CHAPTER 2

Job Order Cost Accounting

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 cost accounting 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

THE NAVIGATOR

- Scan *Study Objectives*
- Read *Feature Story*
- Read *Preview*
- Read text and answer *Before You Go On* p. 53 p. 64 p. 70
- Work *Using the Decision Toolkit*
- Review *Summary of Study Objectives*
- Work *Demonstration Problem*
- Answer *Self-Study Questions*
- Complete *Assignments*

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.

Indirect materials, such as nuts and bolts, wiring, lubricants, and abrasives, are allocated to each job in proportion to direct material dollars. Other costs, such as insurance and supervisors' salaries, are allocated 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."

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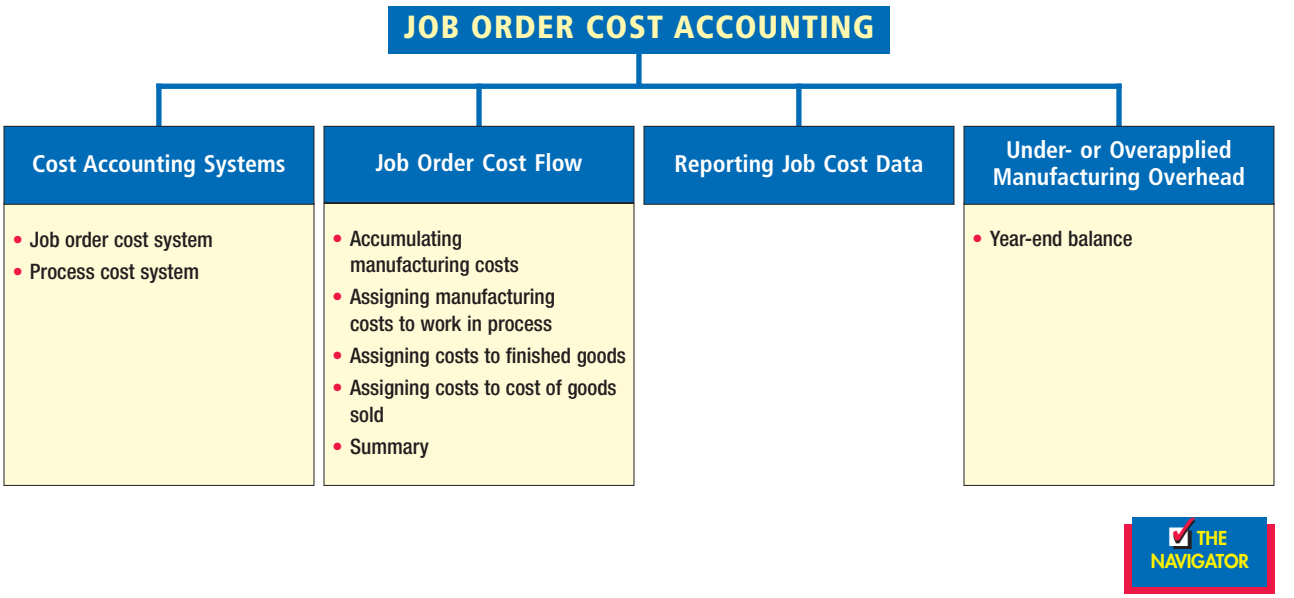
PREVIEW OF CHAPTER 2

The Feature Story about **Western States Fire Apparatus** described the manufacturing costs used in making a fire truck. It demonstrated 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 would be 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 2 are as follows.



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Cost Accounting Systems

Cost accounting involves the measuring, recording, and reporting of product costs. From the data accumulated, both the total cost and the unit cost of each product are determined. The accuracy of the product cost information produced by the cost accounting system is critical to the success of the company. As you will see in later chapters, this information is used 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.

STUDY OBJECTIVE 1

Explain the characteristics and purposes of cost accounting.

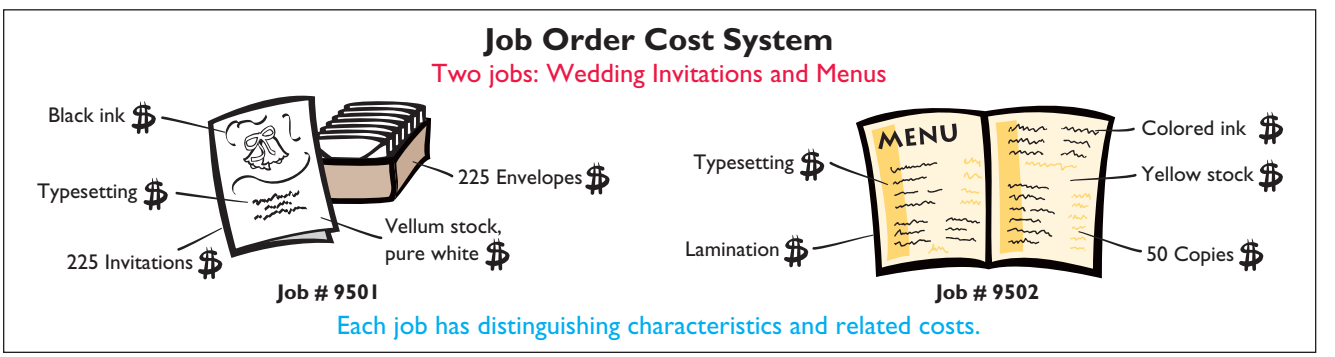
A **cost accounting system** consists of accounts for the various manufacturing costs. These accounts are fully integrated into the general ledger of a company. **An important feature of a cost accounting system is the use of a perpetual inventory system.** Such a system **provides immediate, up-to-date 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 are based on one of these two traditional product costing systems.

JOB ORDER COST SYSTEM

Under a **job order cost system**, costs are assigned to each **job** or to each **batch** of goods. An example of a job would be 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 would be 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**. Jobs or batches may be completed 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 the manufacturing of a product or the providing of a service, the job and its associated costs can be identified. A job order cost system measures costs for each completed job, rather than for set time periods. The recording of costs in a job order cost system is shown in Illustration 2-1.

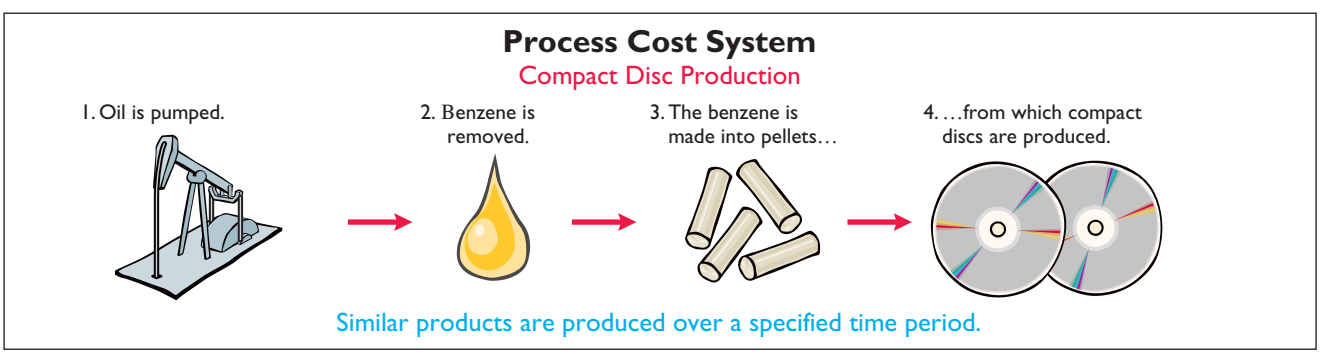
Illustration 2-1 Job order cost system



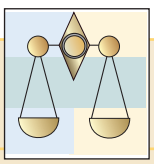
PROCESS COST SYSTEM

A **process cost system** is used when a large volume of similar products are manufactured. Production is continuous to ensure that adequate inventories of the finished product(s) are on hand. A process cost system is used in 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, the costs are assigned to departments or processes for a set period of time. The recording of costs in a process cost system is shown in Illustration 2-2. The process cost system will be discussed further in Chapter 3.

Illustration 2-2 Process cost system



A company may use both types of cost systems. 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 systems is to provide unit cost information for product pricing, cost control, inventory valuation, and financial statement presentation. End-of-period inventory values are computed by using unit cost data.



Business Insight
Management Perspective

Many companies suffer from poor cost accounting. As a result, they sometimes make products they ought not to be selling at all and buy others 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 costs had been seriously underestimated. 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!

BEFORE YOU GO ON . . .

Review It

1. What is cost accounting?
2. What does a cost accounting system consist of?
3. How does a job order cost system differ from a process cost system?

THE NAVIGATOR

Job Order Cost Flow

STUDY OBJECTIVE 2

Describe the flow of costs in a job order cost accounting 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 2-3 (page 54), manufacturing costs are assigned to the Work in Process Inventory account. When a job is completed, the cost of the job is transferred to Finished Goods Inventory. Later when the goods are sold, their cost is transferred to Cost of Goods Sold.

Illustration 2-3 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 2-4 (page 54). It indicates that there are two 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, manufacturing costs incurred are accumulated in entries 1–3 by debits to Raw Materials Inventory, Factory Labor, and Manufacturing Overhead. When these costs are incurred, no attempt is made to associate the costs with specific jobs. The remaining entries (entries 4–8) assign manufacturing costs incurred. In the remainder of this chapter (pages 55–70), we will use a case study to explain how a job order system operates.

Illustration 2-3 Flow of costs in job order cost accounting

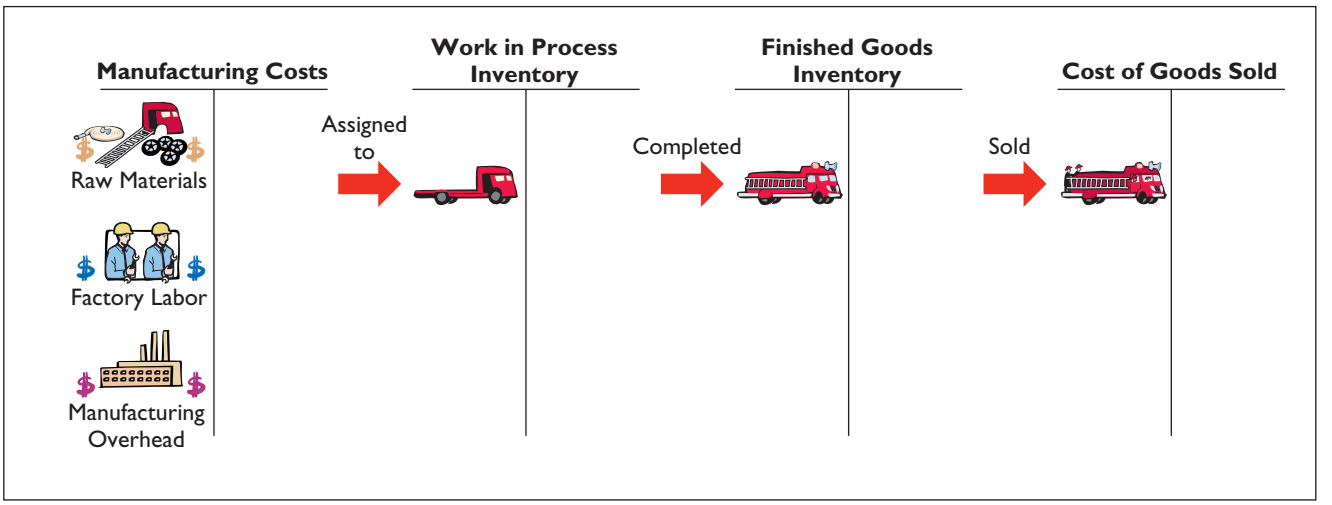
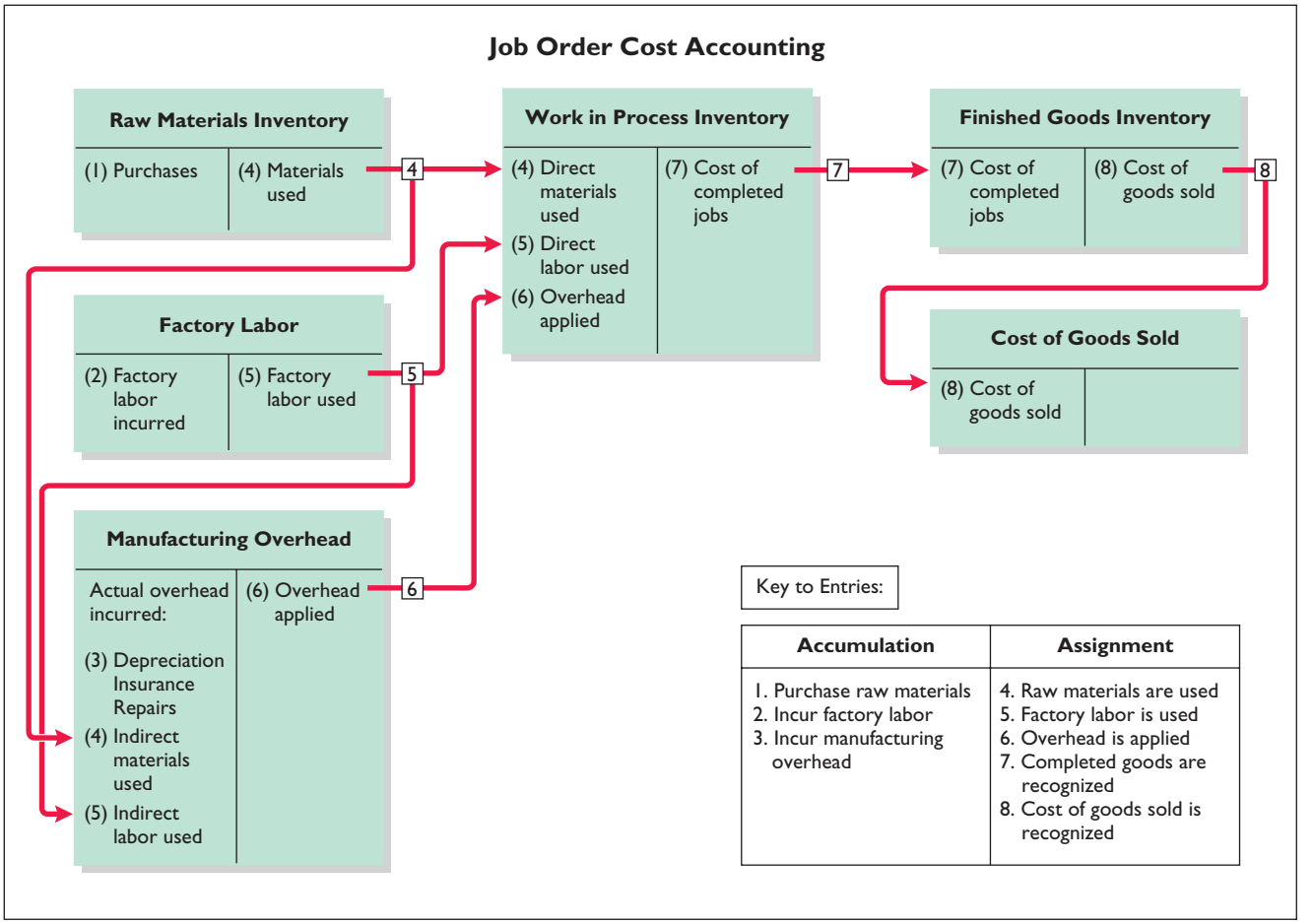


Illustration 2-4 Job order cost accounting system



ACCUMULATING MANUFACTURING COSTS

In a job order cost system, manufacturing costs are recorded in the period in which they are incurred. To illustrate, we will use the January transactions of Wallace Manufacturing Company, which makes machine tools.

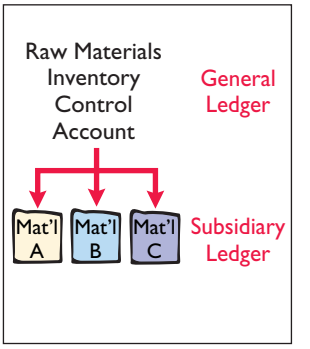
Raw Materials Costs

The costs of raw materials purchased are debited to Raw Materials Inventory when the materials are received. This account is debited for the invoice cost and freight costs chargeable to the purchaser. It is credited for purchase discounts taken and purchase returns and allowances. **No effort is made at this point to associate the cost of materials with specific jobs or orders.** The procedures for ordering, receiving, recording, and paying for raw materials are similar to the purchasing procedures of a merchandising company.

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)		



Raw Materials Inventory is a general ledger account. It is also referred to as a **control account** because it summarizes the detailed data regarding specific inventory accounts in the subsidiary ledger. The subsidiary ledger consists of individual records for each item of raw materials. The records may take the form of accounts (or cards) that are manually or mechanically prepared. Or the records may be kept as computer data files. The records are referred to as **materials inventory records** (or **stores ledger cards**). The card for Stock No. AA2746 following the purchase is shown in Illustration 2-5.

Item: Handles Part No: AA2746

	Receipts			Issues			Balance		
Date	Units	Cost	Total	Units	Cost	Total	Units	Cost	Total
1/4	2,000	$5	$10,000				2,000	$5	$10,000

Illustration 2-5 Materials inventory card

Postings are made daily to the subsidiary ledger. After all postings have been completed, the sum of the balances in the raw materials subsidiary ledger should equal the balance in the Raw Materials Inventory control account.

Factory Labor Costs

The procedures for accumulating factory labor costs are similar to those for computing the payroll for a merchandising company. Time clocks and time cards are used to determine total hours worked; gross and net earnings for each employee

are listed in a payroll register; and individual employee earnings records are maintained. To help ensure the accuracy of data, a company should follow the principles of internal control.

In a manufacturing company, the cost of factory labor consists of (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. **Labor costs are debited to Factory Labor when they are incurred.**

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 is:

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

Factory labor is subsequently assigned to work in process and manufacturing overhead, as explained later in the chapter.

Manufacturing Overhead Costs

A company may have many types of overhead costs. These costs may be recognized **daily**, as in the case of machinery repairs and the use of indirect materials and indirect labor. Or overhead costs may be recorded **periodically** through adjusting entries. Property taxes, depreciation, and insurance are recorded 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)		

Manufacturing Overhead is a control account. The subsidiary ledger consists of individual accounts for each type of cost, such as Factory Utilities, Factory Insurance, and Factory Repairs.

ASSIGNING MANUFACTURING COSTS TO WORK IN PROCESS

STUDY OBJECTIVE 3

Explain the nature and importance of a job cost sheet.

As shown in Illustration 2-4, assigning manufacturing costs to work in process results in the following entries:

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

Journal entries to assign costs to work in process are usually made and posted **monthly**.

An essential accounting record in assigning costs to jobs is a **job cost sheet** shown in Illustration 2-6. 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 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) $ _____

Illustration 2-6 Job cost sheet

Helpful Hint In today's electronic environment, job cost sheets are maintained as computer files.

Postings to job cost sheets are made daily, directly from supporting documents.

A separate job cost sheet is kept for each job. The job cost sheets constitute the subsidiary ledger for the Work in Process Inventory account. **Each entry to Work in Process Inventory must be accompanied by a corresponding posting to one or more job cost sheets.**

Business Insight
e-Business Perspective

General Motors recently launched a new Internet-based ordering system intended to deliver custom vehicles in 15 to 20 days instead of the 55 to 60 days it previously took. Customers interested in a GM car can search online to see if any dealers have a car with the options they want. If not, the customer uses an online program to configure a car with the desired options and then places the order. While this online approach could potentially provide savings for automakers by reducing inventory costs, some people are skeptical. One auto analyst stated, "I don't think it's going to lead to a massive change in the way vehicles are built and sold in the next 10 years."

SOURCE: Karen Lundegaard, "GM Tests Web-Based Ordering System, Seeking to Slash Custom-Delivery Time," *Wall Street Journal* (November 17, 2000).

Raw Materials Costs

Raw materials costs are assigned when the materials are issued by the storeroom. To achieve effective internal control over the issuance of materials, the storeroom worker should receive a written authorization before materials are released to production. Such authorization for issuing raw materials is made on a prenumbered **materials requisition slip**. This form is signed by an

Helpful Hint Approvals are an important part of a materials requisition slip because they help to establish individual accountability over inventory.

authorized employee such as a department supervisor. The materials issued may be used directly on a job, or they may be considered indirect materials. As shown in Illustration 2-7, the requisition should indicate the quantity and type of materials withdrawn and the account to be charged. Direct materials will be charged to Work in Process Inventory, and indirect materials to Manufacturing Overhead.

Illustration 2-7 Materials requisition slip

Wallace Manufacturing Company
Materials Requisition Slip

Deliver to: Assembly Department — Req. No. R247
Charge to: Work in Process–Job No. 101 — Date: 1/6/05

Quantity	Description	Stock No.	Cost per Unit	Total
200	Handles	AA2746	$5.00	$1,000

Requested by Bruce Howart — Received by Herb Crowley
Approved by Kap Shin — Costed by Heather Remmers

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

The requisition is prepared in duplicate. A copy is retained in the storeroom as evidence of the materials released. The original is sent to Accounting, where the cost per unit and total cost of the materials used are determined. Any of the inventory costing methods (FIFO, LIFO, or average cost) may be used in costing the requisitions. After the requisition slips have been costed, they are posted daily to the materials inventory records. Also, **requisitions for direct materials are posted daily to the individual job cost sheets**.

Periodically, the requisitions are sorted, totaled, and journalized. For example, if $24,000 of direct materials and $6,000 of indirect materials are used in Wallace Manufacturing in January, the entry is:

(4)

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

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. The posting of requisition slip R247 and other assumed postings to the job cost sheets for materials are

shown in Illustration 2-8. After all postings have been completed, the sum of the direct materials columns of the job cost sheets should equal the direct materials debited to Work in Process Inventory.

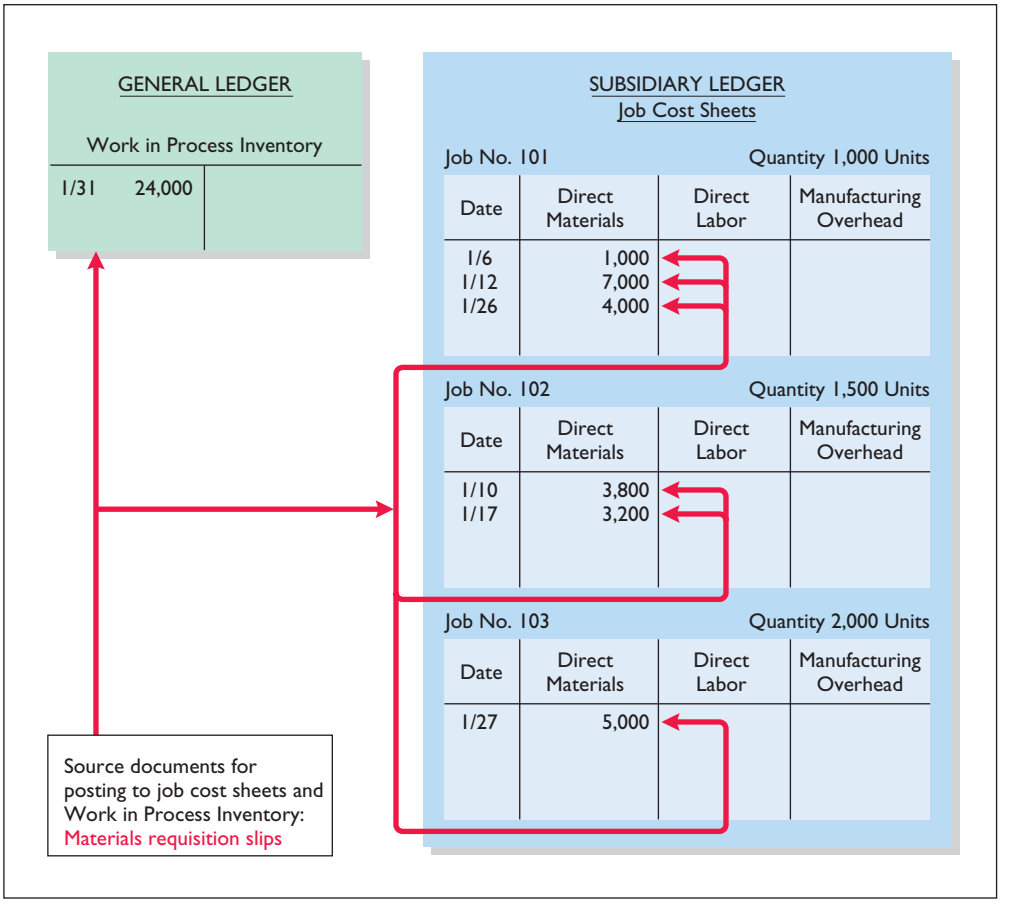


Illustration 2-8 Job cost sheets—direct materials

Helpful Hint Postings to control accounts are made monthly, and postings to job cost sheets are made daily.

The materials inventory record for Part No. AA2746 is shown in Illustration 2-9. It shows the posting of requisition slip R247 for 200 handles and an assumed requisition slip for 760 handles costing $3,800 on January 10 for Job 102.

Item: Handles Part No: AA2746

	Receipts			Issues			Balance		
Date	Units	Cost	Total	Units	Cost	Total	Units	Cost	Total
1/4	2,000	$5	$10,000				2,000	$5	$10,000
1/6				200	$5	$1,000	1,800	$5	9,000
1/10				760	$5	3,800	1,040	$5	5,200

Illustration 2-9 Materials inventory card following issuances

Factory Labor Costs

Factory labor costs are assigned 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. In many companies these data are accumulated 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 job number must be indicated, as shown in Illustration 2-10. All time tickets should be approved by the employee's supervisor.

Illustration 2-10 Time ticket

Wallace Manufacturing Company
Time Ticket

Date: 1/6/05

Employee: John Nash — Employee No.: 124
Charge to: Work in Process — Job No.: 101

Time			Hourly Rate	Total Cost
Start	Stop	Total Hours		
0800	1200	4	10.00	40.00

Approved by: Bob Kadlec — Costed by: M. Chen

Helpful Hint In some companies, different colored time tickets are used for direct and indirect labor.

The time tickets are later sent to the payroll department. There, the total time reported for an employee for a pay period is reconciled with total hours worked, as shown on the employee's time card. Then the employee's hourly wage rate is applied, and the total labor cost is computed. Finally, the time tickets are sorted, totaled, and journalized. The account Work in Process Inventory is debited for direct labor, and Manufacturing Overhead is debited 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	28,000	
	Manufacturing Overhead	4,000	
	Factory Labor		32,000
	(To assign labor to jobs and overhead)		

As a result of this entry, Factory Labor is left with 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. The Work in Process Inventory and job cost sheets after posting are shown in Illustration 2-11. 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.

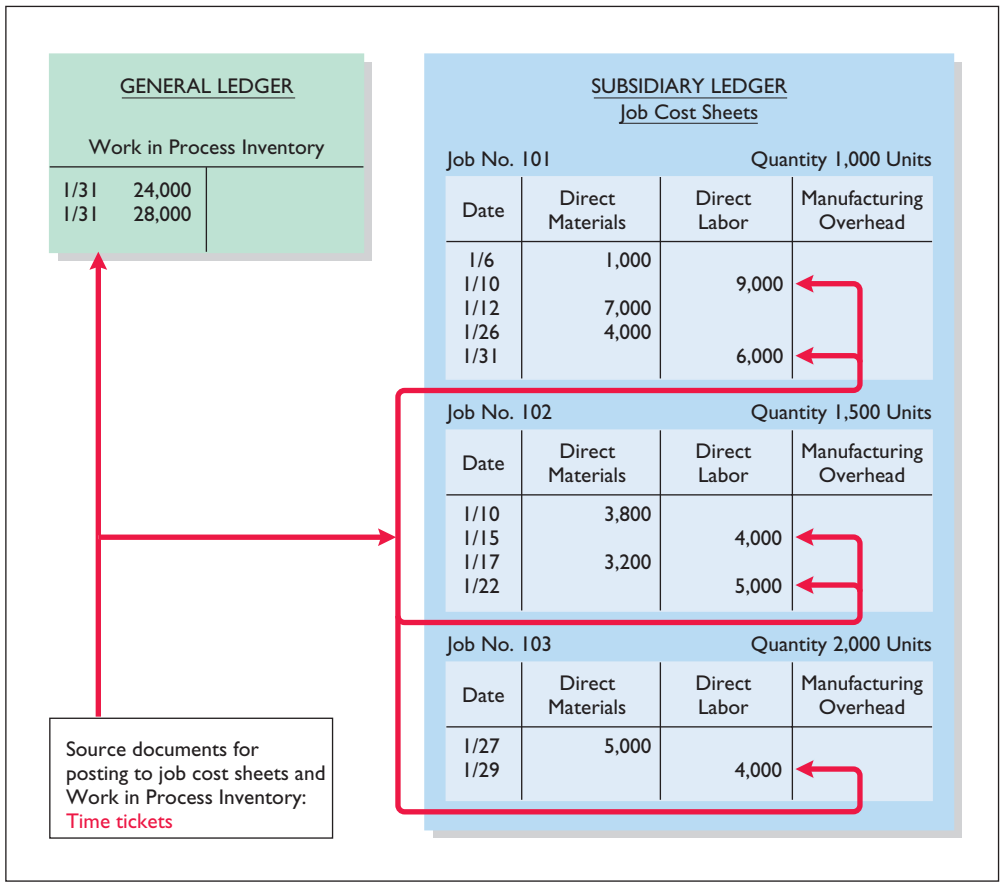


Illustration 2-11 Job cost sheets—direct labor

Helpful Hint Prove the $28,000 by totaling the charges by jobs:

101	$15,000
102	9,000
103	4,000
	$28,000

Manufacturing Overhead Costs

We've seen that the actual costs of direct materials and direct labor can be charged 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, manufacturing overhead is assigned to work in process and to specific jobs **on an estimated basis through the use of a predetermined overhead rate**.

STUDY OBJECTIVE 4

Indicate how the predetermined overhead rate is determined and used.

Business Insight
e-Business Perspective

What do companies like **Noratek Solutions**, **Business Systems of America**, **Foundation Software, Inc.**, and **R.C. Systems, Inc.** have in common? All of them provide software to help in recording job order costing information. For example, Noratek Solutions software analyzes every job from every angle, and it supports reporting of estimated and actual costs and revenues for any number of jobs. The system is integrated with purchasing, accounts payable, payroll, and receivables so that a complete cross-reference into all transactions can be easily developed. Users have a complete audit trail so that they can examine the details of any job.

A manual system is provided in this chapter so that the major concepts related to a job order cost system are understood. In practice, sophisticated job order cost software packages frequently are used.

The **predetermined overhead rate** is based on the relationship between estimated annual overhead costs and expected annual operating activity. This relationship is expressed in terms of a common **activity base**. The activity may be stated 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. The predetermined overhead rate is established at the beginning of the year. Small companies often will have a single, company-wide predetermined overhead rate. Large companies, however, often have rates that vary from department to department. The formula for a predetermined overhead rate is as follows.

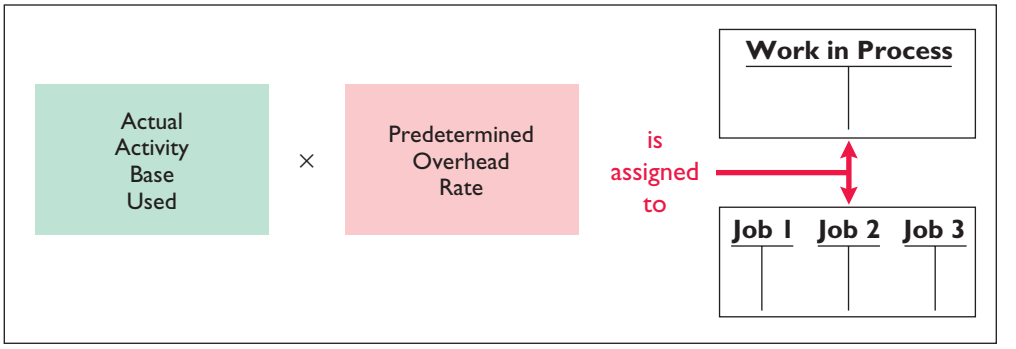
Illustration 2-12 Formula for predetermined overhead rate

Estimated Annual Overhead Costs	÷	Expected Annual Operating Activity	=	Predetermined Overhead Rate

We indicated earlier that overhead relates to production operations as a whole. In order to know what "the whole" is, the logical thing would be to wait until the end of the year's operations, when all costs for the period would be available. But as a practical matter, that wouldn't work: Managers could not wait that long before having information about product costs of specific jobs completed during the year in order to price products accurately. Instead, using a predetermined overhead rate enables a cost to be determined for the job immediately. Illustration 2-13 indicates how manufacturing overhead is assigned to work in process.

Helpful Hint In contrast to overhead, actual costs for direct materials and direct labor are used to assign costs to Work in Process.

Illustration 2-13 Using predetermined overhead rates



Wallace Manufacturing uses direct labor cost as the activity base. Assuming that annual overhead costs are expected to be $280,000 and that $350,000 of direct labor costs are anticipated for the year, the overhead rate is 80 percent, computed as follows:

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

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

Historically, direct labor costs or direct labor hours have often been used as the activity base. The reason was the relatively high correlation between direct labor and manufacturing overhead. In recent years, **there has been a trend toward use of machine hours as the activity base, due to increased reliance on automation in manufacturing operations**. Or, as mentioned in Chapter 1, many companies have implemented 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 order is manufactured in more than one factory department, each department may have its own overhead rate. In the Feature Story about fire trucks, two bases were used in assigning overhead to jobs: direct materials dollars for indirect materials, and direct labor hours for such costs as insurance and supervisors' salaries.

Manufacturing overhead is applied to work in process when direct labor costs are assigned. It also is applied to specific jobs at the same time. For Wallace Manufacturing, overhead applied for January is $22,400 ($28,000 × 80%). This application is recorded through the following entry.

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

The overhead applied to each job will be 80 percent of the direct labor cost of the job for the month. After posting, the Work in Process Inventory account and the job cost sheets will appear as shown in Illustration 2-14. Note that the debit

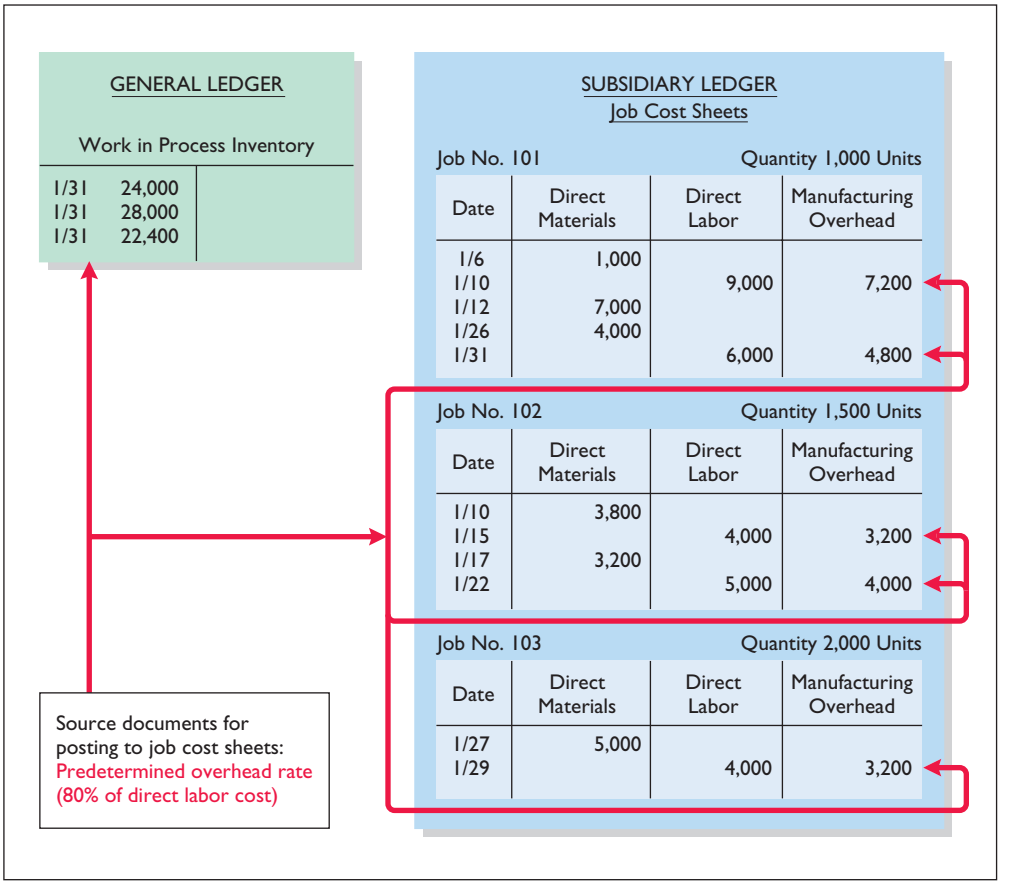


Illustration 2-14 Job cost sheets—manufacturing overhead applied

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.

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**. Assuming that all jobs are unfinished, proof of the agreement of the control and subsidiary accounts in Wallace Manufacturing is shown below.

Illustration 2-15 Proof of job cost sheets to work in process inventory

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
	74,400 ←		$74,400

DECISION TOOLKIT

Decision Checkpoints	Info Needed for Decision	Tool to Use for Decision	How to Evaluate Results
What is the cost of a job?	Cost of material, labor, and overhead assigned to a specific job	Job cost sheet	Compare costs to those of previous periods and to those of competitors to ensure that costs are in line. Compare costs to expected selling price or service fees charged to determine overall profitability.

BEFORE YOU GO ON . . .

Review It

1. What source documents are used in assigning manufacturing costs to Work in Process Inventory?
2. What is a job cost sheet, and what is its primary purpose?
3. What is the formula for computing a predetermined overhead rate?

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.

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

Related exercise material: BE2-3, BE2-4, BE2-7, E2-2, E2-3, E2-7, and E2-8.

THE NAVIGATOR

ASSIGNING COSTS TO FINISHED GOODS

When a job is completed, the costs are summarized and the lower portion of the applicable job cost sheet is completed. For example, if we assume that Job No. 101 is completed on January 31, the job cost sheet will show the following.

STUDY OBJECTIVE 5

Prepare entries for jobs completed and sold.

Illustration 2-16 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

Cost of completed job	
Direct materials	$ 12,000
Direct labor	15,000
Manufacturing overhead	12,000
Total cost	$ 39,000
Unit cost ($39,000 ÷ 1,000)	$ 39.00

When a job is finished, an entry is made to transfer its total cost to finished goods inventory. The entry for Wallace Manufacturing is:

(7)

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

Finished Goods Inventory is a control account. It controls individual finished goods records in a finished goods subsidiary ledger. Postings to the receipts columns are made directly from completed job cost sheets. The finished goods inventory record for Job No. 101 is shown in Illustration 2-17 below.

ASSIGNING COSTS TO COST OF GOODS SOLD

Cost of goods sold is recognized when each sale occurs. To illustrate the entries when a completed job is sold, assume that on January 31 Wallace Manufacturing sells on account Job 101, costing $39,000, 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)		

The units sold, the cost per unit, and the total cost of goods sold for each job sold are recorded in the issues section of the finished goods record, as shown in Illustration 2-17.

Illustration 2-17
Finished goods record

Item: Magnetic Sensors — Job No: 101

	Receipts			Issues			Balance		
Date	Units	Cost	Total	Units	Cost	Total	Units	Cost	Total
1/31	1,000	$39	$39,000				1,000	$39	$39,000
1/31				1,000	$39	$39,000			–0–

SUMMARY OF JOB ORDER COST FLOWS

A completed flow chart for a job order cost accounting system is shown in Illustration 2-18. All postings are keyed to entries 1–8 in Wallace Manufacturing's accounts presented in the cost flow graphic in Illustration 2-4. Illustration 2-19 provides a summary of the flow of documents in a job order cost system.

Illustration 2-18 Flow of costs in a job order cost system

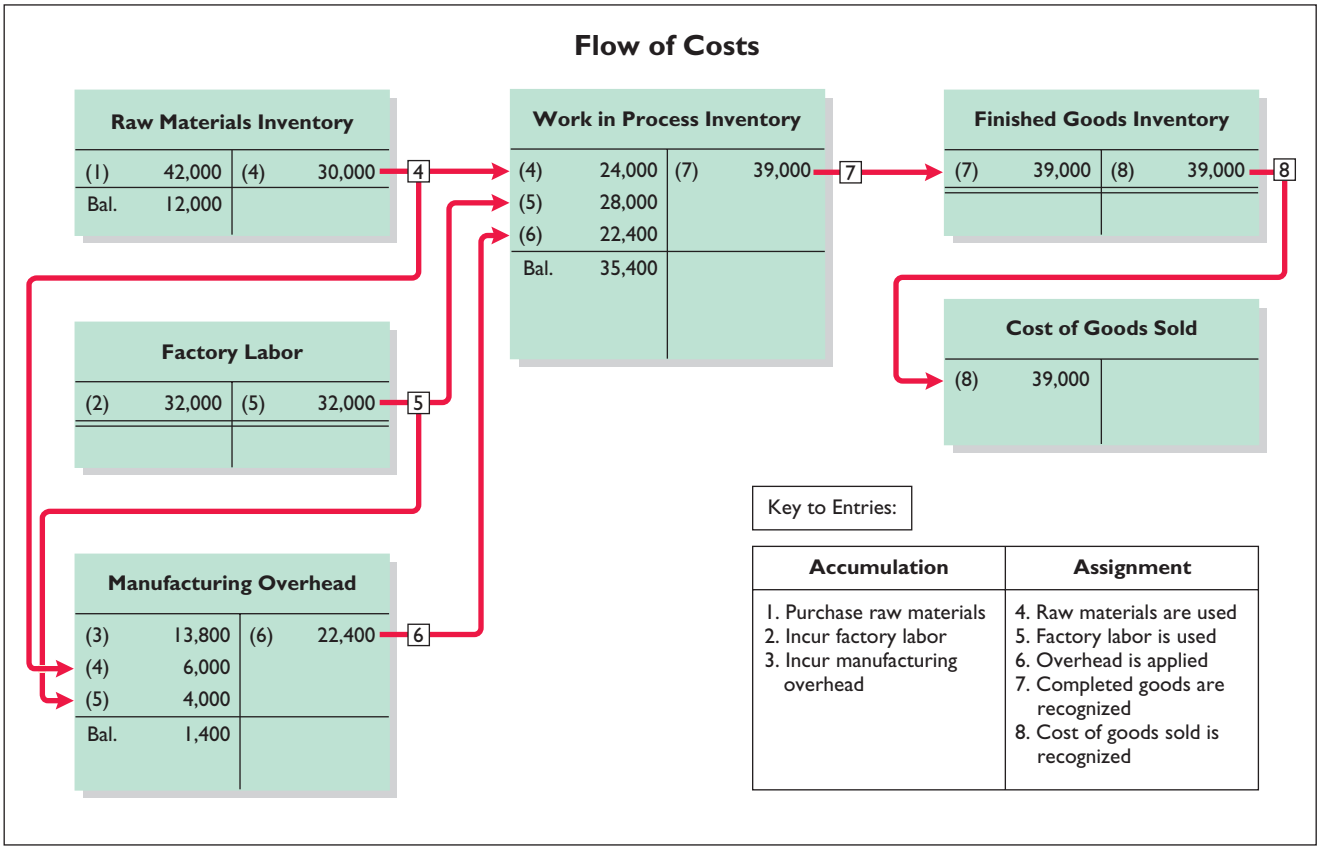
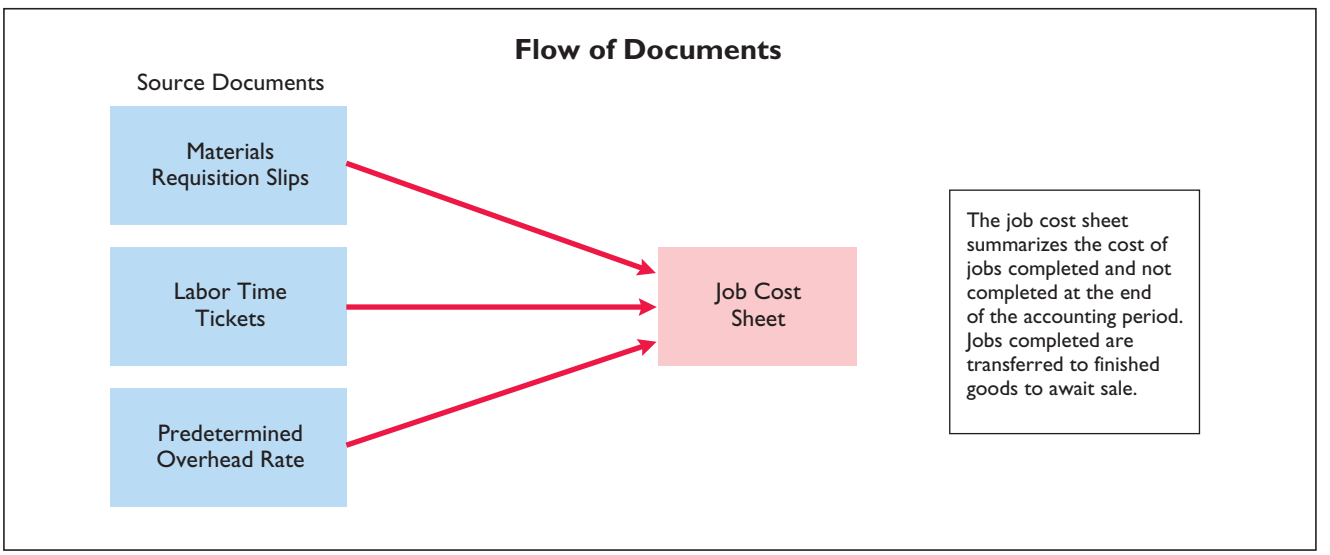
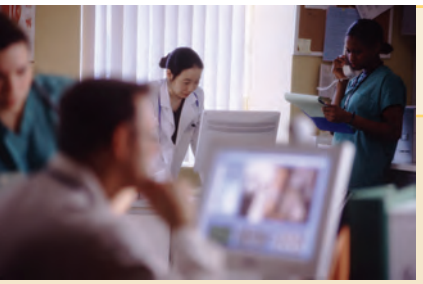


Illustration 2-19 Flow of documents in a job order cost system





Business Insight
Service Company Perspective

Service companies like the **Mayo Clinic** (health care), **PriceWaterhouse-Coopers** (accounting firm), and **Merrill Lynch** (financial services firm) also use job order costing systems. The major difference in a job order costing system between a manufacturing company such as **Coca-Cola** and a service company such as **Massachusetts General Hospital** involves inventory. Service companies do not have raw materials nor finished goods inventory. However, similar to manufacturing companies, many service companies have substantial overhead costs, which must be allocated.

Because job order costing systems are used extensively in service industries, exercises are provided in the end-of-chapter material to help you understand how to cost various types of services.

Reporting Job Cost Data

Helpful Hint Monthly financial statements are usually prepared for management use only.

At the end of a period, financial statements are prepared 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 1 with one exception: **The schedule shows manufacturing overhead applied, rather than actual overhead costs. This amount is added to direct materials and direct labor to determine total manufacturing costs.** The schedule is prepared directly from the Work in Process Inventory account. A condensed schedule for Wallace Manufacturing Company for January is as follows.

Illustration 2-20 Cost of goods manufactured schedule

WALLACE MANUFACTURING COMPANY
Cost of Goods Manufactured Schedule
For the Month Ended January 31, 2005

Work in process, January 1		$ –0–
Direct materials used	$24,000	
Direct labor	28,000	
Manufacturing overhead applied	**22,400**	
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		$39,000

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 2-18.

The income statement and balance sheet are the same as those illustrated in Chapter 1. For example, the partial income statement for Wallace Manufacturing for the month of January is shown in Illustration 2-21.

WALLACE MANUFACTURING COMPANY
Income Statement (partial)
For the Month Ending January 31, 2005

Sales		$50,000
Cost of goods sold		
Finished goods inventory, January 1	$ –0–	
Cost of goods manufactured (See Illustration 2-20)	**39,000**	
Cost of goods available for sale	39,000	
Less: Finished goods inventory, January 31	–0–	
Cost of goods sold		39,000
Gross profit		$11,000

Illustration 2-21 Partial income statement

Under- or 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. These concepts are shown in Illustration 2-22.

STUDY OBJECTIVE 6

Distinguish between under- and overapplied manufacturing overhead.

Illustration 2-22 Under- and overapplied overhead

Manufacturing Overhead

Actual (Costs incurred)	Applied (Costs assigned)

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

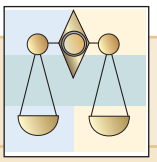
If actual is ***less*** than applied, manufacturing overhead is overapplied.

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. Accordingly, any balance in Manufacturing Overhead is eliminated by an adjusting entry. Usually, under- or overapplied overhead is considered to be an **adjustment to cost of goods sold**. Thus, **underapplied overhead is debited to Cost of Goods Sold**. **Overapplied overhead is credited 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	2,500	
	Cost of Goods Sold		2,500
	(To transfer overapplied overhead to cost of goods sold)		

After this entry is posted, Manufacturing Overhead will have a zero balance. In preparing an income statement for the year, the amount reported for cost of goods sold will be the account balance **after the adjustment** for either under- or overapplied overhead.



Business Insight
Management Perspective

Overhead also applies in nonmanufacturing companies. The State of Michigan found that auto dealers were charging documentary and service fees ranging from $18 to $445 per automobile and inspection fees from $88 to $360. These fees often were charged auto buyers after a base sales price for the car had been negotiated. The Attorney General of the State of Michigan ruled that auto dealers cannot charge customers additional fees for routine overhead costs. The attorney general said: "Overhead is part of the sales price of a motor vehicle. Processing paper work, dealer incurred costs, and inspection fees to qualify cars for extended warranty plans are ordinary overhead expenses."

Conceptually, it can be argued that 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.

DECISION TOOLKIT

Decision Checkpoints	Info Needed for Decision	Tool to Use for Decision	How to Evaluate Results
Has the company over- or underapplied overhead for the period?	Actual overhead costs and overhead applied	Manufacturing overhead account	If the account balance is a credit, overhead applied exceeded actual overhead costs. If the account balance is a debit, overhead applied was less than actual overhead costs.

BEFORE YOU GO ON . . .

Review It

1. When are entries made to record the completion and sale of a job?
2. What costs are included in total manufacturing costs in the cost of goods manufactured schedule?

THE NAVIGATOR

Using the Decision Toolkit

Martinez Building Products Company is one of the largest manufacturers and marketers of unique, custom-made residential garage doors in the U.S. as well as a major supplier of industrial and commercial doors, grills, and counter shutters for the new construction, repair, and remodel markets. Martinez has developed plans for continued expansion of a network of service operations that sell, install, and service manufactured fireplaces, garage doors, and related products.

Martinez uses a job cost system and applies overhead to production on the basis of direct labor cost. In computing a predetermined overhead rate for the year 2005, the company estimated manufacturing overhead to be $24 million and direct labor costs to be $20 million. In addition the following information is provided.

Actual costs incurred during 2005

Direct materials used	$30,000,000
Direct labor cost incurred	21,000,000
Insurance, factory	500,000
Indirect labor	7,500,000
Maintenance	1,000,000
Rent on building	11,000,000
Depreciation on equipment	2,000,000

Instructions

Answer each of the following.

(a) Why is Martinez Building Products Company using a job order costing system?

(b) On what basis does Martinez allocate its manufacturing overhead? Compute the predetermined overhead rate for the current year.

(c) Compute the amount of the under- or overapplied overhead for 2005.

(d) Martinez had balances in the beginning and ending work in process and finished goods accounts as follows.

	1/1/05	12/31/05
Work in process	$ 5,000,000	$ 4,000,000
Finished goods	13,000,000	11,000,000

Determine the (1) cost of goods manufactured and (2) cost of goods sold for Martinez during 2005. Assume that any under- or overapplied overhead should be included in the cost of goods sold.

(e) During 2005, Job G408 was started and completed. Its cost sheet showed a total cost of $100,000, and the company prices its product at 50% above its cost. What is the price to the customer if the company follows this pricing strategy?

Solution

(a) The company is using a job order system because each job (or batch) must have its own distinguishing characteristics. For example, each type of garage door would be different, and therefore a different cost per garage door should be assigned.

(b) The company allocates its overhead on the basis of direct labor cost. The predetermined overhead rate is 120%, computed as follows.

$$\$24,000,000 \div \$20,000,000 = 120\%$$

(c)

Actual manufacturing overhead	$22,000,000
Applied overhead cost ($21,000,000 × 120%)	25,200,000
Overapplied overhead	$ 3,200,000

(d) (1)	Work in process, 1/1/05		$ 5,000,000
	Direct materials used	$30,000,000	
	Direct labor	21,000,000	
	Manufacturing overhead applied	25,200,000	
	Total manufacturing costs		76,200,000
	Total cost of work in process		81,200,000
	Less: Work in process, 12/31/05		4,000,000
	Cost of goods manufactured		$77,200,000
(2)	Finished goods inventory, 1/1/05	$13,000,000	
	Cost of goods manufactured (see above)	77,200,000	
	Cost of goods available for sale	90,200,000	
	Finished goods inventory, 12/31/05	11,000,000	
	Cost of goods sold (unadjusted)	79,200,000	
	Less: Overapplied overhead	3,200,000	
	Cost of goods sold	$76,000,000	
(e)	G408 cost	$ 100,000	
	Markup percentage	× 50%	
	Profit	$ 50,000	

Price to customer: $150,000 ($100,000 + $50,000)

THE NAVIGATOR

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, the total cost and the unit cost of each product is determined. 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 cost accounting system.*** In job order cost accounting, 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.

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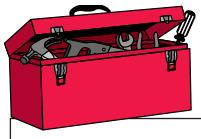

DECISION TOOLKIT—A SUMMARY

Decision Checkpoints	Info Needed for Decision	Tool to Use for Decision	How to Evaluate Results
What is the cost of a job?	Cost of material, labor, and overhead assigned to a specific job	Job cost sheet	Compare costs to those of previous periods and to those of competitors to ensure that costs are in line. Compare costs to expected selling price or service fees charged to determine overall profitability.
Has the company over- or underapplied overhead for the period?	Actual overhead costs and overhead applied	Manufacturing overhead account	If the account balance is a credit, overhead applied exceeded actual overhead costs. If the account balance is a debit, overhead applied was less than actual overhead costs.

Glossary

Cost accounting An area of accounting that involves measuring, recording, and reporting product costs. (p. 51)

Cost accounting system Manufacturing cost accounts that are fully integrated into the general ledger of a company. (p. 51)

Job cost sheet A form used to record the costs chargeable to a job and to determine the total and unit costs of the completed job. (p. 56)

Job order cost system A cost accounting system in which costs are assigned to each job or batch. (p. 52)

Materials requisition slip A document authorizing the issuance of raw materials from the storeroom to production. (p. 57)

Overapplied overhead A situation in which overhead assigned to work in process is greater than the overhead incurred. (p. 69)

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. 62)

Process cost system A system of accounting used when a large volume of similar products are manufactured. (p. 52)

Summary entry A journal entry that summarizes the totals from multiple transactions. (p. 56)

Time ticket A document that indicates the employee, the hours worked, the account and job to be charged, and the total labor cost. (p. 60)

Underapplied overhead A situation in which overhead assigned to work in process is less than the overhead incurred. (p. 69)

Demonstration Problem

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

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

Manufacturing overhead rate: 80% of direct labor costs.

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

Instructions

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

Action Plan

- 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 Demonstration Problem

(a)

	1.			
Feb. 28	Raw Materials Inventory		54,000	
	Accounts Payable			54,000
	(Purchase of raw materials on account)			
	2.			
28	Factory Labor		80,000	
	Factory Wages Payable			76,000
	Employer Payroll Taxes Payable			4,000
	(To record factory labor costs)			
	3.			
28	Manufacturing Overhead		59,800	
	Accounts Payable, Accumulated Depreciation, and Prepaid Insurance			59,800
	(To record overhead costs)			
	4.			
28	Work in Process Inventory		48,000	
	Manufacturing Overhead		3,000	
	Raw Materials Inventory			51,000
	(To assign raw materials to production)			
	5.			
28	Work in Process Inventory		78,000	
	Manufacturing Overhead		2,000	
	Factory Labor			80,000
	(To assign factory labor to production)			
	6.			
28	Work in Process Inventory		62,400	
	Manufacturing Overhead			62,400
	(To assign overhead to jobs—80% × $78,000)			
	7.			
28	Finished Goods Inventory		120,600	
	Work in Process Inventory			120,600
	(To record completion of Job A16: direct materials $27,000, direct labor $52,000, and manufacturing overhead $41,600)			

8.

Feb 28	Accounts Receivable	150,000	
	Sales		150,000
	(To record sale of Job A16)		
28	Cost of Goods Sold	120,600	
	Finished Goods Inventory		120,600
	(To record cost of sale for Job A16)		

(b) 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.

THE NAVIGATOR

Self-Study Questions

Self-Study/Self-Test

Answers are at the end of the chapter.

(SO 1) 1. Cost accounting involves the measuring, recording, and reporting of:
(a) product costs.
(b) future costs.
(c) manufacturing processes.
(d) managerial accounting decisions.

(SO 2) 2. In accumulating raw materials costs, the cost of raw materials purchased in a perpetual system is debited to:
(a) Raw Materials Purchases.
(b) Raw Materials Inventory.
(c) Purchases.
(d) Work in Process.

(SO 2) 3. When incurred, factory labor costs are debited to:
(a) Work in Process.
(b) Factory Wages Expense.
(c) Factory Labor.
(d) Factory Wages Payable.

(SO 3) 4. The source documents for assigning costs to job cost sheets are:
(a) invoices, time tickets, and the predetermined overhead rate.
(b) materials requisition slips, time tickets, and the actual overhead costs.
(c) materials requisition slips, payroll register, and the predetermined overhead rate.
(d) materials requisition slips, time tickets, and the predetermined overhead rate.

(SO 3) 5. In recording the issuance of raw materials in a job order cost system, it would be *incorrect* to:
(a) debit Work in Process Inventory.
(b) debit Finished Goods Inventory.
(c) debit Manufacturing Overhead.
(d) credit Raw Materials Inventory.

(SO 3) 6. The entry when direct factory labor is assigned to jobs is a debit to:
(a) Work in Process Inventory and a credit to Factory Labor.
(b) Manufacturing Overhead and a credit to Factory Labor.
(c) Factory Labor and a credit to Manufacturing Overhead.
(d) Factory Labor and a credit to Work in Process Inventory.

(SO 4) 7. The formula for computing the predetermined manufacturing overhead rate is estimated annual overhead costs divided by an expected annual operating activity, expressed as:
(a) direct labor cost.
(b) direct labor hours.
(c) machine hours.
(d) any of the above.

(SO 4) 8. 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:
(a) $120,000.
(b) $144,000.
(c) $168,000.
(d) $160,000.

(SO 5) 9. 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:
(a) Debit Finished Goods Inventory $7,000 and credit Work in Process Inventory $7,000.
(b) Debit Cost of Goods Sold $7,000 and credit Finished Goods Inventory $7,000.
(c) Debit Finished Goods Inventory $4,500 and credit Work in Process Inventory $4,500.
(d) Debit Accounts Receivable $7,000 and credit Sales $7,000.

10. Manufacturing overhead is underapplied if: (SO 6)
(a) actual overhead is less than applied.
(b) actual overhead is greater than applied.
(c) the predetermined rate equals the actual rate.
(d) actual overhead equals applied overhead.

THE NAVIGATOR

Questions

1. (a) Kent Krause is not sure about the difference between cost accounting and a cost accounting system. Explain the difference to Kent. (b) What is an important feature of a cost accounting system?
2. (a) Distinguish between the two types of cost accounting systems. (b) May a company use both types of cost accounting systems?
3. What type of industry is likely to use a job order cost system? Give some examples.
4. What type of industry is likely to use a process cost system? Give some examples.
5. 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.
6. There are three inventory control accounts in a job order system. Identify the control accounts and their subsidiary ledgers.
7. What source documents are used in accumulating direct labor costs?
8. "Entries to Manufacturing Overhead normally are only made daily." Do you agree? Explain.
9. Alan Bruski is confused about the source documents used in assigning materials and labor costs. Identify the documents and give the entry for each document.
10. What is the purpose of a job cost sheet?
11. Indicate the source documents that are used in charging costs to specific jobs.
12. Differentiate between a "materials inventory record" and a "materials requisition slip" as used in a job order cost system.
13. Joe Gruber believes actual manufacturing overhead should be charged to jobs. Do you agree? Why or why not?
14. What relationships are involved in computing a predetermined overhead rate?
15. How can the agreement of Work in Process Inventory and job cost sheets be verified?
16. Jane Jelk believes that the cost of goods manufactured schedule in job order cost accounting is the same as shown in Chapter 1. Is Jane correct? Explain.
17. Alex Cesska is confused about under- and overapplied manufacturing overhead. Define the terms for Alex, 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

Prepare a flowchart of a job order cost accounting system, and identify transactions. (SO 2)

BE2-1 Sandy 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 entries in accumulating manufacturing costs. (SO 2)

BE2-2 During the first month of operations, Sandy Tool & Die accumulated the following manufacturing costs: raw materials $3,000 on account, factory labor $5,000 of which $4,500 relates to factory wages payable and $500 relates to payroll taxes payable, and utilities payable $2,000. Prepare separate journal entries for each type of manufacturing cost.

BE2-3 In January, Sandy Tool & Die requisitions raw materials for production as follows: Job 1 $900, Job 2 $1,200, Job 3 $500, 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 2)

BE2-4 Factory labor data for Sandy Tool & Die is given in BE2-2. 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 $1,700, and general factory use $500. Prepare a summary journal entry to record factory labor used.

Prepare entry for the assignment of factory labor costs. (SO 2)

BE2-5 Data pertaining to job cost sheets for Sandy Tool & Die are given in BE2-3 and BE2-4. 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)

BE2-6 Burrand Company estimates that annual manufacturing overhead costs will be $600,000. 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)

BE2-7 During the first quarter, Sota 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 120% of direct labor cost.

Assign manufacturing overhead to production. (SO 4)

BE2-8 In March, Caroline Company completes Jobs 10 and 11. Job 10 cost $25,000 and Job 11 $32,000. 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)

BE2-9 At December 31, balances in Manufacturing Overhead are: Apex Company—debit $1,200, Lopez 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)

Exercises

E2-1 The gross earnings of the factory workers for Darlinda Company during the month of January are $80,000. 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.

Prepare entries for factory labor. (SO 2)

Instructions

(a) Prepare the entry to record the factory labor costs for the month of January.
(b) Prepare the entry to assign factory labor to production.

E2-2 Dooley 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.

Prepare journal entries for manufacturing costs. (SO 2, 3, 4, 5)

Job Number	Materials Requisition Slips		Labor Time Tickets	
429	$2,500		$2,400	
430	3,500		3,000	
431	4,400	$10,400	7,600	$13,000
General use		800		1,200
		$11,200		$14,200

Dooley Manufacturing applies manufacturing overhead to jobs at an overhead rate of 90% of direct labor cost. Job No. 429 is completed during the month.

Instructions

(a) Prepare summary journal entries 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.

(b) Post the entries to Work in Process Inventory, and prove the agreement of the control account with the job cost sheets.

Analyze a job cost sheet and prepare entries for manufacturing costs. (SO 2, 3, 4, 5)

E2-3 A job order cost sheet for Bjerg Company is shown below.

Job No. 92			For 2,000 Units
Date	Direct Materials	Direct Labor	Manufacturing Overhead
Beg. bal. Jan. 1	5,000	6,000	4,200
8	6,000		
12		8,000	6,400
25	2,000		
27		4,000	3,200
	13,000	18,000	13,800

Cost of completed job:	
Direct materials	$13,000
Direct labor	18,000
Manufacturing overhead	13,800
Total cost	$44,800
Unit cost ($44,800 ÷ 2,000)	$22.40

Instructions

(a) On the basis of the foregoing data answer the following questions.

(1) What was the balance in Work in Process Inventory on January 1 if this was the only unfinished job?

(2) 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.

Analyze costs of manufacturing and determine missing amounts. (SO 2, 5)

E2-4 Manufacturing cost data for Copa Company, which uses a job order cost system, are presented below.

	Case A	Case B	Case C
Direct materials used	$ (a)	$ 83,000	$ 63,150
Direct labor	50,000	100,000	(h)
Manufacturing overhead applied	42,500	(d)	(i)
Total manufacturing costs	165,650	(e)	250,000
Work in process 1/1/05	(b)	15,500	18,000
Total cost of work in process	201,500	(f)	(j)
Work in process 12/31/05	(c)	11,800	(k)
Cost of goods manufactured	192,300	(g)	262,000

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.

Compute the manufacturing overhead rate and under- or overapplied overhead. (SO 4, 6)

E2-5 Rodriquez Company applies manufacturing overhead to jobs on the basis of machine hours used. Overhead costs are expected to total $300,000 for the year, and machine usage is estimated at 125,000 hours.

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

Instructions
(a) Compute the manufacturing overhead rate for the year.
(b) What is the amount of under- or overapplied overhead at December 31?
(c) 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.

E2-6 A job cost sheet of Battle Company is given below.

Analyze job cost sheet and prepare entry for completed job.
(SO 2, 3, 4, 5)

Job Cost Sheet

JOB NO. 469 Quantity 2,000
ITEM White Lion Cages Date Requested 7/2
FOR Tesla Company Date Completed 7/31

Date	Direct Materials	Direct Labor	Manufacturing Overhead
7/10	828		
12	900		
15		440	528
22		380	456
24	1,600		
27	1,500		
31		540	648

Cost of completed job:
Direct materials _____
Direct labor _____
Manufacturing overhead _____
Total cost _____
Unit cost _____

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

E2-7 Laird Corporation incurred the following transactions.

Prepare entries for manufacturing costs.
(SO 2, 4, 5)

1. Purchased raw materials on account $46,300.
2. Raw Materials of $36,000 were requisitioned to the factory. An analysis of the materials requisition slips indicated that $8,800 was classified as indirect materials.
3. 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.
4. Time tickets indicated that $50,000 was direct labor and $3,900 was indirect labor.
5. Overhead costs incurred on account were $80,500.
6. Manufacturing overhead was applied at the rate of 150% of direct labor cost.
7. Goods costing $88,000 were completed and transferred to finished goods.
8. Finished goods costing $75,000 to manufacture were sold on account for $103,000.

Instructions
Journalize the transactions. (Omit explanations.)

E2-8 Tombert Printing Corp. uses a job order cost system. The following data summarize the operations related to the first quarter's production.

Prepare entries for manufacturing costs.
(SO 2, 3, 4, 5)

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

Job Number	Materials	Factory Labor
A20	$ 32,240	$18,000
A21	42,920	22,000
A22	36,100	15,000
A23	39,270	25,000
General factory use	4,470	7,300
	$155,000	$87,300

3. Manufacturing overhead costs incurred on account $39,500.
4. Depreciation on machinery and equipment $14,550.
5. Manufacturing overhead rate is 70% 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.)

Prepare a cost of goods manufactured schedule and partial financial statements. (SO 2, 5)

E2-9 At May 31, 2005, the accounts of Yellow Knife 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 $11,500, 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 $48,000.
4. Sales totaled $200,000.

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, 2005.

Compute work in process and finished goods from job cost sheets. (SO 3, 5)

E2-10 Tomlin Company begins operations on April 1. Information from job cost sheets shows the following.

Job Number	Manufacturing Costs Assigned			Month Completed
	April	May	June	
10	$5,200	$4,400		May
11	6,100	3,900	$3,000	June
12	1,200			April
13		4,700	4,500	June
14		3,900	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 50% 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?

Prepare entries for costs of services provided. (SO 2, 4, 5)

E2-11 Shown at the top of the next page are the job cost related accounts for the law firm of Chan, King, and Lou and their manufacturing equivalents:

Law Firm Accounts	Manufacturing Firm Accounts
Supplies	Raw Materials
Direct Attorney Cost	Direct Labor
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 $75,000 (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 $100,000.

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

E2-12 Armando Ortiz 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.

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

	Hernandez	Navarro	Vallejo
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 $50 per auditor hour. The Hernandez job is the only incomplete job at the end of November. Actual overhead for the month was $11,000.

Instructions
(a) Determine the cost of each job.
(b) Indicate the balance of the Work in Process account at the end of November.
(c) Calculate the ending balance of the Manufacturing Overhead account for November.

E2-13 Deco 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.

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

Budgeted overhead	$960,000
Actual overhead	$982,800
Budgeted decorator hours	38,400
Actual decorator hours	39,000

The company uses Operating Overhead in place of Manufacturing Overhead.

Instructions
(a) Compute the predetermined overhead rate.
(b) Prepare the entry to apply the overhead for the year.
(c) Determine whether the overhead was under- or overapplied and by how much.

Problems: Set A

P2-1A Elite Manufacturing uses a job order cost system and applies overhead to production on the basis of direct labor hours. On January 1, 2005, 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 $45,000 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 $67,000 and $74,000, respectively. The following additional events occurred during the month.

1. Purchased additional raw materials of $45,000 on account.
2. Incurred factory labor costs of $35,500. Of this amount $6,500 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 $6,000.
4. Assigned direct materials and direct labor to jobs as follows.

Job No.	Direct Materials	Direct Labor
25	$ 5,000	$ 3,000
26	20,000	12,000
27	15,000	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 2005, assuming Elite Manufacturing estimates total manufacturing overhead costs of $400,000, 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) Job 25, $37,000
Job 26, $48,000

(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?

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

P2-2A For the year ended December 31, 2005, the job cost sheets of Sprague 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	27,000	30,000	37,500	94,500
7651	Balance 1/1	12,000	18,000	22,500	52,500
	Current year's costs	28,000	40,000	50,000	118,000
7652	Current year's costs	40,000	64,000	80,000	184,000

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 $98,000 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 $120,000.
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) $115,500
(4) $167,500
Unfinished job 7652, $184,000

(b) Prepare the adjusting entry for manufacturing overhead, assuming the balance is allocated entirely to cost of goods sold.

(b) Amount = $2,000

(c) Determine the gross profit to be reported for 2005.

(c) $170,500

P2-3A Steve Taylor is a contractor specializing in custom-built jacuzzis. On May 1, 2005, his ledger contains the following data.

Prepare entries in a job cost system and cost of goods manufactured schedule. (SO 2, 3, 4, 5)

Raw Materials Inventory	$30,000
Work in Process Inventory	12,600
Manufacturing Overhead	2,500 (dr.)

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:

Job Cost Sheets

Job by Customer	Direct Materials	Direct Labor	Manufacturing Overhead
Farley	$2,500	$2,000	$1,600
Hendricks	2,000	1,200	960
Minor	900	800	640
	$5,400	$4,000	$3,200

During May, the following costs were incurred: (a) raw materials purchased on account $5,000, (b) labor paid $8,000, (c) manufacturing overhead paid $1,400.

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

Job by Customer	Materials Requisition Slips	Time Tickets
Farley	$ 500	$ 400
Hendricks	600	1,000
Minor	2,300	1,300
Bennett	2,400	3,300
	5,800	6,000
General use	1,500	2,000
	$7,300	$8,000

Overhead was charged to jobs on the basis of $0.80 per dollar of direct labor cost.

The jacuzzis for customers Farley, Hendricks, and Minor were completed during May. Each jacuzzi was sold for $12,500 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 direct 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 $20,860

Compute predetermined overhead rates, apply overhead, and calculate under- or overapplied overhead. (SO 4, 6)

P2-4A Acquatic 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.

In establishing the predetermined overhead rates for 2005 the following estimates were made for the year.

	Department		
	A	B	C
Manufacturing overhead	$930,000	$800,000	$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

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	$76,000	$74,000	$61,500
Direct labor hours	4,000	3,500	4,200
Machine hours	8,000	10,500	12,600

Instructions

(a) 155%, $20, $5
(b) $214,400, $191,000 $177,400
(c) $1,600, $4,000, $(1,500)

(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.

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

P2-5A Freedo 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	July 31	Requisitions	(a)
31	Purchases	90,400			
July 31	Ending balance	(b)			

Work in Process Inventory

July 1	Beginning balance	(c)	July 31	Jobs completed	(f)
31	Direct materials	80,000			
31	Direct labor	(d)			
31	Overhead	(e)			
July 31	Ending balance	(g)			

Finished Goods Inventory

July 1	Beginning balance	(h)	July 31	Cost of goods sold	(j)
31	Completed jobs	(i)			
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	July 31	Overhead applied	117,000
31	Indirect labor	16,000			
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 $8,200, 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 $1,000, plus manufacturing overhead. Manufacturing overhead was applied at the rate of 130% of direct labor cost.
3. On July 1, Job No. 4084, costing $135,000, was in the finished goods warehouse. On July 31, Job No. 4088, costing $143,000, was in finished goods.
4. Overhead was $3,000 underapplied in July.

(d) $90,000
(f) $309,000
(l) $106,000

Instructions

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

Problems: Set B

P2-1B Medina Manufacturing uses a job order cost system and applies overhead to production on the basis of direct labor costs. On January 1, 2005, 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.

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

During the month of January, Medina 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.

1. Purchased additional raw materials of $90,000 on account.
2. Incurred factory labor costs of $65,000. Of this amount $13,000 related to employer payroll taxes.
3. Incurred manufacturing overhead costs as follows: indirect materials $14,000; 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.

Job No.	Direct Materials	Direct Labor
50	$10,000	$ 5,000
51	39,000	25,000
52	30,000	20,000

Instructions

(a) Calculate the predetermined overhead rate for 2005, assuming Medina Manufacturing estimates total manufacturing overhead costs of $980,000, 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, $70,000
Job 51, $99,000

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

P2-2B For the year ended December 31, 2005, the job cost sheets of Amend Company contained the following data.

Job Number	Explanation	Direct Materials	Direct Labor	Manufacturing Overhead	Total Costs
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	40,000	48,000	57,600	145,600
7642	Current year's costs	48,000	50,000	60,000	158,000

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 $115,000.
6. Other manufacturing overhead consisted of indirect materials $14,000, indirect labor $20,000, and depreciation on factory machinery $8,000.

Instructions

(a) $158,000; Job 7642: $158,000

(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) Amount = $3,800

(b) Prepare the adjusting entry for manufacturing overhead, assuming the balance is allocated entirely to Cost of Goods Sold.

(c) $158,600

(c) Determine the gross profit to be reported for 2005.

Prepare entries in a job cost system and cost of goods manufactured schedule.
(SO 2, 3, 4, 5)

P2-3B Zion 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, 2005, the general ledger for Zion Inc. contains the following data.

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

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

Job Cost Sheets

	Customer Job		
Cost Element	Powell	Aurora	Hayden
Direct materials	$ 600	$ 800	$ 900
Direct labor	320	540	580
Manufacturing overhead	400	675	725
	$1,320	$2,015	$2,205

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
Powell	$ 800	$ 450
Elgin	2,000	800
Aurora	500	360
Hayden	1,300	800
Powell	300	390
	4,900	2,800
General use	1,500	1,200
	$6,400	$4,000

Overhead was charged to jobs at the same rate of $1.25 per dollar of direct labor cost. The patios for customers Powell, Aurora, and Hayden 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 direct 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 $12,940

P2-4B Stein 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.

Compute predetermined overhead rates, apply overhead and calculate under- or overapplied overhead. (SO 4, 6)

In establishing the predetermined overhead rates for 2006 the following estimates were made for the year.

	Department		
	D	E	K
Manufacturing overhead	$1,200,000	$1,500,000	$900,000
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	$ 98,000	$129,000	$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) 80%, $12, $7.50
(b) $356,000, $368,000 $193,500
(c) $2,000, $(3,000), $(4,000)

P2-5B 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	16,850
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	12,025	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 75% 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) $14,950
(f) $54,150
(i) $55,150

Instructions

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

Problems: Set C

Problem Set C is provided at the book's Web site, www.wiley.com/college/weygandt.

BROADENING YOUR PERSPECTIVE

Group Decision Case

BYP 2-1 Wang 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.

Sandra Devona, 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 following production quantity and cost data.

	Quarter			
Costs	**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	153,000	97,000	125,000
Total	$265,000	$505,000	$225,000	$445,000
Production in batches	5	11	4	10
Unit cost (per batch)	$ 53,000	$ 45,909	$ 56,250	$ 44,500

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

BYP 2-2 In the course of routine checking of all journal entries prior to preparing year-end reports, Sally Yount discovered several strange entries. She recalled that the president's son Ken 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 Ken 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 $12,000. 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 Ken 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

BYP 2-3 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

BYP 2-4 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**, ***or go to*** **www.wiley.com/college/weygandt**

Steps

1. Go to the site shown above.
2. Choose **Certification**, and then, **Become Certified**.

Instructions

(a) What are the objectives of the certification program?
(b) What is the "experience requirement"?
(c) How many hours of continuing education are required, and what types of courses qualify?

Communication Activity

BYP 2-5 You are the management accountant for Clemente Manufacturing. Your company does custom carpentry work and uses a job order cost accounting system. Clemente

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.

Cindy Stein 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. Stein (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.

Research Assignment

BYP 2-6 The April 19, 2004, edition of the *Wall Street Journal* contains an article by Andy Pasztor and Jonathan Karp titled "**Northrop** Papers Indicate Coverup."

Instructions

Read the article and answer the following questions.

(a) What type of costing system would Northrop use for these government contracts? Explain your answer.
(b) These contracts were billed on a "cost-plus" basis, meaning that the contract allowed the company simply to keep track of its costs and then bill the government for the costs it incurred, plus a profit. In what ways did Northrop abuse this arrangement?
(c) What systems were in place to try to ensure that the company did not violate the terms of the contract?

Ethics Case

BYP 2-7 ESU Printing provides printing services to many different corporate clients. Although ESU 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 ESU.

Clara Biggio, controller for ESU, has recently returned from a meeting where ESU'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.

Clara 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. Clara 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 Clara Biggio?

Answers to Self-Study Questions

1. a **2.** b **3.** c **4.** d **5.** b **6.** a **7.** d **8.** b **9.** c **10.** b