounts.

(SO 2, 3, 4, 5, 6)



**Instructions**

- (a) Compute the predetermined overhead rate for each department.
- (b) Compute the total manufacturing costs assigned to jobs in January in each department.
- (c) Compute the under- or overapplied overhead for each department at January 31.

**P20-5B** Bell Company's fiscal year ends on June 30. The following accounts are found in its job order cost accounting system for the first month of the new fiscal year.

Raw Materials Inventory			
July 1	Beginning balance	19,000	
31	Purchases	90,400	(a)
July 31	Ending balance	(b)	

Work in Process Inventory			
July 1	Beginning balance	(c)	
31	Direct materials	75,000	(f)
31	Direct labor	(d)	
31	Overhead	(e)	
July 31	Ending balance	(g)	

Finished Goods Inventory			
July 1	Beginning balance	(h)	
31	Completed jobs	(i)	(j)
July 31	Ending balance	(k)	

Factory Labor			
July 31	Factory wages	(l)	
July 31	Wages assigned		(m)

Manufacturing Overhead			
July 31	Indirect materials	8,900	
31	Indirect labor	16,000	114,000
31	Other overhead	(n)	

Other data:

1. On July 1, two jobs were in process: Job No. 4085 and Job No. 4086, with costs of \$19,000 and \$13,200, respectively.
2. During July, Job Nos. 4087, 4088, and 4089 were started. On July 31, only Job No. 4089 was unfinished. This job had charges for direct materials \$2,000 and direct labor \$1,500, plus manufacturing overhead. Manufacturing overhead was applied at the rate of 120% of direct labor cost.
3. On July 1, Job No. 4084, costing \$145,000, was in the finished goods warehouse. On July 31, Job No. 4088, costing \$138,000, was in finished goods.
4. Overhead was \$3,000 underapplied in July.

- (d) \$ 95,000
- (f) \$310,900
- (l) \$111,000

**Instructions**

List the letters (a) through (n) and indicate the amount pertaining to each letter. Show computations.



**PROBLEMS: SET C**

Visit the book's companion website at [www.wiley.com/college/veygandt](http://www.wiley.com/college/veygandt), and choose the Student Companion site, to access Problem Set C.

**WATERWAYS CONTINUING PROBLEM**

(Note: This is a continuation of the Waterways Problem from Chapter 19.)

**WCP20** Waterways has two major public-park projects to provide with comprehensive irrigation in one of its service locations this month. Job J57 and Job K52 involve 15 acres of landscaped terrain which will require special-order sprinkler heads to meet the specifications of the project. This problem asks you to help Waterways use a job cost system to account for production of these parts.



Go to the book's companion website, [www.wiley.com/college/veygandt](http://www.wiley.com/college/veygandt), to see the completion of this problem.

**BROADENING YOUR PERSPECTIVE**

**Decision Making Across the Organization**

**BYP20-1** Pine Products Company uses a job order cost system. For a number of months there has been an ongoing rift between the sales department and the production department concerning a special-order product, TC-1. TC-1 is a seasonal product that is manufactured in batches of 1,000 units. TC-1 is sold at cost plus a markup of 40% of cost.



The sales department is unhappy because fluctuating unit production costs significantly affect selling prices. Sales personnel complain that this has caused excessive customer complaints and the loss of considerable orders for TC-1.

The production department maintains that each job order must be fully costed on the basis of the costs incurred during the period in which the goods are produced. Production personnel maintain that the only real solution to the problem is for the sales department to increase sales in the slack periods.

Regina Newell, president of the company, asks you as the company accountant to collect quarterly data for the past year on TC-1. From the cost accounting system, you accumulate the

Costs	Quarter			
	1	2	3	4
Direct materials	\$100,000	\$220,000	\$ 80,000	\$200,000
Direct labor	60,000	132,000	48,000	120,000
Manufacturing overhead	105,000	123,000	97,000	125,000
Total	<u>\$265,000</u>	<u>\$475,000</u>	<u>\$225,000</u>	<u>\$445,000</u>
Production in batches	5	11	4	10
Unit cost (per batch)	<u>\$ 53,000</u>	<u>\$ 43,182</u>	<u>\$ 56,250</u>	<u>\$ 44,500</u>

following production quantity and cost data.

**Instructions**

With the class divided into groups, answer the following questions.

- (a) What manufacturing cost element is responsible for the fluctuating unit costs? Why?
- (b) What is your recommended solution to the problem of fluctuating unit cost?
- (c) Restate the quarterly data on the basis of your recommended solution.

## Managerial Analysis

**BYP20-2** In the course of routine checking of all journal entries prior to preparing year-end reports, Diane Riser discovered several strange entries. She recalled that the president's son Ron had come in to help out during an especially busy time and that he had recorded some journal entries. She was relieved that there were only a few of his entries, and even more relieved that he had included rather lengthy explanations. The entries Ron made were:

(1)

Work in Process Inventory		25,000		
Cash				25,000

(This is for materials put into process. I don't find the record that we paid for these, so I'm crediting Cash, because I know we'll have to pay for them sooner or later.)

(2)

Manufacturing Overhead		12,000		
Cash				12,000

(This is for bonuses paid to salespeople. I know they're part of overhead, and I can't find an account called "Non-factory Overhead" or "Other Overhead" so I'm putting it in Manufacturing Overhead. I have the check stubs, so I know we paid these.)

(3)

Wages Expense		120,000		
Cash				120,000

(This is for the factory workers' wages. I have a note that payroll taxes are \$15,000. I still think that's part of wages expense, and that we'll have to pay it all in cash sooner or later, so I credited Cash for the wages and the taxes.)

(4)

Work in Process Inventory		3,000		
Raw Materials Inventory				3,000

(This is for the glue used in the factory. I know we used this to make the products, even though we didn't use very much on any one of the products. I got it out of inventory, so I credited an inventory account.)

### Instructions

- (a) How should Ron have recorded each of the four events?
- (b) If the entry was not corrected, which financial statements (income statement or balance sheet) would be affected? What balances would be overstated or understated?

## Real-World Focus

**BYP20-3** Founded in 1970, **Parlex Corporation** is a world leader in the design and manufacture of flexible interconnect products. Utilizing proprietary and patented technologies, Parlex produces custom flexible interconnects including flexible circuits, polymer thick film, laminated cables, and value-added assemblies for sophisticated electronics used in automotive, telecommunications, computer, diversified electronics, and aerospace applications. In addition to manufacturing sites in Methuen, Massachusetts; Salem, New Hampshire; Cranston, Rhode Island; San Jose, California; Shanghai, China; Isle of Wight, UK; and Empalme, Mexico, Parlex has logistic support centers and strategic alliances throughout North America, Asia, and Europe.

The following information was provided in the company's annual report.

### PARLEX COMPANY

#### Notes to the Financial Statements

The Company's products are manufactured on a job order basis to customers' specifications. Customers submit requests for quotations on each job, and the Company prepares bids based on its own cost estimates. The Company attempts to reflect the impact of changing costs when establishing prices. However, during the past several years, the market conditions for flexible circuits and the resulting price sensitivity haven't always allowed this to transpire. Although still not satisfactory, the Company was able to reduce the cost of products sold as a percentage of sales to 85% this year versus 87% that was experienced in the two immediately preceding years. Management continues to focus on improving operational efficiency and further reducing costs.

#### Instructions

- (a) Parlex management discusses the job order cost system employed by their company. What are several advantages of using the job order approach to costing?
- (b) Contrast the products produced in a job order environment, like Parlex, to those produced when process cost systems are used.

## Exploring the Web

**BYP20-4** The Institute of Management Accountants sponsors a certification for management accountants, allowing them to obtain the title of Certified Management Accountant.



**Address:** [www.imanet.org](http://www.imanet.org), or go to [www.wiley.com/college/wegandt](http://www.wiley.com/college/wegandt)

#### Steps

1. Go to the site shown above.
2. Choose **Certification**, and then, **Getting Started**.

#### Instructions

- (a) What is the experience qualification requirement?
- (b) How many hours of continuing education are required, and what types of activities qualify?

## Communication Activity

**BYP20-5** You are the management accountant for Newberry Manufacturing. Your company does custom carpentry work and uses a job order cost accounting system. Newberry sends detailed job cost sheets to its customers, along with an invoice. The job cost sheets show the date materials were used, the dollar cost of materials, and the hours and cost of labor. A predetermined overhead application rate is used, and the total overhead applied is also listed.

Donna Werly is a customer who recently had custom cabinets installed. Along with her check in payment for the work done, she included a letter. She thanked the company for including the detailed cost information but questioned why overhead was estimated. She stated that she would be interested in knowing exactly what costs were included in overhead, and she thought that other customers would, too.

#### Instructions

Prepare a letter to Ms. Werly (address: 123 Cedar Lane, Altoona, Kansas 66651) and tell her why you did not send her information on exact costs of overhead included in her job. Respond to her suggestion that you provide this information.



## Ethics Case

**BYP20-6** SEK Printing provides printing services to many different corporate clients. Although SEK bids most jobs, some jobs, particularly new ones, are negotiated on a “cost-plus” basis. Cost-plus means that the buyer is willing to pay the actual cost plus a return (profit) on these costs to SEK.

Betty Keiser, controller for SEK, has recently returned from a meeting where SEK’s president stated that he wanted her to find a way to charge most costs to any project that was on a cost-plus basis. The president noted that the company needed more profits to meet its stated goals this period. By charging more costs to the cost-plus projects and therefore fewer costs to the jobs that were bid, the company should be able to increase its profit for the current year.

Betty knew why the president wanted to take this action. Rumors were that he was looking for a new position and if the company reported strong profit, the president’s opportunities would be enhanced. Betty also recognized that she could probably increase the cost of certain jobs by changing the basis used to allocate manufacturing overhead.

### Instructions

- (a) Who are the stakeholders in this situation?
- (b) What are the ethical issues in this situation?
- (c) What would you do if you were Betty Keiser?



## “All About You” Activity

**BYP20-7** Many of you will work for a small business. As noted in the **All About You** feature in this chapter, some of you will even own your own business. In order to operate a small business you will need a good understanding of managerial accounting, as well as many other skills. Much information is available to assist people who are interested in starting a new business. A great place to start is the website provided by the Small Business Administration which is an agency of the federal government whose purpose is to support small business.

### Instructions

Go to [www.sba.gov](http://www.sba.gov) and in the “Starting Your Business” link, review the material under the “Are You Ready?” Answer the following questions.

- (a) What are some of the characteristics required of a small business owner?
- (b) What are the top 10 reasons given for business failure?



## Answers to Insight and Accounting Across the Organization Questions

### p. 890 Jobs Won, Money Lost

Q: What type of costs do you think the company had been underestimating?

A: *It is most likely that the company failed to estimate and track overhead. In a highly diversified company, overhead associated with the diesel locomotive jobs may have been “lost” in the total overhead pool for the entire company.*

### p. 905 Working a 25-Hour Day

Q: What feature of these businesses creates an incentive to misstate cost accounting data on particular jobs? What can customers do to protect themselves from overbilling?

A: *In these business situations, the compensation to the supplier depends on the costs incurred by the supplier. This so-called “cost-plus” arrangement creates an incentive for the supplier to overstate costs. Customers should stipulate that they have the right to have the suppliers’ records audited.*



## Authors’ Comments on All About You: Minding Your Own Business (p. 906)

The situation presented is a difficult one because you are presently receiving some help for free. It would seem that the best strategy is to price your services based on what it would cost you to

do the landscape business without any free help. In the long run, it is going to be impossible to continue unless you can cover these costs. In addition, if you under-price your services today, it may lead to an expectation by your customers that your prices will remain low in the future. That probably cannot happen, given that your costs will increase substantially after the first two years. However, we should note that it is not unusual to start a small business with some assets available to you. Then, as your business grows, you acquire additional assets to meet your needs. After all, you may need a low price to get started and as you gain experience you will be able to charge more or become more efficient.

So what to do? Let's address your old truck first. You should treat the truck as an asset owned by your business. Put it on your books at its fair value, and depreciate it over a reasonable life. This will result in an overhead charge. You need to cover the cost of that truck, as you will have to buy another one some day.

The land, barn, and your mother's services are a little more difficult. If you rented the land and barn and if you paid an assistant, all of these costs would be charged to overhead. (The assistant would be indirect labor.) You are currently getting all these services for free. This is a good situation now, and you may need this situation early in your business to help you get started. But you should recognize that even if you run your business profitably for the first two years, you may have problems starting in the third year. Thus, it would seem prudent to establish a budget based on both scenarios for the first two years. If you can charge based on your expected costs in the future, do so. If that is not realistic, because you need to establish yourself and get more experience, then charge less. But be sure from the start to cover a reasonable amount of your costs, or the business does not make sense for you financially.

### Answers to Self-Study Questions

1. a   2. c   3. b   4. c   5. c   6. d   7. d   8. b   9. a   10. d   11. b   12. c   13. b  
14. c   15. b