



A Look Back

Chapter 1 introduced managerial accounting and explained basic cost concepts. We also described the lean business model and the reporting of manufacturing activities, including the manufacturing statement.



A Look at This Chapter

We begin this chapter by describing a cost accounting system. We then explain the procedures used to determine costs using a job order costing system. We conclude with a discussion of over- and underapplied overhead.



A Look Ahead

Chapter 3 focuses on measuring costs in process production companies. We explain process production, describe how to assign costs to processes, and compute and analyze cost per equivalent unit.

2

Chapter

Job Order Costing and Analysis

Learning Objectives

CAP

Conceptual

- C1** Explain the cost accounting system. (p. 48)
- C2** Describe important features of job order production. (p. 48)
- C3** Explain job cost sheets and how they are used in job order cost accounting. (p. 50)

Analytical

- A1** Apply job order costing in pricing services. (p. 60)

Procedural

- P1** Describe and record the flow of materials costs in job order cost accounting. (p. 51)
- P2** Describe and record the flow of labor costs in job order cost accounting. (p. 53)
- P3** Describe and record the flow of overhead costs in job order cost accounting. (p. 54)
- P4** Determine adjustments for overapplied and underapplied factory overhead. (p. 59)



LP2



Decision Feature

Working the Field



PHILADELPHIA, PA—One size fits all? Not when it comes to synthetic turf for athletic fields—this according to Hank Julicher, founder of **Sprinturf** (Sprinturf.com). “Not all fields are exactly alike, because no two owners have the same exact needs,” insists Hank. “Many variables must be considered, including playing requirements, climate, and financial considerations.” Designing, installing, and servicing synthetic turf systems are Sprinturf’s mission.

“There is much more to a playing field than just the surface,” explains Hank. “Many would argue that the base is the most important—it needs the strength to support athletes and vehicles, while still being able to drain over 20” of rainfall per hour.” For this, Sprinturf relies on its all-rubber infill system for its installations. Still, understanding customer needs is key. In extremely hot, arid climates, Sprinturf uses light-colored rubber infill to reduce the temperature of playing surfaces. In cold areas, Sprinturf offers solutions to reduce snow and ice buildup. Hank has put in fields from Utah State University to University of Montana to Long Beach City College. While a touchdown is worth 6 points on every Sprinturf field, each field is otherwise unique.

“Being successful is having a vision which you are excited to follow without the fear of failure”
—Hank Julicher

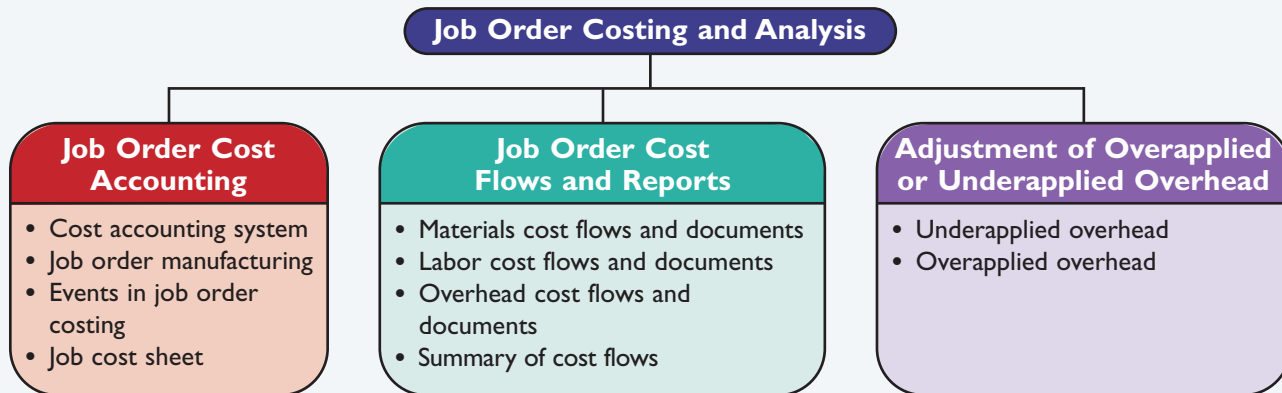
Manufacturers of custom products, such as that from Sprinturf, use state-of-the-art job order cost accounting to track costs. This includes tracking the cost of materials, labor and overhead, and managing those expenses. To help control costs and ensure product quality, Sprinturf does not outsource any part of the design or installation process. Controlling all aspects of the process enables it to better isolate costs and avoid the run-away costs often experienced by startups that fail to use costing techniques. Recruiting top-notch personnel and experienced supervisors also helps control labor costs. Reflecting the unique nature of each field, each installation is videotaped to ensure it is done exactly according to customer specifications.

Hank Julicher stresses cost control as vital to Sprinturf’s success. “To take on two 800 pound gorillas in our industry, we had to be more creative, efficient, and cost-effective to win,” explains Hank. “We just hung in there until the public recognized our quality and value.” This winning formula has led to product growth that any team would envy.

[Sources: *Sprinturf Website*, January 2009; *Entrepreneur*, 2007; *PanStadia*, February and November 2005]

This chapter introduces a system for assigning costs to the flow of goods through a production process. We then describe the details of a *job order cost accounting system*. Job order costing is frequently used by manufacturers of custom

products or providers of custom services. Manufacturers that use job order costing typically base it on a perpetual inventory system, which provides a continuous record of materials, goods in process, and finished goods inventories.



Job Order Cost Accounting

This section describes a cost accounting system and job order production and costing.

Cost Accounting System

C1 Explain the cost accounting system.

Point: Cost accounting systems accumulate costs and then assign them to products and services.

An ever-increasing number of companies use a cost accounting system to generate timely and accurate inventory information. A **cost accounting system** records manufacturing activities using a *perpetual* inventory system, which continuously updates records for costs of materials, goods in process, and finished goods inventories. A cost accounting system also provides timely information about inventories and manufacturing costs per unit of product. This is especially helpful for managers' efforts to control costs and determine selling prices. (A **general accounting system** records manufacturing activities using a *periodic* inventory system. Some companies still use a general accounting system, but its use is declining as competitive forces and customer demands have increased pressures on companies to better manage inventories.)

The two basic types of cost accounting systems are *job order cost accounting* and *process cost accounting*. We describe job order cost accounting in this chapter. Process cost accounting is explained in the next chapter.

Job Order Production

C2 Describe important features of job order production.

Many companies produce products individually designed to meet the needs of a specific customer. Each customized product is manufactured separately and its production is called **job order production**, or *job order manufacturing* (also called *customized production*, which is the production of products in response to special orders). Examples of such products include synthetic football fields, special-order machines, a factory building, custom jewelry, wedding invitations, and artwork.

The production activities for a customized product represent a **job**. The principle of customization is equally applicable to both manufacturing *and* service companies. Most service companies meet customers' needs by performing a custom service for a specific customer. Examples of such services include an accountant auditing a client's financial statements, an interior designer remodeling an office, a wedding consultant planning and supervising a reception, and a lawyer defending a client. Whether the setting is manufacturing or services, job order operations involve meeting the needs of customers by producing or performing custom jobs.

Boeing's aerospace division is one example of a job order production system. Its primary business is twofold: (1) design, develop, and integrate space carriers and (2) provide systems



engineering and integration of Department of Defense (DoD) systems. Many of its orders are customized and produced through job order operations.

When a job involves producing more than one unit of a custom product, it is often called a **job lot**. Products produced as job lots could include benches for a church, imprinted T-shirts for a 10K race or company picnic, or advertising signs for a chain of stores. Although these orders involve more than one unit, the volume of production is typically low, such as 50 benches, 200 T-shirts, or 100 signs. Another feature of job order production is the diversity, often called *heterogeneity*, of the products produced. Namely, each customer order is likely to differ from another in some important respect. These variations can be minor or major.

Point: Many professional examinations including the CPA and CMA exams require knowledge of job order and process cost accounting.

Decision Insight

Custom Design Managers once saw companies as the center of a solar system orbited by suppliers and customers. Now the customer has become the center of the business universe. **Nike** allows custom orders over the Internet, enabling customers to select materials, colors, and to personalize their shoes with letters and numbers. Soon consumers may be able to personalize almost any product, from cellular phones to appliances to furniture.

Events in Job Order Costing

The initial event in a normal job order operation is the receipt of a customer order for a custom product. This causes the company to begin work on a job. A less common case occurs when management decides to begin work on a job before it has a signed contract. This is referred to as *jobs produced on speculation*.

The first step in both cases is to predict the cost to complete the job. This cost depends on the product design prepared by either the customer or the producer. The second step is to negotiate a sales price and decide whether to pursue the job. Other than for government or other cost-plus contracts, the selling price is determined by market factors. Producers evaluate the market price, compare it to cost, and determine whether the profit on the job is reasonable. If the profit is not reasonable, the producer would determine a desired **target cost**. The third step is for the producer to schedule production of the job to meet the customer's needs and to fit within its own production constraints. Preparation of this work schedule should consider workplace facilities including equipment, personnel, and supplies. Once this schedule is complete, the producer can place orders for raw materials. Production occurs as materials and labor are applied to the job.

An overview of job order production activity is shown in Exhibit 2.1. This exhibit shows the March production activity of Road Warriors, which manufactures security-equipped cars and trucks. The company converts any vehicle by giving it a diversity of security items such as alarms, reinforced exterior, bulletproof glass, and bomb detectors. The company began by catering to high-profile celebrities, but it now caters to anyone who desires added security in a vehicle.

Job order production for Road Warriors requires materials, labor, and overhead costs. Recall that direct materials are goods used in manufacturing that are clearly identified with a particular job. Similarly, direct labor is effort devoted to a particular job. Overhead costs support production of more than one job. Common overhead items are depreciation on factory buildings and equipment, factory supplies, supervision, maintenance, cleaning, and utilities.

Exhibit 2.1 shows that materials, labor, and overhead are added to Jobs B15, B16, B17, B18, and B19, which were started during March. Road Warriors completed Jobs B15, B16, and B17 in March and delivered Jobs B15 and B16 to customers. At the end of March, Jobs B18 and B19 remain in goods in process inventory and Job B17 is in finished goods inventory. Both labor and materials costs are also separated into their direct and indirect components. Their indirect amounts are added to overhead. Total overhead cost is then allocated to the various jobs.



Video2.1

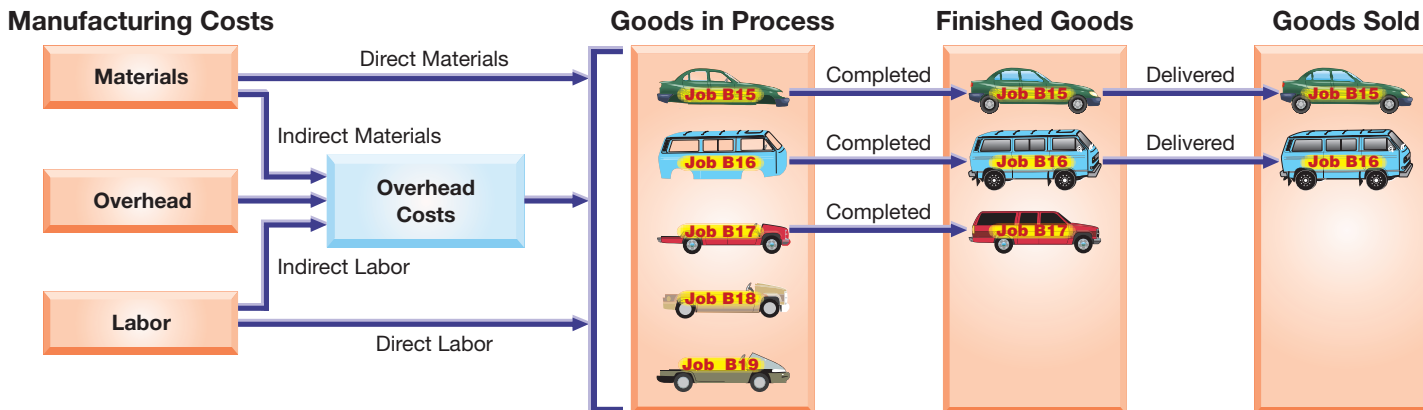
Point: Some jobs are priced on a cost-plus basis: The customer pays the manufacturer for costs incurred on the job plus a negotiated amount or rate of profit.

Decision Insight

Target Costing Many producers determine a target cost for their jobs. Target cost is determined as follows: Expected selling price – Desired profit = Target cost. If the projected target cost of the job as determined by job costing is too high, the producer can apply *value engineering*, which is a method of determining ways to reduce job cost until the target cost is met.

EXHIBIT 2.1

Job Order Production Activities

**Job Cost Sheet**

C3 Explain job cost sheets and how they are used in job order cost accounting.

General ledger accounts usually do not provide the accounting information that managers of job order cost operations need to plan and control production activities. This is so because the needed information often requires more detailed data. Such detailed data are usually stored in subsidiary records controlled by general ledger accounts. Subsidiary records store information about raw materials, overhead costs, jobs in process, finished goods, and other items. This section describes the use of these records.

A major aim of a **job order cost accounting system** is to determine the cost of producing each job or job lot. In the case of a job lot, the system also aims to compute the cost per unit. The accounting system must include separate records for each job to accomplish this, and it must capture information about costs incurred and charge these costs to each job.

A **job cost sheet** is a separate record maintained for each job. Exhibit 2.2 shows a job cost sheet for an alarm system that Road Warriors produced for a customer. This job cost sheet identifies the customer, the job number assigned, the product, and key dates. Costs incurred on the job are immediately recorded on this sheet. When each job is complete, the supervisor enters the date of completion, records any remarks, and signs the sheet. The job cost sheet in Exhibit 2.2 classifies costs as direct materials, direct labor, or overhead. It shows that a total of \$600 in direct materials is added to Job B15 on four different dates. It also shows seven entries for direct labor costs that total \$1,000. Road Warriors *allocates* (also termed *applies*, *assigns*, or *charges*) factory overhead costs of \$1,600 to this job using an allocation rate of 160% of direct labor cost ($160\% \times \$1,000$)—we discuss overhead allocation later in this chapter.

While a job is being produced, its accumulated costs are kept in **Goods in Process Inventory**. The collection of job cost sheets for all jobs in process makes up a subsidiary ledger controlled by the Goods in Process Inventory account in the general ledger. Managers use job cost sheets to monitor costs incurred to date and to predict and control costs for each job.

When a job is finished, its job cost sheet is completed and moved from the jobs in process file to the finished jobs file. This latter file acts as a subsidiary ledger controlled by the **Finished Goods Inventory** account. When a finished job is delivered to a customer, the job cost sheet is moved to a permanent file supporting the total cost of goods sold. This permanent file contains records from both current and prior periods.

Point: Factory overhead consists of costs (other than direct materials and direct labor) that ensure the production activities are carried out.

Point: Documents (electronic and paper) are crucial in a job order system, and the job cost sheet is a cornerstone. Understanding it aids in grasping concepts of capitalizing product costs and product cost flow.

**Decision Maker**

Management Consultant One of your tasks is to control and manage costs for a consulting company. At the end of a recent month, you find that three consulting jobs were completed and two are 60% complete. Each unfinished job is estimated to cost \$10,000 and to earn a revenue of \$12,000. You are unsure how to recognize goods in process inventory and record costs and revenues. Do you recognize any inventory? If so, how much? How much revenue is recorded for unfinished jobs this month? [Answer—p. 64]

EXHIBIT 2.2

Job Cost Sheet

Accounting System: Exhibit 2								
Road Warriors, Los Angeles, California								
Customer's Name			Job No.					
Carroll Connor			B15					
Address			City & State					
1542 High Point Dr.			Portland, Oregon					
Job Description								
Level 1 Alarm System on Ford Expedition								
Date promised			Date started			Date completed		
March 15			March 3			March 11		
Direct Materials			Direct Labor			Overhead		
Date	Requisition	Cost	Date	Time Ticket	Cost	Date	Rate	Cost
3/3/2009	R-4698	100.00	3/3/2009	L-3393	120.00	3/11/2009	160% of Direct Labor Cost	1,600.00
3/7/2009	R-4705	225.00	3/4/2009	L-3422	150.00			
3/9/2009	R-4725	180.00	3/5/2009	L-3456	180.00			
3/10/2009	R-4777	95.00	3/8/2009	L-3479	60.00			
			3/9/2009	L-3501	90.00			
			3/10/2009	L-3535	240.00			
			3/11/2009	L-3559	160.00			
Total		600.00	Total		1,000.00	Total		1,600.00
REMARKS: Completed job on March 11, and shipped to customer on March 15. Met all specifications and requirements.						SUMMARY:		
						Materials 600.00		
						Labor 1,000.00		
						Overhead 1,600.00		
Signed: C. Luther, Supervisor						Total cost 3,200.00		

Quick Check

Answers—p. 65

- Which of these products is likely to involve job order production? (a) inexpensive watches, (b) racing bikes, (c) bottled soft drinks, or (d) athletic socks.
- What is the difference between a job and a job lot?
- Which of these statements is correct? (a) The collection of job cost sheets for unfinished jobs makes up a subsidiary ledger controlled by the Goods in Process Inventory account, (b) Job cost sheets are financial statements provided to investors, or (c) A separate job cost sheet is maintained in the general ledger for each job in process.
- What three costs are normally accumulated on job cost sheets?

Job Order Cost Flows and Reports

Materials Cost Flows and Documents

This section focuses on the flow of materials costs and the related documents in a job order cost accounting system. We begin analysis of the flow of materials costs by examining Exhibit 2.3. When materials are first received from suppliers, the employees count and inspect them and record the items' quantity and cost on a receiving report. The receiving report serves as the *source document* for recording materials received in both a materials ledger card and in the general ledger. In nearly all job order cost systems, **materials ledger cards** (or files) are perpetual records that are updated each time units are purchased and each time units are issued for use in production.



Materials

P1 Describe and record the flow of materials costs in job order cost accounting.

Point: Some companies certify certain suppliers based on the quality of their materials. Goods received from these suppliers are not always inspected by the purchaser to save costs.

To illustrate the purchase of materials, Road Warriors acquired \$450 of wiring and related materials on March 4, 2009. This purchase is recorded as follows.

Mar. 4	Raw Materials Inventory—M-347	450	
	Accounts Payable		450
	To record purchase of materials for production.		

Assets = Liabilities + Equity
 +450 +450

EXHIBIT 2.3

Materials Cost Flows through Subsidiary Records

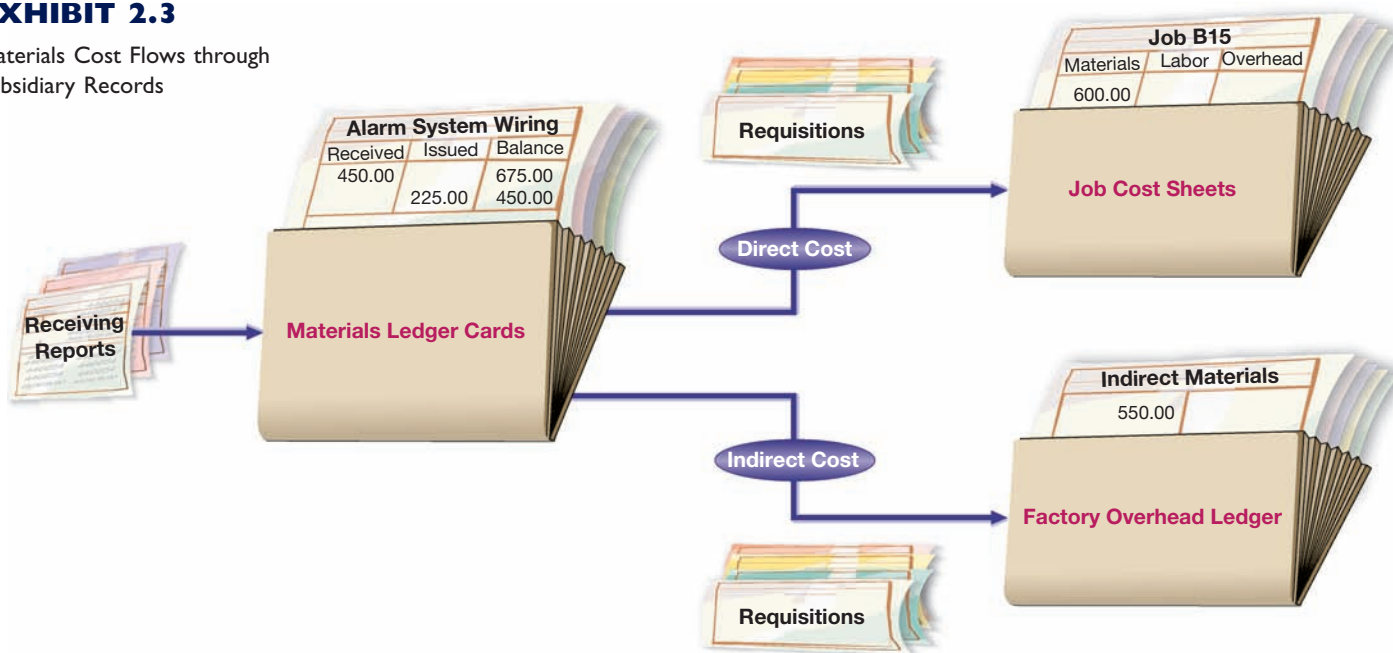


Exhibit 2.3 shows that materials can be requisitioned for use either on a specific job (direct materials) or as overhead (indirect materials). Cost of direct materials flows from the materials ledger card to the job cost sheet. The cost of indirect materials flows from the materials ledger card to the Indirect Materials account in the factory overhead ledger, which is a subsidiary ledger controlled by the Factory Overhead account in the general ledger.



Video2.1

Exhibit 2.4 shows a materials ledger card for material received and issued by Road Warriors. The card identifies the item as alarm system wiring and shows the item’s stock number, its location in the storeroom, information about the maximum and minimum quantities that should be available, and the reorder quantity. For example, alarm system wiring is issued and recorded on March 7, 2009. The job cost sheet in Exhibit 2.2 showed that Job B15 used this wiring.

EXHIBIT 2.4

Materials Ledger Card

MATERIALS LEDGER CARD											
Item Alarm system wiring				Stock No. M-347		Location in Storeroom Bin 137					
Maximum quantity 5 units				Minimum quantity 1 unit		Quantity to reorder 2 units					
Date	Received				Issued				Balance		
	Receiving Report Number	Units	Unit Price	Total Price	Requisition Number	Units	Unit Price	Total Price	Units	Unit Price	Total Price
3/ 4/2009	C-7117	2	225.00	450.00					1	225.00	225.00
3/ 7/2009					R-4705	1	225.00	225.00	3	225.00	675.00
									2	225.00	450.00

When materials are needed in production, a production manager prepares a **materials requisition** and sends it to the materials manager. The requisition shows the job number, the type of material, the quantity needed, and the signature of the manager authorized to make the requisition. Exhibit 2.5 shows the materials requisition for alarm system wiring for Job B15. To see how this requisition ties to the flow of costs, compare the information on the requisition with the March 7, 2009, data in Exhibits 2.2 and 2.4.

Point: Requisitions are often accumulated and recorded in one entry. The frequency of entries depends on the job, the industry, and management procedures.

MATERIALS REQUISITION		No. R-4705
Road Warriors Los Angeles, California		
Job No. <u> B15 </u>	Date <u> 3/7/2009 </u>	
Material Stock No. <u> M-347 </u>	Material Description <u> Alarm system wiring </u>	
Quantity Requested <u> 1 </u>	Requested By <u> C. Luther </u>	
Quantity Provided <u> 1 </u>	Date Provided <u> 3/7/2009 </u>	
Filled By <u> M. Bateman </u>	Material Received By <u> C. Luther </u>	
Remarks _____		

EXHIBIT 2.5
Materials Requisition

The use of alarm system wiring on Job B15 yields the following entry (locate this cost item in the job cost sheet shown in Exhibit 2.2).

Mar. 7	Goods in Process Inventory—Job B15	225	
	Raw Materials Inventory—M-347		225
	<i>To record use of material on Job B15.</i>		

Assets = Liabilities + Equity
 +225
 -225

This entry is posted both to its general ledger accounts and to subsidiary records. Posting to subsidiary records includes a debit to a job cost sheet and a credit to a materials ledger card. (Note: An entry to record use of indirect materials is the same as that for direct materials *except* the debit is to Factory Overhead. In the subsidiary factory overhead ledger, this entry is posted to Indirect Materials.)

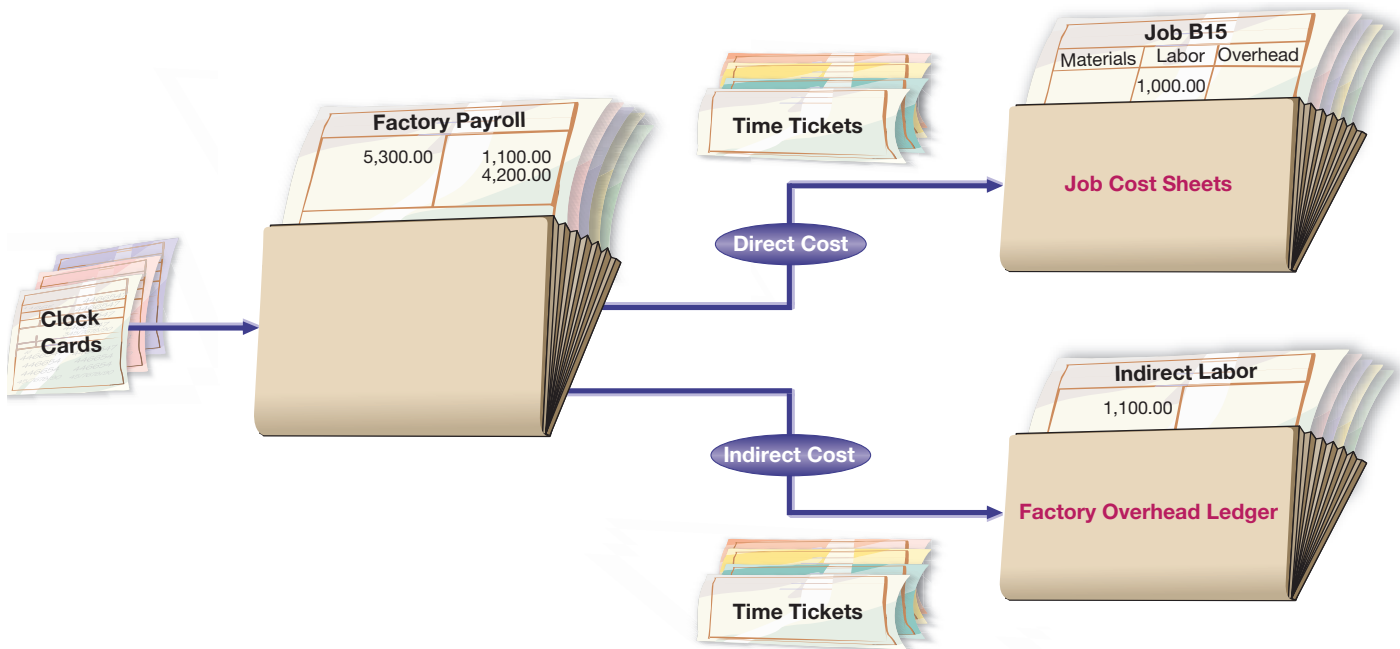
Labor Cost Flows and Documents

Exhibit 2.6 shows the flow of labor costs from clock cards and the Factory Payroll account to subsidiary records of the job order cost accounting system. Recall that costs in subsidiary records give detailed information needed to manage and control operations.



P2 Describe and record the flow of labor costs in job order cost accounting.

EXHIBIT 2.6
Labor Cost Flows through Subsidiary Records



Point: Indirect materials are included in overhead on the job cost sheet. Assigning overhead costs to products is described in the next section.

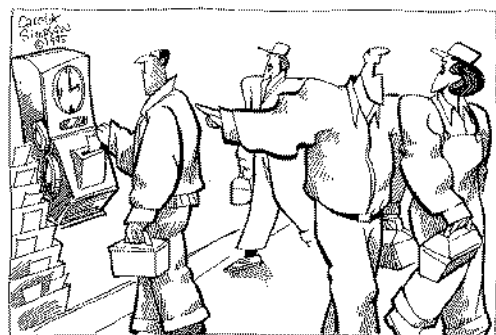
Point: Many employee fraud schemes involve payroll, including overstated hours on clock cards.

The flow of costs in Exhibit 2.6 begins with **clock cards**. Employees commonly use these cards to record the number of hours worked, and they serve as source documents for entries to record labor costs. Clock card data on the number of hours worked is used at the end of each pay period to determine total labor cost. This amount is then debited to the Factory Payroll account, a temporary account containing the total payroll cost (both direct and indirect). Payroll cost is later allocated to both specific jobs and overhead.

According to clock card data, workers earned \$1,500 for the week ended March 5. Illustrating the flow of labor costs, the accrual and payment of these wages are recorded as follows.

Assets = Liabilities + Equity
 -1,500 -1,500

Mar. 6	Factory payroll	1,500	
	Cash		1,500
	<i>To record the weekly payroll.</i>		



To assign labor costs to specific jobs and to overhead, we must know how each employee's time is used and its costs. Source documents called **time tickets** usually capture these data. Employees regularly fill out time tickets to report how much time they spent on each job. An employee who works on several jobs during a day completes a separate time ticket for each job. Tickets are also prepared for time charged to overhead as indirect labor. A supervisor signs an employee's time ticket to confirm its accuracy.

Exhibit 2.7 shows a time ticket reporting the time a Road Warrior employee spent working on Job B15. The employee's supervisor signed the ticket to confirm its accuracy. The hourly rate and total labor cost are computed after the time ticket is turned in. To see the effect of this time ticket on the job cost sheet, look at the entry dated March 8, 2009, in Exhibit 2.2.

EXHIBIT 2.7

Time Ticket

Road Warriors
Los Angeles, California

No. L-3479

Date March 8, 2009

TIME TICKET

Employee Name	Employee Number	Job No.
T. Zeller	3969	B15

TIME AND RATE INFORMATION:

Start Time	Finish Time	Elapsed Time	Hourly Rate
9:00	12:00	3.0	\$20.00

Approved By <u>C. Luther</u>	Total Cost	\$60.00
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Remarks

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Point: In the accounting equation, we treat accounts such as Factory Overhead and Factory Payroll as temporary accounts, which hold various expenses until they are allocated to balance sheet or income statement accounts.

Assets = Liabilities + Equity
 +60 +60

When time tickets report labor used on a specific job, this cost is recorded as direct labor. The following entry records the data from the time ticket in Exhibit 2.7.

Mar. 8	Goods in Process Inventory—Job B15	60	
	Factory Payroll		60
	<i>To record direct labor used on Job B15.</i>		

The debit in this entry is posted both to the general ledger account and to the appropriate job cost sheet. (*Note:* An entry to record indirect labor is the same as for direct labor *except* that it debits Factory Overhead and credits Factory Payroll. In the subsidiary factory overhead ledger, the debit in this entry is posted to the Indirect Labor account.)

P3 Describe and record the flow of overhead costs in job order cost accounting.

Overhead Cost Flows and Documents

Factory overhead (or simply overhead) cost flows are shown in Exhibit 2.8. Factory overhead includes all production costs other than direct materials and direct labor. Two sources of

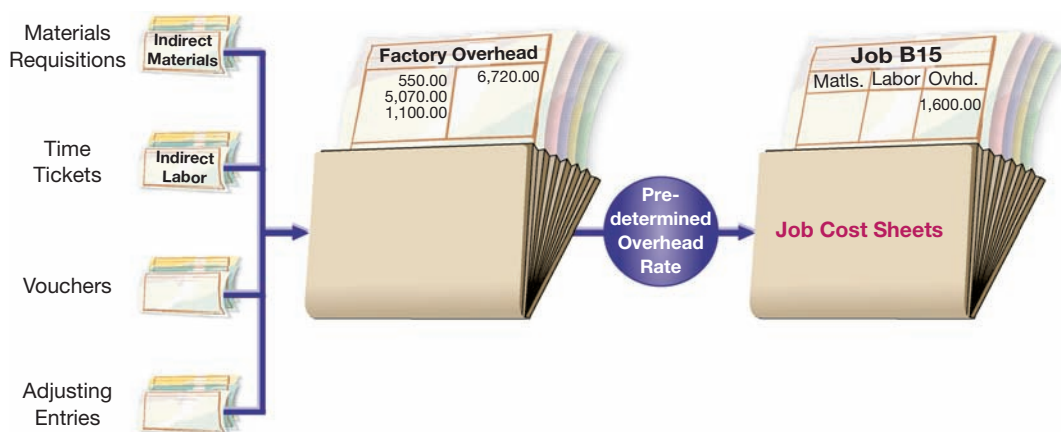


EXHIBIT 2.8

Overhead Cost Flows through Subsidiary Records

overhead costs are indirect materials and indirect labor. These costs are recorded from requisitions for indirect materials and time tickets for indirect labor. Two other sources of overhead are (1) vouchers authorizing payments for items such as supplies or utilities and (2) adjusting entries for costs such as depreciation on factory assets.



Overhead

Factory overhead usually includes many different costs and, thus, a separate account for each is often maintained in a subsidiary factory overhead ledger. This ledger is controlled by the Factory Overhead account in the general ledger. Factory Overhead is a temporary account that accumulates costs until they are allocated to jobs.

Recall that overhead costs are recorded with debits to the Factory Overhead account and with credits to other accounts such as Cash, Accounts Payable, and Accumulated Depreciation—Equipment. In the subsidiary factory overhead ledger, the debits are posted to their respective accounts such as Depreciation Expense—Equipment, Insurance Expense—Warehouse, or Amortization Expense—Patents.

To illustrate the recording of overhead, the following two entries reflect the depreciation of factory equipment and the accrual of utilities, respectively, for the week ended March 6.

Mar. 6	Factory Overhead	600	
	Accumulated Depreciation—Equipment		600
	<i>To record depreciation on factory equipment.</i>		
Mar. 6	Factory Overhead	250	
	Utilities Payable		250
	<i>To record the accrual of factory utilities.</i>		

$$\begin{array}{r} \text{Assets} = \text{Liabilities} + \text{Equity} \\ -600 \qquad \qquad -600 \end{array}$$

$$\begin{array}{r} \text{Assets} = \text{Liabilities} + \text{Equity} \\ \qquad \qquad +250 \qquad -250 \end{array}$$

Exhibit 2.8 shows that overhead costs flow from the Factory Overhead account to job cost sheets. Because overhead is made up of costs not directly associated with specific jobs or job lots, we cannot determine the dollar amount incurred on a specific job. We know, however, that overhead costs represent a necessary part of business activities. If a job cost is to include all costs needed to complete the job, some amount of overhead must be included. Given the difficulty in determining the overhead amount for a specific job, however, we allocate overhead to individual jobs in some reasonable manner.

We generally allocate overhead by linking it to another factor used in production, such as direct labor or machine hours. The factor to which overhead costs are linked is known as the *allocation base*. A manager must think carefully about how many and which allocation bases to use. This managerial decision influences the accuracy with which overhead costs are allocated to individual jobs. In turn, the cost of individual jobs might impact a manager’s decisions for pricing or performance evaluation. In Exhibit 2.2, overhead is expressed as 160% of direct labor. We then allocate overhead by multiplying 160% by the estimated amount of direct labor on the jobs.

We cannot wait until the end of a period to allocate overhead to jobs because perpetual inventory records are part of the job order costing system (demanding up-to-date costs). Instead, we



Point: The predetermined overhead rate is computed at the start of the period and is used throughout the period to allocate overhead to jobs.

Point: Predetermined overhead rates can be estimated using mathematical equations, statistical analysis, or professional experience.

must predict overhead in advance and assign it to jobs so that a job’s total costs can be estimated prior to its completion. This estimated cost is useful for managers in many decisions including setting prices and identifying costs that are out of control. Being able to estimate overhead in advance requires a **predetermined overhead rate**, also called *predetermined overhead allocation (or application) rate*. This rate requires an estimate of total overhead cost and an allocation factor such as total direct labor cost before the start of the period. Exhibit 2.9 shows the usual formula for computing a predetermined overhead rate (estimates are commonly based on annual amounts). This rate is used during the period to allocate overhead to jobs. It is common for companies to use multiple activity (allocation) bases and multiple predetermined overhead rates for different types of products and services.

EXHIBIT 2.9

Predetermined Overhead Allocation Rate Formula

$$\text{Predetermined overhead rate} = \frac{\text{Estimated overhead costs}}{\text{Estimated activity base}}$$

Example: If management predicts total direct labor costs of \$100,000 and total overhead costs of \$200,000, what is its predetermined overhead rate?
Answer: 200% of direct labor cost.

To illustrate, Road Warriors allocates overhead by linking it to direct labor. At the start of the current period, management predicts total direct labor costs of \$125,000 and total overhead costs of \$200,000. Using these estimates, management computes its predetermined overhead rate as 160% of direct labor cost (\$200,000 ÷ \$125,000). Specifically, reviewing the job order cost sheet in Exhibit 2.2, we see that \$1,000 of direct labor went into Job B15. We then use the predetermined overhead rate of 160% to allocate \$1,600 (equal to \$1,000 × 1.60) of overhead to this job. The entry to record this allocation is

$$\begin{array}{l} \text{Assets} = \text{Liabilities} + \text{Equity} \\ +1,600 \qquad \qquad \qquad +1,600 \end{array}$$

Mar. 11	Goods in Process Inventory—Job B15.	1,600	
	Factory Overhead.		1,600
	To assign overhead to Job B15.		

Since the allocation rate for overhead is estimated at the start of a period, the total amount assigned to jobs during a period rarely equals the amount actually incurred. We explain how this difference is treated later in this chapter.



Decision Ethics

Web Consultant You are working on seven client engagements. Two clients reimburse your firm for actual costs plus a 10% markup. The other five pay a fixed fee for services. Your firm’s costs include overhead allocated at \$47 per labor hour. The managing partner of your firm instructs you to record as many labor hours as possible to the two markup engagements by transferring labor hours from the other five. What do you do? [Answer—p. 64]

Summary of Cost Flows

We showed journal entries for charging Goods in Process Inventory (Job B15) with the cost of (1) direct materials requisitions, (2) direct labor time tickets, and (3) factory overhead. We made separate entries for each of these costs, but they are usually recorded in one entry. Specifically, materials requisitions are often collected for a day or a week and recorded with a single entry summarizing them. The same is done with labor time tickets. When summary entries are made, supporting schedules of the jobs charged and the types of materials used provide the basis for postings to subsidiary records.

To show all production cost flows for a period and their related entries, we again look at Road Warriors’ activities. Exhibit 2.10 shows costs linked to all of Road Warriors’ production activities for March. Road Warriors did not have any jobs in process at the beginning of March, but it did apply materials, labor, and overhead costs to five new jobs in March. Jobs B15 and B16 are completed and delivered to customers in March, Job B17 is completed but not delivered, and Jobs B18 and B19 are still in process. Exhibit 2.10 also shows purchases of raw materials for \$2,750, labor costs incurred for \$5,300, and overhead costs of \$6,720.

The upper part of Exhibit 2.11 shows the flow of these costs through general ledger accounts and the end-of-month balances in key subsidiary records. Arrow lines are numbered

Point: Study the flow of manufacturing costs through general ledger accounts and job cost sheets. Use Exhibit 2.11 as reinforcement.

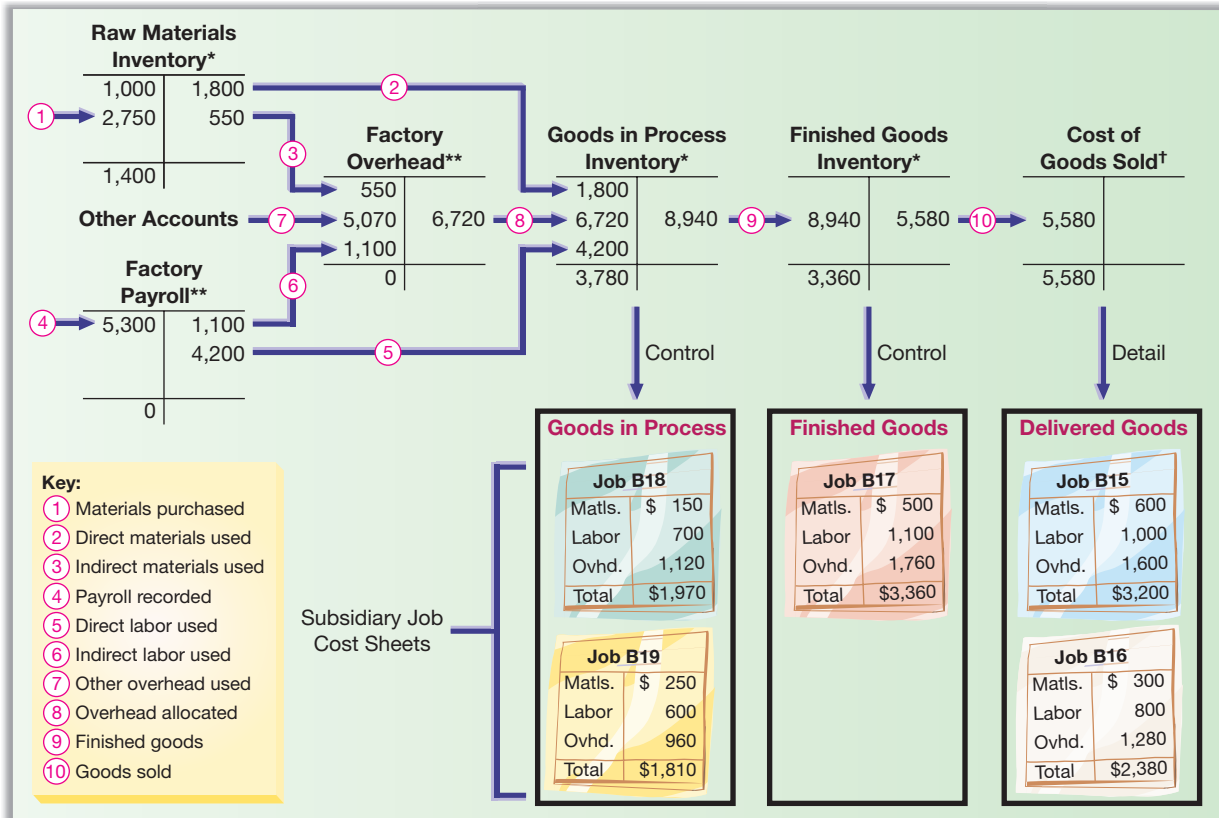
EXHIBIT 2.10

Job Order Costs of All Production Activities

ROAD WARRIORS							
Job Order Manufacturing Costs							
For Month Ended March 31, 2009							
Explanation	Materials	Labor	Overhead		Goods in Process	Finished Goods	Cost of Goods Sold
			Incurred	Allocated			
Job B15	\$ 600	\$1,000		\$1,600			\$3,200
Job B16	300	800		1,280			2,380
Job B17	500	1,100		1,760		\$3,360	
Job B18	150	700		1,120	\$1,970		
Job B19	250	600		960	1,810		
Total job costs	1,800	4,200		\$6,720	\$3,780	\$3,360	\$5,580
Indirect materials	550		\$ 550				
Indirect labor		1,100	1,100				
Other overhead			5,070				
Total costs used in production	2,350	\$5,300	\$6,720				
Ending materials inventory	1,400						
Materials available	3,750						
Less beginning materials inventory	(1,000)						
Materials purchased	\$2,750						

EXHIBIT 2.11

Job Order Cost Flows and Ending Job Cost Sheets



* The ending balances in the inventory accounts are carried to the balance sheet.

† The Cost of Goods Sold balance is carried to the income statement.

** Factory Payroll and Factory Overhead are considered temporary accounts; when these costs are allocated to jobs, the balances in these accounts are reduced.

to show the flows of costs for March. Each numbered cost flow reflects several entries made in March. The lower part of Exhibit 2.11 shows summarized job cost sheets and their status at the end of March. The sum of costs assigned to the jobs in process (\$1,970 + \$1,810) equals the \$3,780 balance in Goods in Process Inventory shown in Exhibit 2.10. Also, costs assigned to Job B17 equal the \$3,360 balance in Finished Goods Inventory. The sum of costs assigned to Jobs B15 and B16 (\$3,200 + \$2,380) equals the \$5,580 balance in Cost of Goods Sold.

Exhibit 2.12 shows each cost flow with a single entry summarizing the actual individual entries made in March. Each entry is numbered to link with the arrow lines in Exhibit 2.11.

EXHIBIT 2.12

Entries for Job Order Production Costs*

①	Raw Materials Inventory	2,750	
	Accounts Payable		2,750
	<i>Acquired materials on credit for factory use.</i>		
②	Goods in Process Inventory	1,800	
	Raw Materials Inventory		1,800
	<i>To assign costs of direct materials used.</i>		
③	Factory Overhead	550	
	Raw Materials Inventory		550
	<i>To record use of indirect materials.</i>		
④	Factory Payroll	5,300	
	Cash (and other accounts)		5,300
	<i>To record salaries and wages of factory workers (including various payroll liabilities).</i>		
⑤	Goods in Process Inventory	4,200	
	Factory Payroll		4,200
	<i>To assign costs of direct labor used.</i>		
⑥	Factory Overhead	1,100	
	Factory Payroll		1,100
	<i>To record indirect labor costs as overhead.</i>		
⑦	Factory Overhead	5,070	
	Cash (and other accounts)		5,070
	<i>To record factory overhead costs such as insurance, utilities, rent, and depreciation.</i>		
⑧	Goods in Process Inventory	6,720	
	Factory Overhead		6,720
	<i>To apply overhead at 160% of direct labor.</i>		
⑨	Finished Goods Inventory	8,940	
	Goods in Process Inventory		8,940
	<i>To record completion of Jobs B15, B16, and B17.</i>		
⑩	Cost of Goods Sold	5,580	
	Finished Goods Inventory		5,580
	<i>To record sale of Jobs B15 and B16.</i>		

Point: Actual overhead is debited to Factory Overhead. Allocated overhead is credited to Factory Overhead.

* Transactions are numbered to be consistent with arrow lines in Exhibit 2.11.



Decision Maker

Entrepreneur Competitors' prices on one of your product segments are lower than yours. Of the total product cost used in setting your prices, 53% is overhead allocated using direct labor hours. You believe that product costs are distorted and wonder whether there is a better way to allocate overhead and to set product price. What do you suggest? [Answer—p. 65]

Quick Check

Answers—p. 65

5. In job order cost accounting, which account is debited in recording a raw materials requisition?
(a) Raw Materials Inventory, (b) Raw Materials Purchases, (c) Goods in Process Inventory if for a job, or (d) Goods in Process Inventory if they are indirect materials.
6. What are four sources of information for recording costs in the Factory Overhead account?
7. Why does job order cost accounting require a predetermined overhead rate?
8. What events result in a debit to Factory Payroll? What events result in a credit?

Adjustment of Overapplied or Underapplied Overhead

Refer to the debits in the Factory Overhead account in Exhibit 2.11 (or Exhibit 2.12). The total cost of factory overhead incurred during March is \$6,720 (\$550 + \$5,070 + \$1,100). The \$6,720 exactly equals the amount assigned to goods in process inventory (see arrow line ⑧). Therefore, the overhead incurred equals the overhead applied in March. The amount of overhead incurred rarely equals the amount of overhead applied, however, because a job order cost accounting system uses a predetermined overhead rate in applying factory overhead costs to jobs. This rate is determined using estimated amounts before the period begins, and estimates rarely equal the exact amounts actually incurred. This section explains what we do when too much or too little overhead is applied to jobs.



Video2.1

Underapplied Overhead

When less overhead is applied than is actually incurred, the remaining debit balance in the Factory Overhead account at the end of the period is called **underapplied overhead**. To illustrate, assume that Road Warriors actually incurred *other overhead costs* of \$5,550 instead of the \$5,070 shown in Exhibit 2.11. This yields an actual total overhead cost of \$7,200 in March. Since the amount of overhead applied was only \$6,720, the Factory Overhead account is left with a \$480 debit balance as shown in the ledger account in Exhibit 2.13.

P4 Determine adjustments for overapplied and underapplied factory overhead.

Factory Overhead		Acct. No. 540		
Date	Explanation	Debit	Credit	Balance
Mar. 31	Indirect materials cost	550		550 Dr.
31	Indirect labor cost	1,100		1,650 Dr.
31	Other overhead cost	5,550		7,200 Dr.
31	Overhead costs applied to jobs		6,720	480 Dr.

EXHIBIT 2.13

Underapplied Overhead in the Factory Overhead Ledger Account

The \$480 debit balance reflects manufacturing costs not assigned to jobs. This means that the balances in Goods in Process Inventory, Finished Goods Inventory, and Cost of Goods Sold do not include all production costs incurred. When the underapplied overhead amount is immaterial, it is allocated (closed) to the Cost of Goods Sold account with the following adjusting entry.

Example: If we do not adjust for underapplied overhead, will net income be overstated or understated? *Answer:* Overstated.

Mar. 31	Cost of Goods Sold	480	
	Factory Overhead		480
	<i>To adjust for underapplied overhead costs.</i>		

Assets = Liabilities + Equity
 -480
 +480

The \$480 debit (increase) to Cost of Goods Sold reduces income by \$480. (When the underapplied (or overapplied) overhead is material, the amount is normally allocated to the Cost of Goods Sold, Finished Goods Inventory, and Goods in Process Inventory accounts. This process is covered in advanced courses.)

Overapplied Overhead

When the overhead applied in a period exceeds the overhead incurred, the resulting credit balance in the Factory Overhead account is called **overapplied overhead**. We treat overapplied overhead at the end of the period in the same way we treat underapplied overhead, except that we debit Factory Overhead and credit Cost of Good Sold for the amount.

Decision Insight

Job Order Education Many companies invest in their employees, and the demand for executive education is strong. Annual spending on training and education exceeds \$20 billion. Annual revenues for providers of executive education continue to rise, with about 40% of revenues coming from custom programs designed for one or a select group of companies.



Quick Check

Answers—p. 65

9. In a job order cost accounting system, why does the Factory Overhead account usually have an overapplied or underapplied balance at period-end?
10. When the Factory Overhead account has a debit balance at period-end, does this reflect overapplied or underapplied overhead?

Decision Analysis

Pricing for Services

A1 Apply job order costing in pricing services.

The chapter described job order costing mainly using a manufacturing setting. However, these concepts and procedures are applicable to a service setting. Consider AdWorld, an advertising agency that develops Web-based ads for small firms. Each of its customers has unique requirements, so costs for each individual job must be tracked separately.

AdWorld uses two types of labor: Web designers (\$65 per hour) and computer staff (\$50 per hour). It also incurs overhead costs that it assigns using two different predetermined overhead allocation rates: \$125 per designer hour and \$96 per staff hour. For each job, AdWorld must estimate the number of designer and staff hours needed. Then total costs pertaining to each job are determined using the procedures in the chapter. (*Note:* Most service firms have neither the category of materials cost nor inventory.)

To illustrate, a manufacturer of golf balls requested a quote from AdWorld for an advertising engagement. AdWorld estimates that the job will require 43 designer hours and 61 staff hours, with the following total estimated cost for this job.

Direct Labor	
Designers (43 hours × \$65)	\$ 2,795
Staff (61 hours × \$50)	<u>3,050</u>
Total direct labor	\$ 5,845
Overhead	
Designer related (43 hours × \$125)	5,375
Staff related (61 hours × \$96)	<u>5,856</u>
Total overhead	<u>11,231</u>
Total estimated job cost	<u>\$17,076</u>

AdWorld can use this cost information to help determine the price quote for the job (see *Decision Maker, Sales Manager*, scenario in this chapter).

Another source of information that AdWorld must consider is the market, that is, how much competitors will quote for this job. Competitor information is often unavailable; therefore, AdWorld’s managers must use estimates based on their assessment of the competitive environment.

Decision Maker



Sales Manager As AdWorld's sales manager, assume that you estimate costs pertaining to a proposed job as \$17,076. Your normal pricing policy is to apply a markup of 18% from total costs. However, you learn that three other agencies are likely to bid for the same job, and that their quotes will range from \$16,500 to \$22,000. What price should you quote? What factors other than cost must you consider? [Answer—p. 65]

Demonstration Problem—Job Order Costing

The following information reflects Walczak Company's job order production activities for May.

Raw materials purchases	\$16,000
Factory payroll cost	15,400
Overhead costs incurred	
Indirect materials	5,000
Indirect labor	3,500
Other factory overhead	9,500

Walczak's predetermined overhead rate is 150% of direct labor cost. Costs are allocated to the three jobs worked on during May as follows.

	Job 401	Job 402	Job 403
In-process balances on April 30			
Direct materials	\$3,600		
Direct labor	1,700		
Applied overhead	2,550		
Costs during May			
Direct materials	3,550	\$3,500	\$1,400
Direct labor	5,100	6,000	800
Applied overhead	?	?	?
Status on May 31	Finished (sold)	Finished (unsold)	In process

Required

- Determine the total cost of:
 - The April 30 inventory of jobs in process.
 - Materials used during May.
 - Labor used during May.
 - Factory overhead incurred and applied during May and the amount of any over- or underapplied overhead on May 31.
 - Each job as of May 31, the May 31 inventories of both goods in process and finished goods, and the goods sold during May.
- Prepare summarized journal entries for the month to record:
 - Materials purchases (on credit), the factory payroll (paid with cash), indirect materials, indirect labor, and the other factory overhead (paid with cash).
 - Assignment of direct materials, direct labor, and overhead costs to the Goods in Process Inventory account. (Use separate debit entries for each job.)
 - Transfer of each completed job to the Finished Goods Inventory account.
 - Cost of goods sold.
 - Removal of any underapplied or overapplied overhead from the Factory Overhead account. (Assume the amount is not material.)
- Prepare a manufacturing statement for May.

Planning the Solution

- Determine the cost of the April 30 goods in process inventory by totaling the materials, labor, and applied overhead costs for Job 401.

- Compute the cost of materials used and labor by totaling the amounts assigned to jobs and to overhead.
- Compute the total overhead incurred by summing the amounts for the three components. Compute the amount of applied overhead by multiplying the total direct labor cost by the predetermined overhead rate. Compute the underapplied or overapplied amount as the difference between the actual cost and the applied cost.
- Determine the total cost charged to each job by adding the costs incurred in April (if any) to the cost of materials, labor, and overhead applied during May.
- Group the costs of the jobs according to their completion status.
- Record the direct materials costs assigned to the three jobs, using a separate Goods in Process Inventory account for each job; do the same for the direct labor and the applied overhead.
- Transfer costs of Jobs 401 and 402 from Goods in Process Inventory to Finished Goods.
- Record the costs of Job 401 as cost of goods sold.
- Record the transfer of underapplied overhead from the Factory Overhead account to the Cost of Goods Sold account.
- On the manufacturing statement, remember to include the beginning and ending goods in process inventories and to deduct the underapplied overhead.

Solution to Demonstration Problem

I. Total cost of

a. April 30 inventory of jobs in process (Job 401).

Direct materials	\$3,600
Direct labor	1,700
Applied overhead	<u>2,550</u>
Total cost	<u>\$7,850</u>

b. Materials used during May.

Direct materials	
Job 401	\$ 3,550
Job 402	3,500
Job 403	<u>1,400</u>
Total direct materials	8,450
Indirect materials	<u>5,000</u>
Total materials used	<u>\$13,450</u>

c. Labor used during May.

Direct labor	
Job 401	\$ 5,100
Job 402	6,000
Job 403	<u>800</u>
Total direct labor	11,900
Indirect labor	<u>3,500</u>
Total labor used	<u>\$15,400</u>

d. Factory overhead incurred in May.

Actual overhead	
Indirect materials	\$ 5,000
Indirect labor	3,500
Other factory overhead	<u>9,500</u>
Total actual overhead	18,000
Overhead applied (150% × \$11,900)	<u>17,850</u>
Underapplied overhead	<u>\$ 150</u>

e. Total cost of each job.

	401	402	403
In-process costs from April			
Direct materials	\$ 3,600		
Direct labor	1,700		
Applied overhead*	2,550		
Cost incurred in May			
Direct materials	3,550	\$ 3,500	\$1,400
Direct labor	5,100	6,000	800
Applied overhead*	<u>7,650</u>	<u>9,000</u>	<u>1,200</u>
Total costs	<u>\$24,150</u>	<u>\$18,500</u>	<u>\$3,400</u>

* Equals 150% of the direct labor cost.

Total cost of the May 31 inventory of goods in process (Job 403) = \$3,400

Total cost of the May 31 inventory of finished goods (Job 402) = \$18,500

Total cost of goods sold during May (Job 401) = \$24,150

2. Journal entries.

a.

Raw Materials Inventory	16,000	
Accounts Payable		16,000
<i>To record materials purchases.</i>		
Factory Payroll	15,400	
Cash		15,400
<i>To record factory payroll.</i>		
Factory Overhead	5,000	
Raw Materials Inventory		5,000
<i>To record indirect materials.</i>		
Factory Overhead	3,500	
Factory Payroll		3,500
<i>To record indirect labor.</i>		
Factory Overhead	9,500	
Cash		9,500
<i>To record other factory overhead.</i>		

b. Assignment of costs to Goods in Process Inventory.

Goods in Process Inventory (Job 401)	3,550	
Goods in Process Inventory (Job 402)	3,500	
Goods in Process Inventory (Job 403)	1,400	
Raw Materials Inventory		8,450
<i>To assign direct materials to jobs.</i>		
Goods in Process Inventory (Job 401)	5,100	
Goods in Process Inventory (Job 402)	6,000	
Goods in Process Inventory (Job 403)	800	
Factory Payroll		11,900
<i>To assign direct labor to jobs.</i>		
Goods in Process Inventory (Job 401)	7,650	
Goods in Process Inventory (Job 402)	9,000	
Goods in Process Inventory (Job 403)	1,200	
Factory Overhead		17,850
<i>To apply overhead to jobs.</i>		

c. Transfer of completed jobs to Finished Goods Inventory.

Finished Goods Inventory	42,650	
Goods in Process Inventory (Job 401)		24,150
Goods in Process Inventory (Job 402)		18,500
<i>To record completion of jobs.</i>		

d.

Cost of Goods Sold	24,150	
Finished Goods Inventory		24,150
<i>To record sale of Job 401.</i>		

e.

Cost of Goods Sold	150	
Factory Overhead		150
<i>To assign underapplied overhead.</i>		

3.

WALCZAK COMPANY Manufacturing Statement For Month Ended May 31	
Direct materials	\$ 8,450
Direct labor	11,900
Factory overhead	
Indirect materials	\$5,000
Indirect labor	3,500
Other factory overhead	<u>9,500</u>
	<u>18,000</u>
Total production costs	38,350
Add goods in process, April 30	<u>7,850</u>
Total cost of goods in process	46,200
Less goods in process, May 31	3,400
Less underapplied overhead	<u>150</u>
Cost of goods manufactured	<u>\$42,650</u>

See how underapplied overhead is reported. Overapplied overhead is similarly reported, but is added.

Summary

C1 Explain the cost accounting system. A cost accounting system records production activities using a perpetual inventory system, which continuously updates records for transactions and events that affect inventory costs.

C2 Describe important features of job order production. Certain companies called *job order manufacturers* produce custom-made products for customers. These customized products are produced in response to a customer's orders. A job order manufacturer produces products that usually are different and, typically, produced in low volumes. The production systems of job order companies are flexible and are not highly standardized.

C3 Explain job cost sheets and how they are used in job order cost accounting. In a job order cost accounting system, the costs of producing each job are accumulated on a separate job cost sheet. Costs of direct materials, direct labor, and overhead are accumulated separately on the job cost sheet and then added to determine the total cost of a job. Job cost sheets for jobs in process, finished jobs, and jobs sold make up subsidiary records controlled by general ledger accounts.

A1 Apply job order costing in pricing services. Job order costing can usefully be applied to a service setting. The resulting job cost estimate can then be used to help determine a price for services.

P1 Describe and record the flow of materials costs in job order cost accounting. Costs of materials flow from receiving reports to materials ledger cards and then to either job cost sheets or the Indirect Materials account in the factory overhead ledger.

P2 Describe and record the flow of labor costs in job order cost accounting. Costs of labor flow from clock cards to the Factory Payroll account and then to either job cost sheets or the Indirect Labor account in the factory overhead ledger.

P3 Describe and record the flow of overhead costs in job order cost accounting. Overhead costs are accumulated in the Factory Overhead account that controls the subsidiary factory overhead ledger. Then, using a predetermined overhead rate, overhead costs are charged to jobs.

P4 Determine adjustments for overapplied and underapplied factory overhead. At the end of each period, the Factory Overhead account usually has a residual debit (underapplied overhead) or credit (overapplied overhead) balance. If the balance is not material, it is transferred to Cost of Goods Sold, but if it is material, it is allocated to Goods in Process Inventory, Finished Goods Inventory, and Cost of Goods Sold.

Guidance Answers to **Decision Maker** and **Decision Ethics**



Management Consultant Service companies (such as this consulting firm) do not recognize goods in process inventory or finished goods inventory—an important difference between service and manufacturing companies. For the two jobs that are 60% complete, you could recognize revenues and costs at 60% of the total expected amounts. This means you could recognize revenue of \$7,200 ($0.60 \times \$12,000$) and costs of \$6,000 ($0.60 \times \$10,000$), yielding net income of \$1,200 from each job.

Web Consultant The partner has a monetary incentive to *manage* the numbers and assign more costs to the two cost-plus engagements. This also would reduce costs on the fixed-price engagements. To act in such a manner is unethical. As a professional and an honest person, it is your responsibility to engage in ethical behavior. You must not comply with the partner's instructions. If the partner insists you act in an unethical manner, you should report the matter to a higher authority in the organization.

Entrepreneur An inadequate cost system can distort product costs. You should review overhead costs in detail. Once you know the different cost elements in overhead, you can classify them into groups such as material related, labor related, or machine related. Other groups can also be formed (we discuss this in Chapter 8). Once you have classified overhead items into groups, you can better establish overhead allocation bases and use them to compute predetermined overhead rates. These multiple rates and bases can then be used to assign overhead costs to products. This will likely improve product pricing.

Sales Manager The price based on AdWorld's normal pricing policy is \$20,150 ($\$17,076 \times 1.18$), which is within the price range offered by competitors. One option is to apply normal pricing policy and quote a price of \$20,150. On the other hand, assessing the competition, particularly in terms of their service quality and other benefits they might offer, would be useful. Although price is an input customers use to select suppliers, factors such as quality and timeliness (responsiveness) of suppliers are important. Accordingly, your price can reflect such factors.

Guidance Answers to Quick Checks

- b*
- A job is a special order for a custom product. A job lot consists of a quantity of identical, special-order items.
- a*
- Three costs normally accumulated on a job cost sheet are direct materials, direct labor, and factory overhead.
- c*
- Four sources of factory overhead are materials requisitions, time tickets, vouchers, and adjusting entries.
- Since a job order cost accounting system uses perpetual inventory records, overhead costs must be assigned to jobs before the end of a period. This requires the use of a predetermined overhead rate.
- Debits are recorded when wages and salaries of factory employees are paid or accrued. Credits are recorded when direct labor costs are assigned to jobs and when indirect labor costs are transferred to the Factory Overhead account.
- Overapplied or underapplied overhead usually exists at the end of a period because application of overhead is based on estimates of overhead and another variable such as direct labor. Estimates rarely equal actual amounts incurred.
- A debit balance reflects underapplied factory overhead.



Key Terms

mhhe.com/wildMA2e

Key Terms are available at the book's Website for learning and testing in an online Flashcard Format.

Clock card (p. 54)

Cost accounting system (p. 48)

Finished Goods Inventory (p. 50)

General accounting system (p. 48)

Goods in Process Inventory (p. 50)

Job (p. 48)

Job cost sheet (p. 50)

Job lot (p. 49)

Job order cost accounting system (p. 50)

Job order production (p. 48)

Materials ledger card (p. 51)

Materials requisition (p. 52)

Overapplied overhead (p. 60)

Predetermined overhead rate (p. 56)

Target cost (p. 49)

Time ticket (p. 54)

Underapplied overhead (p. 59)



Multiple Choice Quiz

Answers on p. ...

mhhe.com/wildMA2e

Additional Quiz Questions are available at the book's Website.

- A company's predetermined overhead allocation rate is 150% of its direct labor costs. How much overhead is applied to a job that requires total direct labor costs of \$30,000?
 - \$15,000
 - \$30,000
 - \$45,000
 - \$60,000
 - \$75,000
- A company's cost accounting system uses direct labor costs to apply overhead to goods in process and finished goods inventories. Its production costs for the period are: direct

materials, \$45,000; direct labor, \$35,000; and overhead applied, \$38,500. What is its predetermined overhead allocation rate?

- 10%
- 110%
- 86%
- 91%
- 117%

- A company's ending inventory of finished goods has a total cost of \$10,000 and consists of 500 units. If the overhead applied to these goods is \$4,000, and the predetermined



Quiz2

overhead rate is 80% of direct labor costs, how much direct materials cost was incurred in producing these 500 units?










- \$10,000
 - \$ 6,000
 - \$ 4,000
 - \$ 5,000
 - \$ 1,000
4. A company's Goods in Process Inventory T-account follows.

Goods in Process Inventory		
Beginning balance	9,000	
Direct materials	94,200	
Direct labor	59,200	? Finished goods
Overhead applied	31,600	
Ending balance	17,800	

The cost of units transferred to Finished Goods inventory is


- \$193,000
 - \$211,800
 - \$185,000
 - \$144,600
 - \$176,200
5. At the end of its current year, a company learned that its overhead was underapplied by \$1,500 and that this amount is not considered material. Based on this information, the company should
- Close the \$1,500 to Finished Goods Inventory.
 - Close the \$1,500 to Cost of Goods Sold.
 - Carry the \$1,500 to the next period.
 - Do nothing about the \$1,500 because it is not material and it is likely that overhead will be overapplied by the same amount next year.
 - Carry the \$1,500 to the Income Statement as "Other Expense."

Discussion Questions

- Why must a company estimate the amount of factory overhead assigned to individual jobs or job lots?
-  The chapter used a percent of labor cost to assign factory overhead to jobs. Identify another factor (or base) a company might reasonably use to assign overhead costs.
-  What information is recorded on a job cost sheet? How do management and employees use job cost sheets?
- In a job order cost accounting system, what records serve as a subsidiary ledger for Goods in Process Inventory? For Finished Goods Inventory?
- What journal entry is recorded when a materials manager receives a materials requisition and then issues materials (both direct and indirect) for use in the factory?
-  How does the materials requisition help safeguard a company's assets?
- What is the difference between a clock card and a time ticket?
- What events cause debits to be recorded in the Factory Overhead account? What events cause credits to be recorded in the Factory Overhead account?
- What account(s) is(are) used to eliminate overapplied or underapplied overhead from the Factory Overhead account, assuming the amount is not material?
-  Assume that **Apple** produces a batch of 1,000 iPods. Does it account for this as 1,000 individual jobs or as a job lot? Explain (consider costs and benefits). 
- Why must a company prepare a predetermined overhead rate when using job order cost accounting?
-  How would a hospital apply job order costing? Explain.
-  **Harley-Davidson** manufactures 30 custom-made luxury-model motorcycles. Does it account for these motorcycles as 30 individual jobs or as a job lot? Explain. 
- Best Buy's** GeekSquad performs computer and home theater installation and service, for an upfront flat price. How can Best Buy use a job order costing system? 



Denotes Discussion Questions that involve decision making.

Most materials in this section are available in McGraw-Hill's Connect 

QUICK STUDY

Determine which products are most likely to be manufactured as a job and which as a job lot.

- A custom-designed home.
- Hats imprinted with company logo.
- Little League trophies.
- A hand-crafted table.
- A 90-foot motor yacht.
- Wedding dresses for a chain of stores.

QS 2-1

Jobs and job lots

C2



The following information is from the materials requisitions and time tickets for Job 9-1005 completed by Franklin Boats. The requisitions are identified by code numbers starting with the letter Q and the time tickets start with W. At the start of the year, management estimated that overhead cost would equal 110% of direct labor cost for each job. Determine the total cost on the job cost sheet for Job 9-1005.

QS 2-2

Job cost computation
C3

Date	Document	Amount
7/1/2009	Q-4698	\$2,500
7/1/2009	W-3393	1,200
7/5/2009	Q-4725	2,000
7/5/2009	W-3479	900
7/10/2009	W-3559	600

During the current month, a company that uses a job order cost accounting system purchases \$25,000 in raw materials for cash. It then uses \$6,000 of raw materials indirectly as factory supplies and uses \$16,000 of raw materials as direct materials. Prepare entries to record these three transactions.

QS 2-3

Direct materials journal entries
P1

During the current month, a company that uses a job order cost accounting system incurred a monthly factory payroll of \$75,000, paid in cash. Of this amount, \$29,000 is classified as indirect labor and the remainder as direct. Prepare entries to record these transactions.

QS 2-4

Direct labor journal entries P2

A company incurred the following manufacturing costs this period: direct labor, \$234,000; direct materials, \$292,000; and factory overhead, \$58,500. Compute its overhead cost as a percent of (1) direct labor and (2) direct materials.

QS 2-5

Factory overhead rates P3

During the current month, a company that uses a job order cost accounting system incurred a monthly factory payroll of \$350,000, paid in cash. Of this amount, \$90,000 is classified as indirect labor and the remainder as direct for the production of Job 65A. Factory overhead is applied at 90% of direct labor. Prepare the entry to apply factory overhead to this job lot.

QS 2-6

Factory overhead journal entries
P3

A company allocates overhead at a rate of 150% of direct labor cost. Actual overhead cost for the current period is \$475,000, and direct labor cost is \$300,000. Prepare the entry to close over- or underapplied overhead to cost of goods sold.

QS 2-7

Entry for over- or underapplied overhead P4

connect Most materials in this section are available in McGraw-Hill's Connect

The left column lists the titles of documents and accounts used in job order cost accounting. The right column presents short descriptions of the purposes of the documents. Match each document in the left column to its numbered description in the right column.

- | | | |
|------------------------------------|-------|---|
| A. Voucher | _____ | 1. Shows amount of time an employee works on a job. |
| B. Materials requisition | _____ | 2. Temporarily accumulates incurred labor costs until they are assigned to specific jobs or to overhead. |
| C. Factory Overhead account | _____ | 3. Shows only total time an employee works each day. |
| D. Clock card | _____ | 4. Perpetual inventory record of raw materials received, used, and available for use. |
| E. Factory Payroll account | _____ | 5. Shows amount approved for payment of an overhead or other cost. |
| F. Materials ledger card | _____ | 6. Temporarily accumulates the cost of incurred overhead until the cost is assigned to specific jobs. |
| G. Time ticket | _____ | 7. Communicates the need for materials to complete a job. |

EXERCISES

Exercise 2-1

Documents in job order cost accounting
C2 C3 P1 P2 P3

Exercise 2-2

Analysis of cost flows

C2 P1 P2 P3 

As of the end of June, the job cost sheets at Tracer Wheels, Inc., show the following total costs accumulated on three custom jobs.

	Job 102	Job 103	Job 104
Direct materials	\$25,000	\$59,000	\$56,000
Direct labor	14,000	26,700	40,000
Overhead	7,000	13,350	20,000

Job 102 was started in production in May and the following costs were assigned to it in May: direct materials, \$13,000; direct labor, \$3,600; and overhead, \$1,600. Jobs 103 and 104 are started in June. Overhead cost is applied with a predetermined rate based on direct labor cost. Jobs 102 and 103 are finished in June, and Job 104 is expected to be finished in July. No raw materials are used indirectly in June. Using this information, answer the following questions. (Assume this company's predetermined overhead rate did not change across these months.)

1. What is the cost of the raw materials requisitioned in June for each of the three jobs?
2. How much direct labor cost is incurred during June for each of the three jobs?
3. What predetermined overhead rate is used during June?
4. How much total cost is transferred to finished goods during June?

Check (4) \$145,050

Exercise 2-3

Overhead rate; costs assigned to jobs

P3

In December 2008, Matsushi Electronics' management establishes the year 2009 predetermined overhead rate based on direct labor cost. The information used in setting this rate includes estimates that the company will incur \$750,000 of overhead costs and \$500,000 of direct labor cost in year 2009. During March 2009, Matsushi began and completed Job No. 13-56.

1. What is the predetermined overhead rate for year 2009?
2. Use the information on the following job cost sheet to determine the total cost of the job.

Check (2) \$23,450

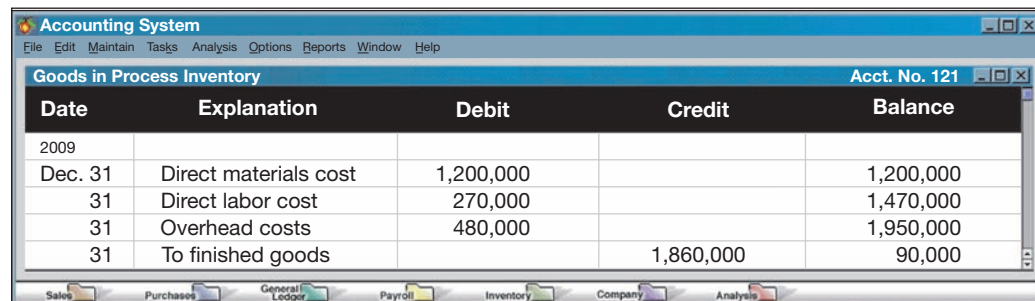
JOB COST SHEET						
Customer's Name		ESPN Co.		Job No.		13-56
Job Description		5 plasma monitors—150 inch				
Date	Direct Materials		Direct Labor		Overhead Costs Applied	
	Requisition No.	Amount	Time-Ticket No.	Amount	Rate	Amount
Mar. 8	4-129	\$4,000	T-306	\$ 680		
Mar. 11	4-142	7,450	T-432	1,280		
Mar. 18	4-167	3,800	T-456	1,320		
Totals						

Exercise 2-4

Analysis of costs assigned to goods in process

P3

Wilson Company uses a job order cost accounting system that charges overhead to jobs on the basis of direct material cost. At year-end, the Goods in Process Inventory account shows the following.



Date	Explanation	Debit	Credit	Balance
2009				
Dec. 31	Direct materials cost	1,200,000		1,200,000
31	Direct labor cost	270,000		1,470,000
31	Overhead costs	480,000		1,950,000
31	To finished goods		1,860,000	90,000

1. Determine the overhead rate used (based on direct material cost).
2. Only one job remained in the goods in process inventory at December 31, 2009. Its direct materials cost is \$40,000. How much direct labor cost and overhead cost are assigned to it?

Check (2) Direct labor cost, \$34,000

The following information is available for SafeLife Company, which produces special-order security products and uses a job order cost accounting system.

Exercise 2-5

Cost flows in a job order cost system

C3 P3

	April 30	May 31
Inventories		
Raw materials	\$27,000	\$ 41,000
Goods in process	9,000	20,600
Finished goods	70,000	33,000
Activities and information for May		
Raw materials purchases (paid with cash)		183,000
Factory payroll (paid with cash)		500,000
Factory overhead		
Indirect materials		6,000
Indirect labor		74,000
Other overhead costs		95,500
Sales (received in cash)		1,500,000
Predetermined overhead rate based on direct labor cost		55%

Compute the following amounts for the month of May.

1. Cost of direct materials used.
2. Cost of direct labor used.
3. Cost of goods manufactured.
4. Cost of goods sold.*
5. Gross profit.
6. Overapplied or underapplied overhead.

Check (3) \$811,700

*Do not consider any underapplied or overapplied overhead.

Use information in Exercise 2-5 to prepare journal entries for the following events in May.

Exercise 2-6

Journal entries for a job order cost accounting system

P1 P2 P3 P4

1. Raw materials purchases for cash.
2. Direct materials usage.
3. Indirect materials usage.
4. Factory payroll costs in cash.
5. Direct labor usage.
6. Indirect labor usage.
7. Factory overhead excluding indirect materials and indirect labor (record credit to Other Accounts).
8. Application of overhead to goods in process.
9. Transfer of finished jobs to the finished goods inventory.
10. Sale and delivery of finished goods to customers for cash (record unadjusted cost of sales).
11. Allocation (closing) of overapplied or underapplied overhead to Cost of Goods Sold.

In December 2008, Dreamvision established its predetermined overhead rate for movies produced during year 2009 by using the following cost predictions: overhead costs, \$1,700,000, and direct labor costs, \$500,000. At year end 2009, the company's records show that actual overhead costs for the year are \$1,710,000. Actual direct labor cost had been assigned to jobs as follows.

Exercise 2-7

Factory overhead computed, applied, and adjusted

P3 P4

Movies completed and released	\$400,000
Movies still in production	90,000
Total actual direct labor cost	<u>\$490,000</u>

1. Determine the predetermined overhead rate for year 2009.
2. Set up a T-account for overhead and enter the overhead costs incurred and the amounts applied to movies during the year using the predetermined overhead rate.
3. Determine whether overhead is overapplied or underapplied (and the amount) during the year.
4. Prepare the adjusting entry to allocate any over- or underapplied overhead to Cost of Goods Sold.

Check (3) \$44,000 underapplied

Exercise 2-8

Factory overhead computed, applied, and adjusted

P3 P4

In December 2008, Jens Company established its predetermined overhead rate for jobs produced during year 2009 by using the following cost predictions: overhead costs, \$1,500,000, and direct labor costs, \$1,250,000. At year end 2009, the company's records show that actual overhead costs for the year are \$1,660,000. Actual direct labor cost had been assigned to jobs as follows.

Jobs completed and sold	\$1,027,500
Jobs in finished goods inventory	205,500
Jobs in goods in process inventory	<u>137,000</u>
Total actual direct labor cost	<u>\$1,370,000</u>

1. Determine the predetermined overhead rate for year 2009.
2. Set up a T-account for Factory Overhead and enter the overhead costs incurred and the amounts applied to jobs during the year using the predetermined overhead rate.
3. Determine whether overhead is overapplied or underapplied (and the amount) during the year.
4. Prepare the adjusting entry to allocate any over- or underapplied overhead to Cost of Goods Sold.

Check (3) \$16,000 underapplied

Exercise 2-9

Overhead rate calculation, allocation, and analysis P3

Campton Company applies factory overhead based on direct labor costs. The company incurred the following costs during 2009: direct materials costs, \$635,500; direct labor costs, \$2,000,000; and factory overhead costs applied, \$1,200,000.

1. Determine the company's predetermined overhead rate for year 2009.
2. Assuming that the company's \$54,000 ending Goods in Process Inventory account for year 2009 had \$13,000 of direct labor costs, determine the inventory's direct materials costs.
3. Assuming that the company's \$337,435 ending Finished Goods Inventory account for year 2009 had \$137,435 of direct materials costs, determine the inventory's direct labor costs and its overhead costs.

Check (3) \$75,000 overhead costs

Exercise 2-10

Costs allocated to ending inventories

P3

Santana Company's ending Goods in Process Inventory account consists of 10,000 units of partially completed product, and its Finished Goods Inventory account consists of 12,000 units of product. The factory manager determines that Goods in Process Inventory includes direct materials cost of \$20 per unit and direct labor cost of \$14 per unit. Finished goods are estimated to have \$24 of direct materials cost per unit and \$18 of direct labor cost per unit. The company established the predetermined overhead rate using the following predictions: estimated direct labor cost, \$600,000, and estimated factory overhead, \$750,000. The company allocates factory overhead to its goods in process and finished goods inventories based on direct labor cost. During the period, the company incurred these costs: direct materials, \$1,070,000; direct labor, \$580,000; and factory overhead applied, \$725,000.

1. Determine the predetermined overhead rate.
2. Compute the total cost of the two ending inventories.
3. Compute cost of goods sold for the year (assume no beginning inventories and no underapplied or overapplied overhead).

Check (3) Cost of goods sold, \$1,086,000

Exercise 2-11

Cost-based pricing



Clemente Corporation has requested bids from several architects to design its new corporate headquarters. Troy Architects is one of the firms bidding on the job. Troy estimates that the job will require the following direct labor.

	Labor	Estimated Hours	Hourly Rate
1			
2	Architects	300	\$400
3	Staff	300	65
4	Clerical	600	20

Troy applies overhead to jobs at 160% of direct labor cost. Troy would like to earn at least \$90,000 profit on the architectural job. Based on past experience and market research, it estimates that the competition will bid between \$450,000 and \$550,000 for the job.

1. What is Troy's estimated cost of the architectural job?
2. What bid would you suggest that Troy submit?

Check (1) \$393,900

connect Most materials in this section are available in McGraw-Hill's Connect

Lemmon Co.'s March 31 inventory of raw materials is \$170,000. Raw materials purchases in April are \$310,000, and factory payroll cost in April is \$224,000. Overhead costs incurred in April are: indirect materials, \$25,000; indirect labor, \$19,000; factory rent, \$25,000; factory utilities, \$13,000; and factory equipment depreciation, \$41,000. The predetermined overhead rate is 65% of direct labor cost. Job 306 is sold for \$400,000 cash in April. Costs of the three jobs worked on in April follow.

	Job 306	Job 307	Job 308
Balances on March 31			
Direct materials	\$ 9,000	\$ 17,000	
Direct labor	19,000	5,000	
Applied overhead	12,350	3,250	
Costs during April			
Direct materials	75,000	160,000	\$ 65,000
Direct labor	31,000	74,000	100,000
Applied overhead	?	?	?
Status on April 30	Finished (sold)	Finished (unsold)	In process

PROBLEM SET A

Problem 2-1A

Production costs computed and recorded; reports prepared

C3 P1 P2 P3 P4 



Required

1. Determine the total of each production cost incurred for April (direct labor, direct materials, and applied overhead), and the total cost assigned to each job (including the balances from March 31).
2. Prepare journal entries for the month of April to record the following.
 - a. Materials purchases (on credit), factory payroll (paid in cash), and actual overhead costs including indirect materials and indirect labor. (Factory rent and utilities are paid in cash.)
 - b. Assignment of direct materials, direct labor, and applied overhead costs to the Goods in Process Inventory.
 - c. Transfer of Jobs 306 and 307 to the Finished Goods Inventory.
 - d. Cost of goods sold for Job 306.
 - e. Revenue from the sale of Job 306.
 - f. Assignment of any underapplied or overapplied overhead to the Cost of Goods Sold account. (The amount is not material.)
3. Prepare a manufacturing statement for April (use a single line presentation for direct materials and show the details of overhead cost).
4. Compute gross profit for April. Show how to present the inventories on the April 30 balance sheet.

Check (2f) \$10,250 overapplied

(3) Cost of goods manufactured, \$473,850

Analysis Component

5. The over- or underapplied overhead is closed to Cost of Goods Sold. Discuss how this adjustment impacts business decision making regarding individual jobs or batches of jobs.

Mead Bay's computer system generated the following trial balance on December 31, 2009. The company's manager knows something is wrong with the trial balance because it does not show any balance for Goods in Process Inventory but does show balances for the Factory Payroll and Factory Overhead accounts.

	Debit	Credit
Cash	\$ 40,000	
Accounts receivable	34,000	
Raw materials inventory	22,000	

[continued on next page]

Problem 2-2A

Source documents, journal entries, overhead, and financial reports

P1 P2 P3 P4 



[continued from previous page]

Goods in process inventory	0	
Finished goods inventory	12,000	
Prepaid rent	4,000	
Accounts payable		\$ 8,500
Notes payable		11,500
Common stock		40,000
Retained earnings		84,000
Sales		178,000
Cost of goods sold	112,000	
Factory payroll	18,000	
Factory overhead	26,000	
Operating expenses	54,000	
Totals	<u>\$322,000</u>	<u>\$322,000</u>

After examining various files, the manager identifies the following six source documents that need to be processed to bring the accounting records up to date.

Materials requisition 21-3010:	\$4,100 direct materials to Job 402
Materials requisition 21-3011:	\$7,100 direct materials to Job 404
Materials requisition 21-3012:	\$2,400 indirect materials
Labor time ticket 6052:	\$2,000 direct labor to Job 402
Labor time ticket 6053:	\$15,000 direct labor to Job 404
Labor time ticket 6054:	\$1,000 indirect labor

Jobs 402 and 404 are the only units in process at year-end. The predetermined overhead rate is 150% of direct labor cost.

Required

1. Use information on the six source documents to prepare journal entries to assign the following costs.
 - a. Direct materials costs to Goods in Process Inventory.
 - b. Direct labor costs to Goods in Process Inventory.
 - c. Overhead costs to Goods in Process Inventory.
 - d. Indirect materials costs to the Factory Overhead account.
 - e. Indirect labor costs to the Factory Overhead account.
2. Determine the revised balance of the Factory Overhead account after making the entries in part 1. Determine whether there is any under- or overapplied overhead for the year. Prepare the adjusting entry to allocate any over- or underapplied overhead to Cost of Goods Sold, assuming the amount is not material.
3. Prepare a revised trial balance.
4. Prepare an income statement for year 2009 and a balance sheet as of December 31, 2009.

Analysis Component

5. Assume that the \$2,400 on materials requisition 21-3012 should have been direct materials charged to Job 404. Without providing specific calculations, describe the impact of this error on the income statement for 2009 and the balance sheet at December 31, 2009.

Check (2) \$3,900 underapplied overhead

(3) T. B. totals, \$322,000

(4) Net income, \$8,100

Problem 2-3A

Source documents, journal entries, and accounts in job order cost accounting

P1 P2 P3

Challenger Watercraft's predetermined overhead rate for year 2009 is 200% of direct labor. Information on the company's production activities during May 2009 follows.

- a. Purchased raw materials on credit, \$200,000.
- b. Paid \$130,000 cash for factory wages.
- c. Paid \$16,000 cash to a computer consultant to reprogram factory equipment.
- d. Materials requisitions record use of the following materials for the month.

Job 136	\$ 50,000
Job 137	33,000
Job 138	19,800
Job 139	22,600
Job 140	<u>6,800</u>
Total direct materials	132,200
Indirect materials	<u>20,000</u>
Total materials used	<u>\$152,200</u>

e. Time tickets record use of the following labor for the month.

Job 136	\$ 12,100
Job 137	10,800
Job 138	37,500
Job 139	39,400
Job 140	<u>3,200</u>
Total direct labor	103,000
Indirect labor	<u>27,000</u>
Total	<u>\$130,000</u>

- f. Applied overhead to Jobs 136, 138, and 139.
- g. Transferred Jobs 136, 138, and 139 to Finished Goods.
- h. Sold Jobs 136 and 138 on credit at a total price of \$550,000.
- i. The company incurred the following overhead costs during the month (credit Prepaid Insurance for expired factory insurance).

Depreciation of factory building	\$68,500
Depreciation of factory equipment	37,500
Expired factory insurance	11,000
Accrued property taxes payable	35,000

j. Applied overhead at month-end to the Goods in Process (Jobs 137 and 140) using the predetermined overhead rate of 200% of direct labor cost.

Required

1. Prepare a job cost sheet for each job worked on during the month. Use the following simplified form.

Job No. _____	
Materials	\$ _____
Labor	_____
Overhead	_____
Total cost	<u>\$ _____</u>

- 2. Prepare journal entries to record the events and transactions a through j.
- 3. Set up T-accounts for each of the following general ledger accounts, each of which started the month with a zero balance: Raw Materials Inventory; Goods in Process Inventory; Finished Goods Inventory; Factory Payroll; Factory Overhead; Cost of Goods Sold. Then post the journal entries to these T-accounts and determine the balance of each account.
- 4. Prepare a report showing the total cost of each job in process and prove that the sum of their costs equals the Goods in Process Inventory account balance. Prepare similar reports for Finished Goods Inventory and Cost of Goods Sold.

Check (2f) Cr. Factory Overhead, \$178,000

Check (3) Finished Goods Inventory, \$140,800

Problem 2-4A

Overhead allocation and adjustment using a predetermined overhead rate

C3 P3 P4



mhhe.com/wildMA2e

In December 2008, Zander Company’s manager estimated next year’s total direct labor cost assuming 50 persons working an average of 2,000 hours each at an average wage rate of \$30 per hour. The manager also estimated the following manufacturing overhead costs for year 2009.

Indirect labor	\$ 339,200
Factory supervision	240,000
Rent on factory building	140,000
Factory utilities	318,000
Factory insurance expired	88,000
Depreciation—Factory equipment	480,000
Repairs expense—Factory equipment	60,000
Factory supplies used	88,800
Miscellaneous production costs	46,000
Total estimated overhead costs	\$1,800,000

At the end of 2009, records show the company incurred \$1,554,900 of actual overhead costs. It completed and sold five jobs with the following direct labor costs: Job 201, \$604,000; Job 202, \$573,000; Job 203, \$318,000; Job 204, \$726,000; and Job 205, \$324,000. In addition, Job 206 is in process at the end of 2009 and had been charged \$27,000 for direct labor. No jobs were in process at the end of 2008. The company’s predetermined overhead rate is based on direct labor cost.

Required

1. Determine the following.
 - a. Predetermined overhead rate for year 2009.
 - b. Total overhead cost applied to each of the six jobs during year 2009.
 - c. Over- or underapplied overhead at year-end 2009.
2. Assuming that any over- or underapplied overhead is not material, prepare the adjusting entry to allocate any over- or underapplied overhead to Cost of Goods Sold at the end of year 2009.

Check (1c) \$11,700 underapplied
(2) Cr. Factory Overhead \$11,700

Problem 2-5A

Production transactions; subsidiary records; and source documents

P1 P2 P3 P4

If the working papers that accompany this book are unavailable, do not attempt to solve this problem. Morton Company manufactures variations of its product, a technopress, in response to custom orders from its customers. On May 1, the company had no inventories of goods in process or finished goods but held the following raw materials.

Material M	200 units @ \$125 =	\$25,000
Material R	95 units @ 90 =	8,550
Paint	55 units @ 40 =	2,200
Total cost		\$35,750

On May 4, the company began working on two technopresses: Job 102 for Global Company and Job 103 for Kaddo Company.

Required

Follow the instructions in this list of activities and complete the sheets provided in the working papers.

- a. Purchased raw materials on credit and recorded the following information from receiving reports and invoices.

Receiving Report No. 426, Material M, 250 units at \$125 each.
Receiving Report No. 427, Material R, 90 units at \$90 each.

Instructions: Record these purchases with a single journal entry and post it to general ledger T-accounts, using the transaction letter *a* to identify the entry. Enter the receiving report information on the materials ledger cards.

- b. Requisitioned the following raw materials for production.

Requisition No. 35, for Job 102, 135 units of Material M.
 Requisition No. 36, for Job 102, 72 units of Material R.
 Requisition No. 37, for Job 103, 70 units of Material M.
 Requisition No. 38, for Job 103, 38 units of Material R.
 Requisition No. 39, for 15 units of paint.

Instructions: Enter amounts for direct materials requisitions on the materials ledger cards and the job cost sheets. Enter the indirect material amount on the materials ledger card and record a debit to the Indirect Materials account in the subsidiary factory overhead ledger. Do not record a journal entry at this time.

- c. Received the following employee time tickets for work in May.

Time tickets Nos. 1 to 10 for direct labor on Job 102, \$45,000.
 Time tickets Nos. 11 to 30 for direct labor on Job 103, \$32,500.
 Time tickets Nos. 31 to 36 for equipment repairs, \$9,625.

Instructions: Record direct labor from the time tickets on the job cost sheets and then debit indirect labor to the Indirect Labor account in the subsidiary factory overhead ledger. Do not record a journal entry at this time.

- d. Paid cash for the following items during the month: factory payroll, \$87,125, and miscellaneous overhead items, \$51,000.

Instructions: Record these payments with journal entries and then post them to the general ledger accounts. Also record a debit in the Miscellaneous Overhead account in the subsidiary factory overhead ledger.

- e. Finished Job 102 and transferred it to the warehouse. The company assigns overhead to each job with a predetermined overhead rate equal to 80% of direct labor cost.

Instructions: Enter the allocated overhead on the cost sheet for Job 102, fill in the cost summary section of the cost sheet, and then mark the cost sheet "Finished." Prepare a journal entry to record the job's completion and its transfer to Finished Goods and then post it to the general ledger accounts.

- f. Delivered Job 102 and accepted the customer's promise to pay \$200,000 within 30 days.

Instructions: Prepare journal entries to record the sale of Job 102 and the cost of goods sold. Post them to the general ledger accounts.

- g. Applied overhead to Job 103 based on the job's direct labor to date.

Instructions: Enter overhead on the job cost sheet but do not make a journal entry at this time.

- h. Recorded the total direct and indirect materials costs as reported on all the requisitions for the month.

Instructions: Prepare a journal entry to record these costs and post it to general ledger accounts.

- i. Recorded the total direct and indirect labor costs as reported on all time tickets for the month.

Instructions: Prepare a journal entry to record these costs and post it to general ledger accounts.

- j. Recorded the total overhead costs applied to jobs.

Instructions: Prepare a journal entry to record the allocation of these overhead costs and post it to general ledger accounts.

Check (h) Dr. Goods in Process Inventory, \$35,525

Check Balance in Factory Overhead, \$775 Cr., overapplied

Grant Co.'s August 31 inventory of raw materials is \$75,000. Raw materials purchases in September are \$200,000, and factory payroll cost in September is \$110,000. Overhead costs incurred in September are: indirect materials, \$15,000; indirect labor, \$7,000; factory rent, \$10,000; factory utilities, \$6,000; and factory equipment depreciation, \$15,000. The predetermined overhead rate is 50% of direct labor cost. Job 114 is sold for \$190,000 cash in September. Costs for the three jobs worked on in September follow.

	Job 114	Job 115	Job 116
Balances on August 31			
Direct materials	\$ 7,000	\$ 9,000	
Direct labor	9,000	8,000	
Applied overhead	4,500	4,000	

[continued on next page]

PROBLEM SET B

Problem 2-1B

Production costs computed and recorded; reports prepared

G3 P1 P2 P3 P4 

[continued from previous page]

Costs during September			
Direct materials	50,000	85,000	\$40,000
Direct labor	15,000	34,000	60,000
Applied overhead	?	?	?
Status on September 30	Finished (sold)	Finished (unsold)	In process

Required

1. Determine the total of each production cost incurred for September (direct labor, direct materials, and applied overhead), and the total cost assigned to each job (including the balances from August 31).
2. Prepare journal entries for the month of September to record the following.
 - a. Materials purchases (on credit), factory payroll (paid in cash), and actual overhead costs including indirect materials and indirect labor. (Factory rent and utilities are paid in cash.)
 - b. Assignment of direct materials, direct labor, and applied overhead costs to Goods in Process Inventory.
 - c. Transfer of Jobs 114 and 115 to the Finished Goods Inventory.
 - d. Cost of Job 114 in the Cost of Goods Sold account.
 - e. Revenue from the sale of Job 114.
 - f. Assignment of any underapplied or overapplied overhead to the Cost of Goods Sold account. (The amount is not material.)
3. Prepare a manufacturing statement for September (use a single line presentation for direct materials and show the details of overhead cost).
4. Compute gross profit for September. Show how to present the inventories on the September 30 balance sheet.

Check (2f) \$1,500 overapplied

(3) Cost of goods manufactured, \$250,000

Analysis Component

5. The over- or underapplied overhead adjustment is closed to Cost of Goods Sold. Discuss how this adjustment impacts business decision making regarding individual jobs or batches of jobs.

Problem 2-2B

Source documents, journal entries, overhead, and financial reports

P1 P2 P3 P4 

Coleman Company's computer system generated the following trial balance on December 31, 2009. The company's manager knows that the trial balance is wrong because it does not show any balance for Goods in Process Inventory but does show balances for the Factory Payroll and Factory Overhead accounts.

	Debit	Credit
Cash	\$ 96,000	
Accounts receivable	84,000	
Raw materials inventory	52,000	
Goods in process inventory	0	
Finished goods inventory	18,000	
Prepaid rent	6,000	
Accounts payable		\$ 21,000
Notes payable		27,000
Common stock		60,000
Retained earnings		174,000
Sales		360,000
Cost of goods sold	210,000	
Factory payroll	32,000	
Factory overhead	54,000	
Operating expenses	90,000	
Totals	<u>\$642,000</u>	<u>\$642,000</u>

After examining various files, the manager identifies the following six source documents that need to be processed to bring the accounting records up to date.

Materials requisition 94-231:	\$9,200 direct materials to Job 603
Materials requisition 94-232:	\$15,200 direct materials to Job 604
Materials requisition 94-233:	\$4,200 indirect materials
Labor time ticket 765:	\$10,000 direct labor to Job 603
Labor time ticket 766:	\$16,000 direct labor to Job 604
Labor time ticket 777:	\$6,000 indirect labor

Jobs 603 and 604 are the only units in process at year-end. The predetermined overhead rate is 200% of direct labor cost.

Required

1. Use information on the six source documents to prepare journal entries to assign the following costs.
 - a. Direct materials costs to Goods in Process Inventory.
 - b. Direct labor costs to Goods in Process Inventory.
 - c. Overhead costs to Goods in Process Inventory.
 - d. Indirect materials costs to the Factory Overhead account.
 - e. Indirect labor costs to the Factory Overhead account.
2. Determine the revised balance of the Factory Overhead account after making the entries in part 1. Determine whether there is under- or overapplied overhead for the year. Prepare the adjusting entry to allocate any over- or underapplied overhead to Cost of Goods Sold, assuming the amount is not material.
3. Prepare a revised trial balance.
4. Prepare an income statement for year 2009 and a balance sheet as of December 31, 2009.

Check (2) \$12,200 underapplied overhead

(3) T. B. totals, \$642,000

(4) Net income, \$47,800

Analysis Component

5. Assume that the \$4,200 indirect materials on materials requisition 94-233 should have been direct materials charged to Job 604. Without providing specific calculations, describe the impact of this error on the income statement for 2009 and the balance sheet at December 31, 2009.

Bradley Company's predetermined overhead rate is 200% of direct labor. Information on the company's production activities during September 2009 follows.

- a. Purchased raw materials on credit, \$250,000.
- b. Paid \$168,000 cash for factory wages.
- c. Paid \$22,000 cash for miscellaneous factory overhead costs.
- d. Materials requisitions record use of the following materials for the month.

Job 487	\$ 60,000
Job 488	40,000
Job 489	24,000
Job 490	28,000
Job 491	8,000
Total direct materials	160,000
Indirect materials	24,000
Total materials used	<u>\$184,000</u>

- e. Time tickets record use of the following labor for the month.

Job 487	\$ 16,000
Job 488	14,000
Job 489	50,000
Job 490	52,000
Job 491	4,000
Total direct labor	136,000
Indirect labor	32,000
Total	<u>\$168,000</u>

Problem 2-3B

Source documents, journal entries, and accounts in job order cost accounting

P1 P2 P3

- f. Allocated overhead to Jobs 487, 489, and 490.
- g. Transferred Jobs 487, 489, and 490 to Finished Goods.
- h. Sold Jobs 487 and 489 on credit for a total price of \$680,000.
- i. The company incurred the following overhead costs during the month (credit Prepaid Insurance for expired factory insurance).

Depreciation of factory building	\$74,000
Depreciation of factory equipment	42,000
Expired factory insurance	14,000
Accrued property taxes payable	62,000

- j. Applied overhead at month-end to the Goods in Process (Jobs 488 and 491) using the predetermined overhead rate of 200% of direct labor cost.

Required

- 1. Prepare a job cost sheet for each job worked on in the month. Use the following simplified form.

Job No. _____	
Materials	\$ _____
Labor	_____
Overhead	_____
Total cost	\$ _____

Check (2f) Cr. Factory Overhead,
\$236,000

(3) Finished Goods Inventory,
\$184,000

- 2. Prepare journal entries to record the events and transactions *a* through *j*.
- 3. Set up T-accounts for each of the following general ledger accounts, each of which started the month with a zero balance: Raw Materials Inventory, Goods in Process Inventory, Finished Goods Inventory, Factory Payroll, Factory Overhead, Cost of Goods Sold. Then post the journal entries to these T-accounts and determine the balance of each account.
- 4. Prepare a report showing the total cost of each job in process and prove that the sum of their costs equals the Goods in Process Inventory account balance. Prepare similar reports for Finished Goods Inventory and Cost of Goods Sold.

Problem 2-4B

Overhead allocation and adjustment using a predetermined overhead rate

C3 P3 P4

In December 2008, Bigby Company’s manager estimated next year’s total direct labor cost assuming 100 persons working an average of 2,000 hours each at an average wage rate of \$15 per hour. The manager also estimated the following manufacturing overhead costs for year 2009.

Indirect labor	\$ 319,200
Factory supervision	240,000
Rent on factory building	140,000
Factory utilities	88,000
Factory insurance expired	68,000
Depreciation—Factory equipment	480,000
Repairs expense—Factory equipment	60,000
Factory supplies used	68,800
Miscellaneous production costs	36,000
Total estimated overhead costs	<u>\$1,500,000</u>

At the end of 2009, records show the company incurred \$1,450,000 of actual overhead costs. It completed and sold five jobs with the following direct labor costs: Job 625, \$708,000; Job 626, \$660,000; Job 627, \$350,000; Job 628, \$840,000; and Job 629, \$368,000. In addition, Job 630 is in process at the end of 2009 and had been charged \$20,000 for direct labor. No jobs were in process at the end of 2008. The company’s predetermined overhead rate is based on direct labor cost.

Required

1. Determine the following.
 - a. Predetermined overhead rate for year 2009.
 - b. Total overhead cost applied to each of the six jobs during year 2009.
 - c. Over- or underapplied overhead at year-end 2009.
2. Assuming that any over- or underapplied overhead is not material, prepare the adjusting entry to allocate any over- or underapplied overhead to Cost of Goods Sold at the end of year 2009.

Check (1c) \$23,000 overapplied
 (2) Dr: Factory Overhead,
 \$23,000

If the working papers that accompany this book are unavailable, do not attempt to solve this problem. Parador Company produces variations of its product, a megatron, in response to custom orders from its customers. On June 1, the company had no inventories of goods in process or finished goods but held the following raw materials.

Material M	120 units @ \$400 =	\$48,000
Material R	80 units @ 320 =	25,600
Paint	44 units @ 144 =	<u>6,336</u>
Total cost		<u>\$79,936</u>

Problem 2-5B
 Production transactions;
 subsidiary records; and
 source documents
 P1 P2 P3 P4

On June 3, the company began working on two megatrons: Job 450 for Doso Company and Job 451 for Border, Inc.

Required

- Follow instructions in this list of activities and complete the sheets provided in the working papers.
- a. Purchased raw materials on credit and recorded the following information from receiving reports and invoices.

Receiving Report No. 20, Material M, 150 units at \$400 each.
Receiving Report No. 21, Material R, 70 units at \$320 each.

Instructions: Record these purchases with a single journal entry and post it to general ledger T-accounts, using the transaction letter *a* to identify the entry. Enter the receiving report information on the materials ledger cards.

- b. Requisitioned the following raw materials for production.

Requisition No. 223, for Job 450, 80 units of Material M.
Requisition No. 224, for Job 450, 60 units of Material R.
Requisition No. 225, for Job 451, 40 units of Material M.
Requisition No. 226, for Job 451, 30 units of Material R.
Requisition No. 227, for 12 units of paint.

Instructions: Enter amounts for direct materials requisitions on the materials ledger cards and the job cost sheets. Enter the indirect material amount on the materials ledger card and record a debit to the Indirect Materials account in the subsidiary factory overhead ledger. Do not record a journal entry at this time.

- c. Received the following employee time tickets for work in June.

Time tickets Nos. 1 to 10 for direct labor on Job 450, \$80,000.
Time tickets Nos. 11 to 20 for direct labor on Job 451, \$64,000.
Time tickets Nos. 21 to 24 for equipment repairs, \$24,000.

Instructions: Record direct labor from the time tickets on the job cost sheets and then debit indirect labor to the Indirect Labor account in the subsidiary factory overhead ledger. Do not record a journal entry at this time.

d. Paid cash for the following items during the month: factory payroll, \$168,000, and miscellaneous overhead items, \$73,600.

Instructions: Record these payments with journal entries and post them to the general ledger accounts. Also record a debit in the Miscellaneous Overhead account in the subsidiary factory overhead ledger.

e. Finished Job 450 and transferred it to the warehouse. The company assigns overhead to each job with a predetermined overhead rate equal to 70% of direct labor cost.

Instructions: Enter the allocated overhead on the cost sheet for Job 450, fill in the cost summary section of the cost sheet, and then mark the cost sheet "Finished." Prepare a journal entry to record the job's completion and its transfer to Finished Goods and then post it to the general ledger accounts.

f. Delivered Job 450 and accepted the customer's promise to pay \$580,000 within 30 days.

Instructions: Prepare journal entries to record the sale of Job 450 and the cost of goods sold. Post them to the general ledger accounts.

g. Applied overhead cost to Job 451 based on the job's direct labor used to date.

Instructions: Enter overhead on the job cost sheet but do not make a journal entry at this time.

h. Recorded the total direct and indirect materials costs as reported on all the requisitions for the month.

Instructions: Prepare a journal entry to record these costs and post it to general ledger accounts.

i. Recorded the total direct and indirect labor costs as reported on all time tickets for the month.

Instructions: Prepare a journal entry to record these costs and post it to general ledger accounts.

j. Recorded the total overhead costs applied to jobs.

Instructions: Prepare a journal entry to record the allocation of these overhead costs and post it to general ledger accounts.

Check (h) Dr. Goods in Process Inventory, \$76,800

Check Balance in Factory Overhead, \$1,472 Cr., overapplied

SERIAL PROBLEM

(This serial problem began in Chapter 1 and continues through most of the book. If previous chapter segments were not completed, the serial problem can begin at this point. It is helpful, but not necessary, to use the Working Papers that accompany the book.)

Success Systems

SP 2 The computer workstation furniture manufacturing that Adriana Lopez started in January is progressing well. As of the end of June, Success Systems' job cost sheets show the following total costs accumulated on three furniture jobs.

	Job 6.02	Job 6.03	Job 6.04
Direct materials	\$1,500	\$3,300	\$2,700
Direct labor	800	1,420	2,100
Overhead	400	710	1,050

Job 6.02 was started in production in May, and these costs were assigned to it in May: direct materials, \$600; direct labor, \$180; and overhead, \$90. Jobs 6.03 and 6.04 were started in June. Overhead cost is applied with a predetermined rate based on direct labor costs. Jobs 6.02 and 6.03 are finished in June, and Job 6.04 is expected to be finished in July. No raw materials are used indirectly in June. (Assume this company's predetermined overhead rate did not change across these months.)

Required

1. What is the cost of the raw materials used in June for each of the three jobs and in total?
2. How much total direct labor cost is incurred in June?
3. What predetermined overhead rate is used in June?
4. How much cost is transferred to finished goods inventory in June?

Check (1) Total materials, \$6,900

(3) 50%

BEYOND THE NUMBERS

REPORTING IN ACTION



BTN 2-1 Best Buy's financial statements and notes in Appendix A provide evidence of growth potential in its domestic sales.

Required

1. Identify at least two types of costs that will predictably increase as a percent of sales with growth in domestic sales.

2. Explain why you believe the types of costs identified for part 1 will increase, and describe how you might assess Best Buy's success with these costs. (*Hint: You might consider the gross margin ratio.*)

Fast Forward

3. Access Best Buy's annual report for a fiscal year ending after March 3, 2007, from its Website [BestBuy.com] or the SEC's EDGAR database [www.sec.gov]. Review and report its growth in sales along with its cost and income levels (including its gross margin ratio).

BTN 2-2 Retailers as well as manufacturers can apply just-in-time (JIT) to their inventory management. Both **Best Buy** and **Circuit City** want to know the impact of a JIT inventory system for their operating cash flows. Review each company's statement of cash flows in Appendix A to answer the following.

Required

1. Identify the impact on operating cash flows (increase or decrease) for changes in inventory levels (increase or decrease) for both companies for each of the three most recent years.
2. What impact would a JIT inventory system have on both Best Buy's and Circuit City's operating income? Link the answer to your response for part 1.
3. Would the move to a JIT system have a one-time or recurring impact on operating cash flow?

COMPARATIVE ANALYSIS

C1 



BTN 2-3 An accounting professional requires at least two skill sets. The first is to be technically competent. Knowing how to capture, manage, and report information is a necessary skill. Second, the ability to assess manager and employee actions and biases for accounting analysis is another skill. For instance, knowing how a person is compensated helps anticipate information biases. Draw on these skills and write a one-half page memo to the financial officer on the following practice of allocating overhead.

Background: Assume that your company sells portable housing to both general contractors and the government. It sells jobs to contractors on a bid basis. A contractor asks for three bids from different manufacturers. The combination of low bid and high quality wins the job. However, jobs sold to the government are bid on a cost-plus basis. This means price is determined by adding all costs plus a profit based on cost at a specified percent, such as 10%. You observe that the amount of overhead allocated to government jobs is higher than that allocated to contract jobs. These allocations concern you and motivate your memo.

ETHICS CHALLENGE

P3 

Point: Students could compare responses and discuss differences in concerns with allocating overhead.

BTN 2-4 Assume that you are preparing for a second interview with a manufacturing company. The company is impressed with your credentials but has indicated that it has several qualified applicants. You anticipate that in this second interview, you must show what you offer over other candidates. You learn the company currently uses a periodic inventory system and is not satisfied with the timeliness of its information and its inventory management. The company manufactures custom-order holiday decorations and display items. To show your abilities, you plan to recommend that it use a cost accounting system.

Required

In preparation for the interview, prepare notes outlining the following:

1. Your cost accounting system recommendation and why it is suitable for this company.
2. A general description of the documents that the proposed cost accounting system requires.
3. How the documents in part 2 facilitate the operation of the cost accounting system.

COMMUNICATING IN PRACTICE

C2 C3 

Point: Have students present a mock interview, one assuming the role of the president of the company and the other the applicant.

TAKING IT TO THE NET



BTN 2-5 Many contractors work on custom jobs that require a job order costing system.

Required

Access the Website AMSI.com and click on *Construction Management Software*, and then on STARBUILDER. Prepare a one-page memorandum for the CEO of a construction company providing information about the job order costing software this company offers. Would you recommend that the company purchase this software?

TEAMWORK IN ACTION



BTN 2-6 Consider the activities undertaken by a medical clinic in your area.

Required

1. Do you consider a job order cost accounting system appropriate for the clinic?
2. Identify as many factors as possible to lead you to conclude that it uses a job order system.

ENTREPRENEURIAL DECISION



BTN 2-7 Refer to the chapter opener regarding Hank Julicher and his company, **Sprinturf**. All successful businesses track their costs, and it is especially important for startup businesses to monitor and control costs.

Required

1. Assume that Sprinturf uses a job order costing system. For the three basic cost categories of direct materials, direct labor, and overhead, identify at least two typical costs that would fall into each category for Sprinturf.
2. Assume a local high school expresses an interest in purchasing a synthetic field installation from Sprinturf. The high school's budget will allow them to pay no more than \$600,000 for the field. How can Sprinturf use job cost information to assess whether to pursue this opportunity?

HITTING THE ROAD



BTN 2-8 Job order cost accounting is frequently used by home builders.

Required

1. You (or your team) are to prepare a job cost sheet for a single-family home under construction. List four items of both direct materials and direct labor. Explain how you think overhead should be applied.
2. Contact a builder and compare your job cost sheet to this builder's job cost sheet. If possible, speak to that company's accountant. Write your findings in a short report.

GLOBAL DECISION



BTN 2-9 **DSG**, **Circuit City**, and **Best Buy** are competitors in the global marketplace. Access DSG's annual report (www.DSGiplc.com) for the year ended April 28, 2007. The following information is available for DSG.



(£ millions)	Current Year	One Year Prior	Two Years Prior
Inventories	£1,030	£873	£811

Required

1. Determine the change in DSG's inventories for the last two years. Then identify the impact on net resources generated by operating activities (increase or decrease) for changes in inventory levels (increase or decrease) for DSG for the last two years.
2. Would a move to a JIT system likely impact DSG more than it would Best Buy or Circuit City? Explain.

ANSWERS TO MULTIPLE CHOICE QUIZ

1. c; $\$30,000 \times 150\% = \underline{\$45,000}$

2. b; $\$38,500/\$35,000 = \underline{110\%}$

3. e; Direct materials + Direct labor + Overhead = Total cost;
Direct materials + $(\$4,000/.80) + \$4,000 = \$10,000$
Direct materials = $\$1,000$

4. e; $\$9,000 + \$94,200 + \$59,200 + \$31,600 - \text{Finished goods} = \$17,800$
Thus, finished goods = $\$176,200$

5. b