A Look Back

Chapter 8 discussed flexible budgets, variance analysis, and standard costs. It explained how management uses each to control and monitor business activities.

A Look at This Chapter

This chapter describes responsibility accounting, measuring departmental performance, transfer pricing, and allocating common costs across departments. It also identifies managerial reports useful in directing a company's activities.

A Look Ahead

Chapter 10 explains several tools and procedures used in making and evaluating short-term managerial decisions.

Chapter 9

Decentralization and Performance Evaluation

Learning Objectives

CAP

Conceptual

- C1 Explain departmentalization and the role of departmental accounting. *(p. 322)*
- C2 Distinguish between direct and indirect expenses. *(p. 324)*
- C3 Identify bases for allocating indirect expenses to departments. *(p. 324)*
- C4 Explain controllable costs and responsibility accounting. *(p. 333)*
- C5 *Appendix 9A*—Explain transfer pricing and methods to set transfer prices. *(p. 339)*
- C6 *Appendix 9B*—Describe allocation of joint costs across products. *(p. 341)*

Analytical

- A1 Analyze investment centers using return on assets, residual income, and balanced scorecard. *(p. 331)*
- A2 Analyze investment centers using profit margin and investment turnover. *(p. 336)*

Procedural

- P1 Prepare departmental income statements. *(p. 326)*
- P2 Prepare departmental contribution reports. *(p. 329)*

LP9

Decision Feature

On The Green

"*The more clicks we can get, the better our future*"
—Todd Rath

ROCHESTER, NY—Brothers Tom and Todd Rath paid their college tuition by diving for lost golf balls and then reselling them. Today, their company **RockBottomGolf.com** applies a similar strategy of buying leftover products and reselling them. "Some of our critics refer to us as the 'graveyard of golf,'" explains Tom. "Oftentimes, we may be selling the last 3,000 drivers a manufacturer has ever made. If anyone can find a home for it, we can." The company boasts over 500,000 customers, affectionately referred to as "Rock Heads."

RockBottom's warehouse sports signs with "Scratch," the company's cartoonish, red-bearded caveman mascot. Scratch is surrounded with slogans such as: "A Clean Cave Is a Happy Cave" and "A Happy Rock Head Stays a Rock Head." Though Scratch is goofy, the company is all business. Offering a wide inventory of well-known brands of golf clubs, bags, balls, apparel, and accessories, the company buys in large lots and strives to keep overhead low. For example, they located their distribution center in Virginia—enabling them to ship to over 60% of the U.S. population within two days. Also, they pack items in small, uniformly sized boxes to lower costs and offer free shipping on certain orders.

Many other cost management procedures are applied. For example, they analyze "checkout flow," providing details on the point at which potential customers drop out of the checkout process and how many drop out. "If I had a 50% checkout success rate one day and 23% the next day, this lets me see that," explains Todd. This mix of financial and nonfinancial information helps Todd steer more customers through the checkout process. He also tracks customer approval ratings, currently above 99%, as a performance measure.

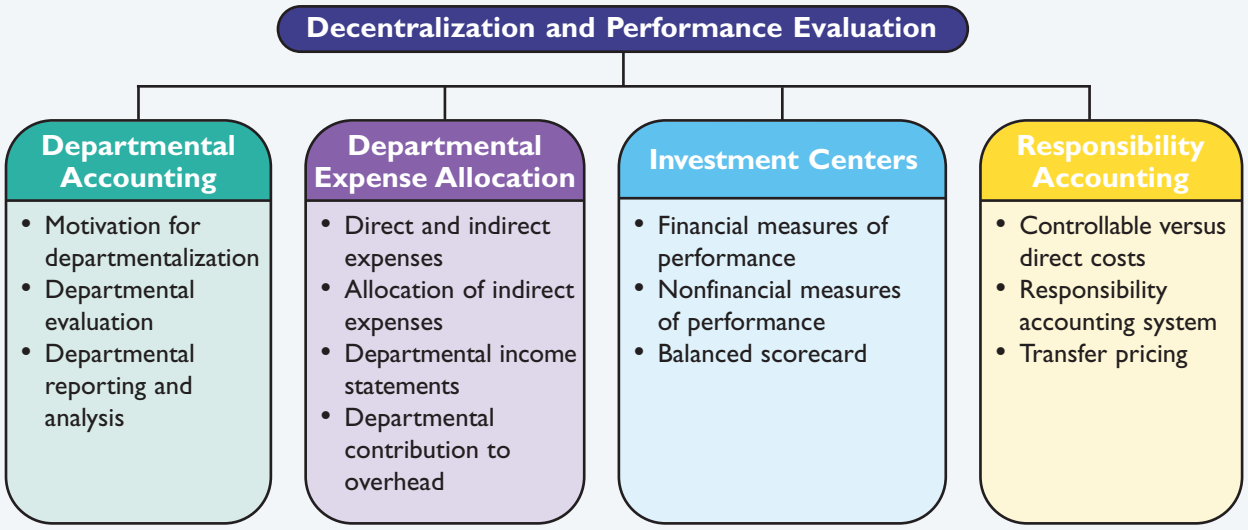
The diversity of its product offerings requires additional cost management. Company managers monitor direct, indirect, and controllable costs, and allocate them to departments and products. Understanding how the company's product lines—such as clubs, bags, apparel—are performing and their contribution margins helps them plan for expansion. As Todd emphasizes, "We use tools to measure our ROI (return on investment). We will only expand as long as there are customers to win."

Their expansion plans do not stop with golf. RockBottomGolf wants to become RockBottomSports, with many other sporting goods products available. This increased departmentalization will require them to monitor contribution margins, return on investment, checkout flow, and customer approval. With its fast-paced growth and position as the top golf retailer on the Internet, RockBottomGolf is "on the green."

[Sources: *RockBottomGolf.com Website,* January 2009; *Internet Retailer,* July 2007; *Inside Business-Hampton Roads,* October 2006.]

Chapter Preview

This chapter describes how to allocate costs shared by more than one product across those different products and how to allocate indirect costs of shared items such as utilities, advertising, and rent. This knowledge helps managers better understand how to assign costs and assess company performance. The chapter also introduces additional managerial accounting reports useful in managing a company's activities and explains how and why management divides companies into departments.



This chapter describes and illustrates allocation of costs for performance evaluation. We begin with departmental accounting and expense allocations and conclude with responsibility accounting.

Departmental Accounting


Video9.1

Companies are divided into *departments,* also called *subunits,* when they are too large to be managed effectively as a single unit. Managerial accounting for departments has two main goals. The first is to set up a **departmental accounting system** to provide information for managers to evaluate the profitability or cost effectiveness of each department's activities. The second goal is to set up a **responsibility accounting system** to control costs and expenses and evaluate managers' performances by assigning costs and expenses to the managers responsible for controlling them. Departmental and responsibility accounting systems are related and share much information.

Motivation for Departmentalization

C1 Explain departmentalization and the role of departmental accounting.

Many companies are so large and complex that they are broken into separate divisions for efficiency and/or effectiveness purposes. Divisions then are usually organized into separate departments. When a company is departmentalized, each department is often placed under the direction of a manager. As a company grows, management often divides departments into new departments so that responsibilities for a department's activities do not overwhelm the manager's ability to oversee and control them. A company also creates departments to take advantage of the skills of individual managers. Departments are broadly classified as either operating or service departments.

Departmental Evaluation

Point: To improve profitability, **Sears, Roebuck & Co.** eliminated several departments, including its catalog division.

When a company is divided into departments, managers need to know how each department is performing. The accounting system must supply information about resources used and outputs achieved by each department. This requires a system to measure and accumulate revenue and expense information for each department whenever possible.

Departmental information is rarely distributed publicly because of its potential usefulness to competitors. Information about departments is prepared for internal managers to help control operations, appraise performance, allocate resources, and plan strategy. If a department is

highly profitable, management may decide to expand its operations, or if a department is performing poorly, information about revenues or expenses can suggest useful changes.

More companies are emphasizing customer satisfaction as a main responsibility of many departments. This has led to changes in the measures reported. Increasingly, financial measurements are being supplemented with quality and customer satisfaction indexes. **Motorola**, for instance, uses two key measures: the number of defective parts per million parts produced and the percent of orders delivered on time to customers. (Note that some departments have only "internal customers.")

Financial information used to evaluate a department depends on whether it is evaluated as a profit center, cost center, or investment center. A **profit center** incurs costs and generates revenues; selling departments are often evaluated as profit centers. A **cost center** incurs costs without directly generating revenues. An **investment center** incurs costs and generates revenues, and is responsible for effectively using center assets. The manufacturing departments of a manufacturer and its service departments such as accounting, advertising, and purchasing, are all cost centers.

Evaluating managers' performance depends on whether they are responsible for profit centers, cost centers, or investment centers. Profit center managers are judged on their abilities to generate revenues in excess of the department's costs. They are assumed to influence both revenue generation and cost incurrence. Cost center managers are judged on their abilities to control costs by keeping them within a satisfactory range under an assumption that only they influence costs. Investment center managers are evaluated on their use of center assets to generate income.

Point: Selling departments are often treated as *revenue centers;* their managers are responsible for maximizing sales revenues.

Decision Insight

Nonfinancial Measures A majority of companies now report nonfinancial performance measures to management. Common measures are cycle time, defect rate, on-time deliveries, inventory turnover, customer satisfaction, and safety. When nonfinancial measures are used with financial measures, the performance measurement system resembles a ***balanced scorecard.*** Many of these companies also use activity-based management as part of their performance measurement system.

Departmental Reporting and Analysis

Companies use various measures (financial and nonfinancial) and reporting formats to evaluate their departments. The type and form of information depend on management's focus and philosophy. **Hewlett-Packard**'s statement of corporate objectives, for instance, indicates that its goal is to satisfy customer needs. Its challenge is to set up managerial accounting systems to provide relevant feedback for evaluating performance in terms of its stated objectives. Also, the means used to obtain information about departments depend on how extensively a company uses computer and information technology.

When accounts are not maintained separately in the general ledger by department, a company can create departmental information by using a *departmental spreadsheet analysis*. For example, after recording sales in its usual manner, a company can compute daily total sales by department and enter these totals on a sales spreadsheet. At period-end, column totals of the spreadsheet show sales by department. The combined total of all columns equals the balance of the Sales account. A merchandiser that uses a spreadsheet analysis of department sales often uses separate spreadsheets to accumulate sales, sales returns, purchases, and purchases returns by department. If each department keeps a count of its inventory, it can also compute its gross profit (assuming it's a profit center).

Point: Many retailers use a point-of-sales system capturing sales data and creating requests to release inventory from the warehouse and order more merchandise. **Walmart**'s sales system not only collects data for internal use but also is used by **Procter & Gamble** to plan its production and product deliveries to **Walmart.**

Point: **Link Wood Products,** a manufacturer of lawn and garden products, records each sale by department on a spreadsheet. Daily totals are accumulated in another spreadsheet to obtain monthly totals by department.

Quick Check

Answers—p. 343

1. What is the difference between a departmental accounting system and a responsibility accounting system?
2. Service departments (*a*) manufacture products, (*b*) make sales directly to customers, (*c*) produce revenues, (*d*) assist operating departments.
3. Explain the difference between a cost center and a profit center. Cite an example of each.

Departmental Expense Allocation

When a company computes departmental profits, it confronts some accounting challenges that involve allocating its expenses across its operating departments.

Direct and Indirect Expenses

C2 Distinguish between direct and indirect expenses.

Direct expenses are costs readily traced to a department because they are incurred for that department's sole benefit. They require no allocation across departments. For example, the salary of an employee who works in only one department is a direct expense of that one department.

Indirect expenses are costs that are incurred for the joint benefit of more than one department and cannot be readily traced to only one department. For example, if two or more departments share a single building, all enjoy the benefits of the expenses for rent, heat, and light. Indirect expenses are allocated across departments benefiting from them when we need information about departmental profits. Ideally, we allocate indirect expenses by using a cause-effect relation. When we cannot identify cause-effect relations, we allocate each indirect expense on a basis approximating the relative benefit each department receives. Measuring the benefit for each department from an indirect expense can be difficult.

Point: Utility expense has elements of both direct and indirect expenses.

Illustration of Indirect Expense Allocation To illustrate how to allocate an indirect expense, we consider a retail store that purchases janitorial services from an outside company. Management allocates this cost across the store's three departments according to the floor space each occupies. Costs of janitorial services for a recent month are $300. Exhibit 9.1 shows the square feet of floor space each department occupies. The store computes the percent of total square feet allotted to each department and uses it to allocate the $300 cost.

EXHIBIT 9.1
Indirect Expense Allocation

Department	Square Feet	Percent of Total	Allocated Cost
Jewelry	2,400	60%	$180
Watch repair	600	15	45
China and silver	1,000	25	75
Totals	4,000	100%	$300

Specifically, because the jewelry department occupies 60% of the floor space, 60% of the total $300 cost is assigned to it. The same procedure is applied to the other departments. When the allocation process is complete, these and other allocated costs are deducted from the gross profit for each department to determine net income for each. One consideration in allocating costs is to motivate managers and employees to behave as desired. As a result, a cost incurred in one department might be best allocated to other departments when one of the other departments caused the cost.

Allocation of Indirect Expenses

C3 Identify bases for allocating indirect expenses to departments.

This section describes how to identify the bases used to allocate indirect expenses across departments. No standard rule identifies the best basis because expense allocation involves several factors, and the relative importance of these factors varies across departments and organizations. Judgment is required, and people do not always agree. In our discussion, note the parallels between activity-based costing and the departmental expense allocation procedures described here.

Point: Expense allocations cannot always avoid some arbitrariness.

Wages and Salaries Employee wages and salaries can be either direct or indirect expenses. If their time is spent entirely in one department, their wages are direct expenses of that department. However, if employees work for the benefit of more than one department, their wages are indirect expenses and must be allocated across the departments benefited. An employee's contribution to a department usually depends on the number of hours worked in contributing to that department. Thus, a reasonable basis for allocating employee wages and salaries is the *relative amount of time spent in eac h department.* In the case of a supervisor who manages more than one department, recording the time spent in each department may not always

be practical. Instead, a company can allocate the supervisor's salary to departments on the basis of the number of employees in each department—a reasonable basis if a supervisor's main task is managing people. Another basis of allocation is on sales across departments, also a reasonable basis if a supervisor's job reflects on departmental sales.

Point: Some companies ask supervisors to estimate time spent supervising specific departments for purposes of expense allocation.

Rent and Related Expenses Rent expense for a building is reasonably allocated to a department on the basis of floor space it occupies. Location can often make some floor space more valuable than other space. Thus, the allocation method can charge departments that occupy more valuable space a higher expense per square foot. Ground floor retail space, for instance, is often more valuable than basement or upper-floor space because all customers pass departments near the entrance but fewer go beyond the first floor. When no precise measures of floor space values exist, basing allocations on data such as customer traffic and real estate assessments is helpful. When a company owns its building, its expenses for depreciation, taxes, insurance, and other related building expenses are allocated like rent expense.

Advertising Expenses Effective advertising of a department's products increases its sales and customer traffic. Moreover, advertising products for some departments usually helps other departments' sales because customers also often buy unadvertised products. Thus, many stores treat advertising as an indirect expense allocated on the basis of each department's proportion of total sales. For example, a department with 10% of a store's total sales is assigned 10% of advertising expense. Another method is to analyze each advertisement to compute the Web/newspaper space or TV/radio time devoted to the products of a department and charge that department for the proportional costs of advertisements. Management must consider whether this more detailed and costly method is justified.

Equipment and Machinery Depreciation Depreciation on equipment and machinery used only in one department is a direct expense of that department. Depreciation on equipment and machinery used by more than one department is an indirect expense to be allocated across departments. Accounting for each department's depreciation expense requires a company to keep records showing which departments use specific assets. The number of hours that a department uses equipment and machinery is a reasonable basis for allocating depreciation.

Point: Employee morale suffers when allocations are perceived as unfair. Thus, it is important to carefully design and explain the allocation of service department costs.

Utilities Expenses Utilities expenses such as heating and lighting are usually allocated on the basis of floor space occupied by departments. This practice assumes their use is uniform across departments. When this is not so, a more involved allocation can be necessary, although there is often a trade-off between the usefulness of more precise allocations and the effort to compute them.

Point: Manufacturers often allocate electricity cost to departments on the basis of the horsepower of equipment located in each department.

Service Department Expenses To generate revenues, operating departments require support services provided by departments such as personnel, payroll, advertising, and purchasing. Such service departments are typically evaluated as cost centers because they do not produce revenues. (Evaluating them as profit centers requires the use of a system that "charges" user departments a price that then serves as the "revenue" generated by service departments.) A departmental accounting system can accumulate and report costs incurred directly by each service department for this purpose. The system then allocates a service department's expenses to operating departments benefiting from them. This is often done, for example, using traditional two-stage cost allocation (see Chapter 4). Exhibit 9.2 shows some commonly used bases for allocating service department expenses to operating departments.

Point: When a service department "charges" its user departments within a company, a *transfer pricing system* must be set up to determine the "revenue" from its services provided.

EXHIBIT 9.2

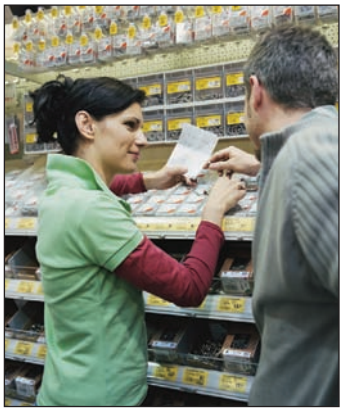
Bases for Allocating Service Department Expenses

Service Department	Common Allocation Bases
Office expenses	Number of employees or sales in each department
Personnel expenses	Number of employees in each department
Payroll expenses	Number of employees in each department
Advertising expenses	Sales or amount of advertising charged directly to each department
Purchasing costs	Dollar amounts of purchases or number of purchase orders processed
Cleaning expenses	Square feet of floor space occupied
Maintenance expenses	Square feet of floor space occupied

P1 Prepare departmental income statements.

Departmental Income Statements

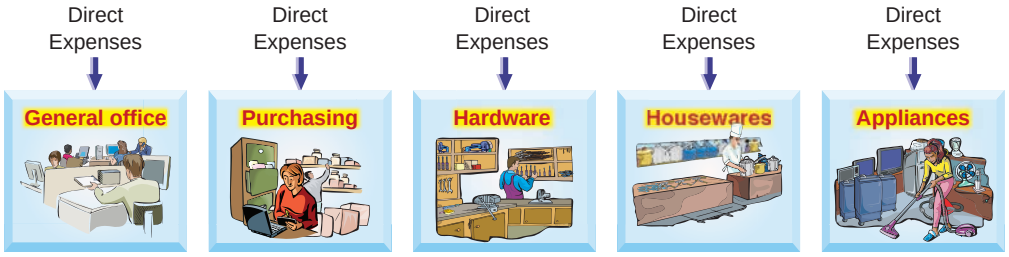
An income statement can be prepared for each operating department once expenses have been assigned to it. Its expenses include both direct expenses and its share of indirect expenses. For this purpose, compiling all expenses incurred in service departments before assigning them to operating departments is useful. We illustrate the steps to prepare departmental income statements using **A-1 Hardware** and its five departments. Two of them (office and purchasing) are service departments and the other three (hardware, housewares, and appliances) are operating (selling) departments. Allocating costs to operating departments and preparing departmental income statements involves four steps. (1) Accumulating direct expenses by department. (2) Allocating indirect expenses across departments. (3) Allocating service department expenses to operating department. (4) Preparing departmental income statements.



Step 1 Step 1 accumulates direct expenses for each service and operating department as shown in Exhibit 9.3. Direct expenses include salaries, wages, and other expenses that each department incurs but does not share with any other department. This information is accumulated in departmental expense accounts.

EXHIBIT 9.3

Step 1: Direct Expense Accumulation

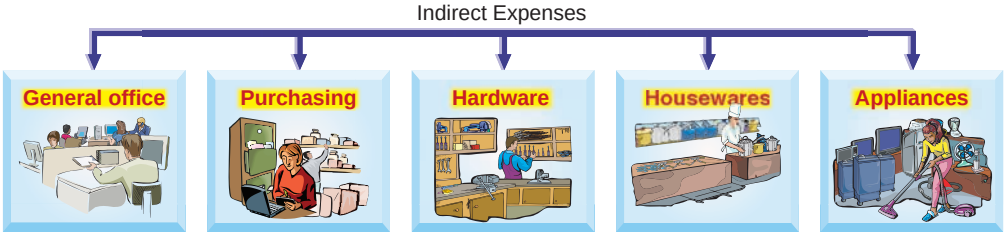


Point: We sometimes allocate service department costs across other service departments before allocating them to operating departments. This "step-wise" process is in advanced courses.

Step 2 Step 2 allocates indirect expenses across all departments as shown in Exhibit 9.4. Indirect expenses can include items such as depreciation, rent, advertising, and any other expenses that cannot be directly assigned to a department. Indirect expenses are recorded in company expense accounts, an allocation base is identified for each expense, and costs are allocated using a *departmental expense allocation spreadsheet* described in step 3.

EXHIBIT 9.4

Step 2: Indirect Expense Allocation



Step 3 Step 3 allocates expenses of the service departments (office and purchasing) to the operating departments. Service department costs are not allocated to other service departments. Exhibit 9.5 reflects the allocation of service department expenses using the allocation base(s). All of the direct and indirect expenses of service departments are allocated to operating departments.[1]

[1] In some cases we allocate a service department's expenses to other service departments when they use its services. For example, expenses of a payroll office benefit all service and operating departments and can be assigned to all departments. Nearly all examples and assignment materials in this book allocate service expenses only to operating departments for simplicity.

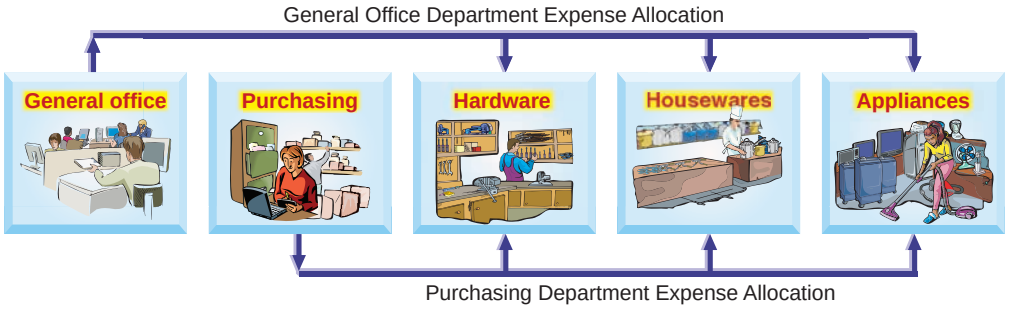


EXHIBIT 9.5

Step 3: Service Department Expense Allocation to Operating Departments

Computations for both steps 2 and 3 are commonly made using a departmental expense allocation spreadsheet as shown in Exhibit 9.6. The first two sections of this spreadsheet list direct expenses and indirect expenses by department. The third section lists the service department expenses and their allocations to operating departments. The allocation bases are identified in the second column, and total expense amounts are reported in the third column.

EXHIBIT 9.6

Departmental Expense Allocation Spreadsheet

File Edit View Insert Format Tools Data Window Help

A-1 HARDWARE
Departmental Expense Allocations
For Year Ended December 31, 2009

		Expense Account Balance	Allocation of Expenses to Departments				
	Allocation Base		General Office Dept.	Purchasing Dept.	Hardware Dept.	Housewares Dept.	Appliances Dept.
Direct expenses							
Salaries expense	Payroll records	$51,900	$13,300	$8,200	$15,600	$ 7,000	$ 7,800
Depreciation—Equipment	Depreciation records	1,500	500	300	400	100	200
Supplies expense	Requisitions	900	200	100	300	200	100
Indirect expenses							
Rent expense	Amount and value of space	12,000	600	600	4,860	3,240	2,700
Utilities expense	Floor space	2,400	300	300	810	540	450
Advertising expense	Sales	1,000			500	300	200
Insurance expense	Value of insured assets	2,500	400	200	900	600	400
Total department expenses		72,200	15,300	9,700	23,370	11,980	11,850
Service department expenses							
General office department	Sales		(15,300)		7,650	4,590	3,060
Purchasing department	Purchase orders			(9,700)	3,880	2,630	3,190
Total expenses allocated to operating departments		$72,200	$ 0	$ 0	$34,900	$19,200	$18,100

Sheet1 Sheet2 Sheet3

The departmental expense allocation spreadsheet is useful in implementing the first three steps. To illustrate, first (step 1) the three direct expenses of salaries, depreciation, and supplies are accumulated in each of the five departments.

Second (step 2), the four indirect expenses of rent, utilities, advertising, and insurance are allocated to all departments using the allocation bases identified. For example, consider rent allocation. Exhibit 9.7 lists the five departments' square footage of space occupied. The two service departments (office and purchasing) occupy 25% of the total space (3,000 sq. feet/12,000 sq. feet). However, they are located near the back of the building, which is of lower value than space near the front that is occupied by operating departments. Management estimates that space near the back accounts for $1,200 of the total rent expense of $12,000. Exhibit 9.8 shows how we allocate the $1,200 rent expense between these two service departments in proportion to their square footage. Exhibit 9.8 shows a simple rule for cost allocations: Allocated cost = Percentage of allocation base × Total cost. We then allocate the remaining $10,800 of rent expense to the three operating departments

EXHIBIT 9.7

Departments' Allocation Bases

Department	Floor Space (Square Feet)	Value of Insured Assets ($)	Sales ($)	Number of Purchase Orders
General office	1,500	$ 38,000		—
Purchasing	1,500	19,000		—*
Hardware	4,050	85,500	$119,500	394
Housewares	2,700	57,000	71,700	267
Appliances	2,250	38,000	47,800	324
Total	12,000	$237,500	$239,000	985

* Purchasing department tracks purchase orders by department.

EXHIBIT 9.8

Allocating Indirect (Rent) Expense to Service Departments

Department	Square Feet	Percent of Total	Allocated Cost
General office	1,500	50.0%	$ 600
Purchasing	1,500	50.0	600
Totals	3,000	100.0%	$1,200

as shown in Exhibit 9.9. We continue step 2 by allocating the $2,400 of utilities expense to all departments based on the square footage occupied as shown in Exhibit 9.10.

EXHIBIT 9.9

Allocating Indirect (Rent) Expense to Operating Departments

Department	Square Feet	Percent of Total	Allocated Cost
Hardware	4,050	45.0%	$ 4,860
Housewares	2,700	30.0	3,240
Appliances	2,250	25.0	2,700
Totals	9,000	100.0%	$10,800

EXHIBIT 9.10

Allocating Indirect (Utilities) Expense to All Departments

Department	Square Feet	Percent of Total	Allocated Cost
General office	1,500	12.50%	$ 300
Purchasing	1,500	12.50	300
Hardware	4,050	33.75	810
Housewares	2,700	22.50	540
Appliances	2,250	18.75	450
Totals	12,000	100.00%	$2,400

Exhibit 9.11 shows the allocation of $1,000 of advertising expense to the three operating departments on the basis of sales dollars. We exclude service departments from this allocation because they do not generate sales.

EXHIBIT 9.11

Allocating Indirect (Advertising) Expense to Operating Departments

Department	Sales	Percent of Total	Allocated Cost
Hardware	$119,500	50.0%	$ 500
Housewares	71,700	30.0	300
Appliances	47,800	20.0	200
Totals	$239,000	100.0%	$1,000

To complete step 2 we allocate insurance expense to each service and operating department as shown in Exhibit 9.12.

Department	Value of Insured Assets	Percent of Total	Allocated Cost
General Office	$ 38,000	16.0%	$ 400
Purchasing	19,000	8.0	200
Hardware	85,500	36.0	900
Housewares	57,000	24.0	600
Appliances	38,000	16.0	400
Total	$237,500	100.0%	$2,500

EXHIBIT 9.12

Allocating Indirect (Insurance) Expense to All Departments

Third (step 3), total expenses of the two service departments are allocated to the three operating departments as shown in Exhibits 9.13 and 9.14.

Department	Sales	Percent of Total	Allocated Cost
Hardware	$119,500	50.0%	$ 7,650
Housewares	71,700	30.0	4,590
Appliances	47,800	20.0	3,060
Total	$239,000	100.0%	$15,300

EXHIBIT 9.13

Allocating Service Department (General Office) Expenses to Operating Departments

Department	Number of Purchase Orders	Percent of Total	Allocated Cost
Hardware	394	40.00%	$3,880
Housewares	267	27.11	2,630
Appliances	324	32.89	3,190
Total	985	100.00%	$9,700

EXHIBIT 9.14

Allocating Service Department (Purchasing) Expenses to Operating Departments

Step 4 The departmental expense allocation spreadsheet can now be used to prepare performance reports for the company's service and operating departments. The general office and purchasing departments are cost centers, and their managers will be evaluated on their control of costs. Actual amounts of service department expenses can be compared to budgeted amounts to help assess cost center manager performance.

Amounts in the operating department columns are used to prepare departmental income statements as shown in Exhibit 9.15. This exhibit uses the spreadsheet for its operating expenses; information on sales and cost of goods sold comes from departmental records.

Example: If the $15,300 general office expenses in Exhibit 9.6 are allocated equally across departments, what is net income for the hardware department and for the combined company?
Answer: Hardware income, $13,350; combined income, $19,000.

Departmental Contribution to Overhead

P2 Prepare departmental contribution reports.

Data from departmental income statements are not always best for evaluating each profit center's performance, especially when indirect expenses are a large portion of total expenses and when weaknesses in assumptions and decisions in allocating indirect expenses can markedly affect net income. In these and other cases, we might better evaluate profit center performance using the **departmental contribution to overhead,** which is a report of the amount of sales less *direct* expenses.[2] We can also examine cost center performance by focusing on control of direct expenses.

Point: Net income is the same in Exhibits 9.15 and 9.16. The method of reporting indirect expenses in Exhibit 9.16 does not change total net income but does identify each department's contribution to overhead and net income.

The upper half of Exhibit 9.16 shows a departmental (profit center) contribution to overhead as part of an expanded income statement. This format is common when reporting departmental contributions to overhead. Using the information in Exhibits 9.15 and 9.16, we can evaluate the profitability of the three profit centers. For instance, let's compare the

[2] A department's contribution is said to be "to overhead" because of the practice of considering all indirect expenses as overhead. Thus, the excess of a department's sales over direct expenses is a contribution toward at least a portion of its total overhead.

EXHIBIT 9.15

Departmental Income Statements

A-1 HARDWARE
Departmental Income Statements
For Year Ended December 31, 2009

	Hardware Department	Housewares Department	Appliances Department	Combined
Sales	$119,500	$71,700	$47,800	$239,000
Cost of goods sold	73,800	43,800	30,200	147,800
Gross profit	45,700	27,900	17,600	91,200
Operating expenses				
Salaries expense	15,600	7,000	7,800	30,400
Depreciation expense—Equipment	400	100	200	700
Supplies expense	300	200	100	600
Rent expense	4,860	3,240	2,700	10,800
Utilities expense	810	540	450	1,800
Advertising expense	500	300	200	1,000
Insurance expense	900	600	400	1,900
Share of general office expenses	7,650	4,590	3,060	15,300
Share of purchasing expenses	3,880	2,630	3,190	9,700
Total operating expenses	34,900	19,200	18,100	72,200
Net income (loss)	**$ 10,800**	**$ 8,700**	**$ (500)**	**$ 19,000**

performance of the appliances department as described in these two exhibits. Exhibit 9.15 shows a $500 net loss resulting from this department's operations, but Exhibit 9.16 shows a $9,500 positive contribution to overhead, which is 19.9% of the appliance department's sales. The contribution of the appliances department is not as large as that of the other selling departments, but a $9,500 contribution to overhead is better than a $500 loss. This tells us that the appliances department is not a money loser. On the contrary, it is contributing $9,500 toward defraying total indirect expenses of $40,500.

EXHIBIT 9.16

Departmental Contribution to Overhead

A-1 HARDWARE
Income Statement Showing Departmental Contribution to Overhead
For Year Ended December 31, 2009

	Hardware Department	Housewares Department	Appliances Department	Combined
Sales	$119,500	$ 71,700	$47,800	$239,000
Cost of goods sold	73,800	43,800	30,200	147,800
Gross profit	45,700	27,900	17,600	91,200
Direct expenses				
Salaries expense	15,600	7,000	7,800	30,400
Depreciation expense—Equipment	400	100	200	700
Supplies expense	300	200	100	600
Total direct expenses	16,300	7,300	8,100	31,700
Departmental contributions to overhead	**$ 29,400**	**$20,600**	**$ 9,500**	**$ 59,500**
Indirect expenses				
Rent expense				10,800
Utilities expense				1,800
Advertising expense				1,000
Insurance expense				1,900
General office department expense				15,300
Purchasing department expense				9,700
Total indirect expenses				40,500
Net income				**$ 19,000**
Contribution as percent of sales	24.6%	28.7%	19.9%	24.9%

Quick Check

Answers—p. 343

4. If a company has two operating (selling) departments (shoes and hats) and two service departments (payroll and advertising), which of the following statements is correct? (*a*) Wages incurred in the payroll department are direct expenses of the shoe department, (*b*) Wages incurred in the payroll department are indirect expenses of the operating departments, or (*c*) Advertising department expenses are allocated to the other three departments.
5. Which of the following bases can be used to allocate supervisors' salaries across operating departments? (*a*) Hours spent in each department, (*b*) number of employees in each department, (*c*) sales achieved in each department, or (*d*) any of the above, depending on which information is most relevant and accessible.
6. What three steps are used to allocate expenses to operating departments?
7. An income statement showing departmental contribution to overhead, (*a*) subtracts indirect expenses from each department's revenues, (*b*) subtracts only direct expenses from each department's revenues, or (*c*) shows net income for each department.

Investment Centers

This section introduces both financial and nonfinancial measures of investment center performance.

Financial Performance Evaluation Measures

A1 Analyze investment centers using return on assets, residual income, and balanced scorecard.

Investment center managers are typically evaluated using performance measures that combine income and assets. Consider the following data for ZTel, a company which operates two divisions: LCD and S-Phone. The LCD division manufactures liquid crystal display (LCD) touch-screen monitors and sells them for use in computers, cellular phones, and other products. The S-Phone division sells smartphones, mobile phones that also function as personal computers, MP3 players, cameras, and global positioning satellite (GPS) systems. Exhibit 9.17 shows current year income and assets for those divisions.

EXHIBIT 9.17
Investment Center Income and Assets

	LCD	S-Phone
Net income	$ 526,500	$ 417,600
Average invested assets	2,500,000	1,850,000

Investment Center Return on Total Assets One measure to evaluate division performance is the **investment center return on total assets,** also called *return on in vestment* (ROI). This measure is computed as follows

$$\text{Return on investment} = \frac{\text{Investment center net income}}{\text{Investment center average invested assets}}$$

The return on investment for the LCD division is 21% (rounded), computed as $526,500/$2,500,000. The S-Phone division's return on investment is 23% (rounded), computed as $417,600/$1,850,000. Though the LCD division earned more dollars of net income, it was less efficient in using its assets to generate income compared to the S-Phone division.

Investment Center Residual Income Another way to evaluate division performance is to compute **investment center residual income,** which is computed as follows

$$\text{Residual income} = \text{Investment center net income} - \text{Target investment center net income}$$

Assume ZTel's top management sets target net income at 8% of divisional assets. For an investment center, this **hurdle rate** is typically the cost of obtaining financing. Applying this hurdle rate using the data from Exhibit 9.17 yields the residual income for ZTel's divisions in Exhibit 9.18:

EXHIBIT 9.18

Investment Center Residual Income

	LCD	S-Phone
Net income	$526,500	$417,600
Less: Target net income		
$2,500,000 × 8%	200,000	
$1,850,000 × 8%		148,000
Investment center residual income	$326,500	$269,600

Unlike return on assets, residual income is expressed in dollars. The LCD division outperformed the S-Phone division on the basis of residual income. However, this result is due in part to the LCD division having a larger asset base than the S-Phone division.

Using residual income to evaluate division performance encourages division managers to accept all opportunities that return more than the target net income, thus increasing company value. For example, the S-Phone division might not want to accept a new customer that will provide a 15% return on investment, since that will reduce the S-Phone division's overall return on investment (23% as shown above). However, the S-Phone division should accept this opportunity because the new customer would increase residual income by providing net income above the target net income.

Point: Residual income is also called *economic value added* (EVA).

Nonfinancial Performance Evaluation Measures

Evaluating performance solely on financial measures such as return on investment or residual income has limitations. For example, some investment center managers might forgo profitable opportunities to keep their return on investment high. Also, residual income is less useful when comparing investment centers of different size. And, both return on investment and residual income can encourage managers to focus too heavily on short-term financial goals.

In response to these limitations, companies consider nonfinancial measures. For example, a delivery company such as **FedEx** might track the percentage of on-time deliveries. The percentage of defective tennis balls manufactured can be used to assess performance of **Penn**'s production managers. **Walmart**'s credit card screens commonly ask customers at check-out whether the cashier was friendly or the store was clean. This kind of information can help division managers run their divisions and help top management evaluate division manager performance.

Balanced Scorecard

The **balanced scorecard** is a system of performance measures, including nonfinancial measures, used to assess company and division manager performance. The balanced scorecard requires managers to think of their company from four perspectives:

1. *Customer:* What do customers think of us?
2. *Internal processes:* Which of our operations are critical to meeting customer needs?
3. *Innovation and learning:* How can we improve?
4. *Financial:* What do our owners think of us?

Point: One survey indicates that nearly 60% of global companies use some form of balanced scorecard.

The balanced scorecard collects information on several key performance indicators within each of the four perspectives. These key indicators vary across companies. Exhibit 9.19 lists common performance measures.

After selecting key performance indicators, companies collect data on each indicator and compare actual amounts to expected amounts to assess performance. For example, a company might have a goal of filling 98% of customer orders within two hours. Balanced scorecard reports are often presented in graphs or tables that can be updated frequently. Such timely information aids division managers in their decisions, and can be used by top management to evaluate division manager performance.



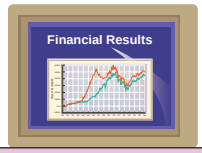



EXHIBIT 9.19

Balanced Scorecard Performance Indicators

Customer	Internal Process	Innovation/Learning	Financial
• Customer satisfaction rating • # of new customers acquired • % of on-time deliveries • % of sales from new products • Time to fill orders % of sales returned	• Defect rates • Cycle time • Product costs • Labor hours per order • Production days without an accident	• Employee satisfaction • Employee turnover • $ spent on training • # of new products • # of patents • $ spent on research	• Net income • ROI • Sales growth • Cash flow • Residual income • Stock price

Exhibit 9.20 is an example of balanced scorecard reporting on the customer perspective for an Internet retailer. This scorecard reports for example that the retailer is getting 62% of its potential customers successfully through the checkout process, and that 2.2% of all orders are returned. The *color* of the arrows in the right-most column reveals whether the company is exceeding its goal (green), barely meeting the goal (yellow), or not meeting the goal (red). The *direction* of the arrows reveals any trend in performance: an upward arrow indicates improvement, a downward arrow indicates declining performance, and an arrow pointing sideways indicates no change. A review of these arrows' color and direction suggests the retailer is meeting or exceeding its goals on checkout success, orders returned, and customer satisfaction. Further, checkout success and customer satisfaction are improving. The red arrow shows the company has received more customer complaints than was hoped for; however, the number of customer complaints is declining. A manager would combine this information with similar information on the internal process, innovation and learning, and financial perspectives to get an overall view of division performance.

Customer Perspective	Actual	Goal
Checkout success	62%	↑
Orders returned	2.20%	→
Customer satisfaction rating	9.5	↑
Number of customer complaints	142	↓

EXHIBIT 9.20

Balanced Scorecard Reporting: Internet Retailer

Decision Maker

Center Manager Your center's usual return on total assets is 19%. You are considering two new investments for your center. The first requires a $250,000 average investment and is expected to yield annual net income of $50,000. The second requires a $1 million average investment with an expected annual net income of $175,000. Do you pursue either? [Answer—p. 343]

Responsibility Accounting

C4 Explain controllable costs and responsibility accounting.

Departmental accounting reports often provide data used to evaluate a department's performance, but are they useful in assessing how well a department *manager* performs? Neither departmental income nor its contribution to overhead may be useful because many expenses can be outside a manager's control. Instead, we often evaluate a manager's performance using

responsibility accounting reports that describe a department's activities in terms of **controllable costs.**[3] A cost is controllable if a manager has the power to determine or at least significantly affect the amount incurred. **Uncontrollable costs** are not within the manager's control or influence.

Controllable versus Direct Costs

Controllable costs are not always the same as direct costs. Direct costs are readily traced to a department, but the department manager might or might not control their amounts. For example, department managers often have little or no control over depreciation expense because they cannot affect the amount of equipment assigned to their departments. Also, department managers rarely control their own salaries. However, they can control or influence items such as the cost of supplies used in their department. When evaluating managers' performances, we should use data reflecting their departments' outputs along with their controllable costs and expenses.

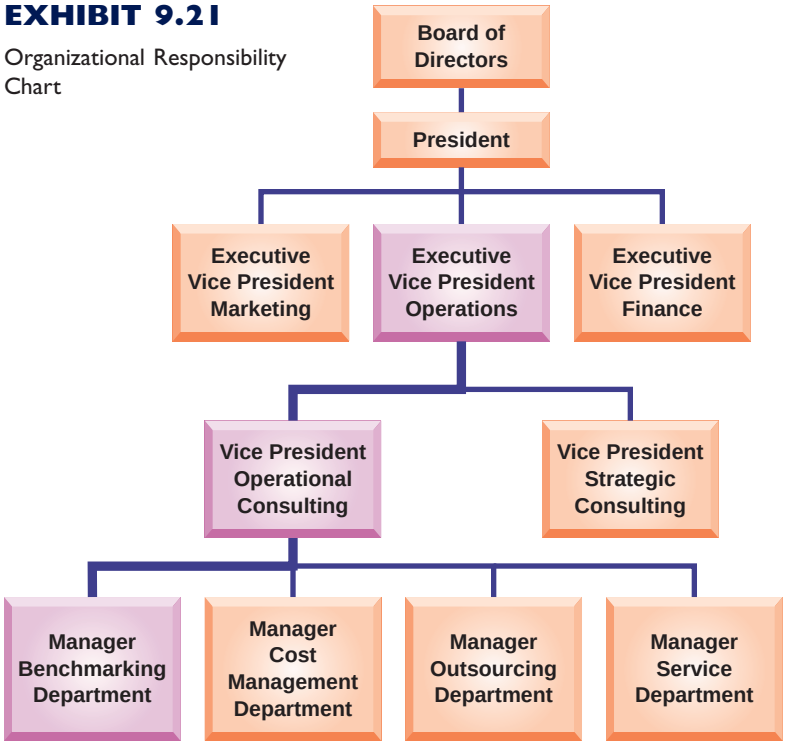
Distinguishing between controllable and uncontrollable costs depends on the particular manager and time period under analysis. For example, the cost of property insurance is usually not controllable at the department manager's level but by the executive responsible for obtaining the company's insurance coverage. Likewise, this executive might not control costs resulting from insurance policies already in force. However, when a policy expires, this executive can renegotiate a replacement policy and then controls these costs. Therefore, all costs are controllable at some management level if the time period is sufficiently long. We must use good judgment in identifying controllable costs.

Responsibility Accounting System

A *responsibility accounting system* uses the concept of controllable costs to assign managers the responsibility for costs and expenses under their control. Prior to each reporting period, a company prepares plans that identify costs and expenses under each manager's control. These plans are called **responsibility accounting budgets.** To ensure the cooperation of managers and the reasonableness of budgets, managers should be involved in preparing their budgets.

EXHIBIT 9.21

Organizational Responsibility Chart



A responsibility accounting system also involves performance reports. A **responsibility accounting performance report** accumulates and reports costs and expenses that a manager is responsible for and their budgeted amounts. Management's analysis of differences between budgeted amounts and actual costs and expenses often results in corrective or strategic managerial actions. Upper-level management uses performance reports to evaluate the effectiveness of lower-level managers in controlling costs and expenses and keeping them within budgeted amounts.

A responsibility accounting system recognizes that control over costs and expenses belongs to several levels of management. We illustrate this by considering the organization chart in Exhibit 9.21. The lines in this chart connecting the managerial positions reflect channels of authority. For example, the four department managers of this consulting firm (benchmarking, cost management, outsourcing, and service) are responsible for controllable costs and expenses incurred in their

[3] The terms *cost* and *expense* are often used interchangeably in managerial accounting, but they are not necessarily the same. *Cost* often refers to the monetary outlay to acquire some resource that can have present and future benefit. *Expense* usually refers to an expired cost. That is, as the benefit of a resource expires, a portion of its cost is written off as an expense.

departments, but these same costs are subject to the overall control of the vice president (VP) for operational consulting. Similarly, this VP's costs are subject to the control of the executive vice president (EVP) for operations, the president, and, ultimately, the board of directors.

At lower levels, managers have limited responsibility and relatively little control over costs and expenses. Performance reports for low-level management typically cover few controllable costs. Responsibility and control broaden for higher-level managers; therefore, their reports span a wider range of costs. However, reports to higher-level managers seldom contain the details reported to their subordinates but are summarized for two reasons: (1) lower-level managers are often responsible for these detailed costs and (2) detailed reports can obscure broader, more important issues facing a company.

Point: Responsibility accounting does not place blame. Instead, responsibility accounting is used to identify opportunities for improving performance.

Exhibit 9.22 shows summarized performance reports for the three management levels identified in Exhibit 9.21. Exhibit 9.22 shows that costs under the control of the benchmarking department manager are totaled and included among controllable costs of the VP for operational consulting. Also, costs under the control of the VP are totaled and included among controllable costs of the EVP for operations. In this way, a responsibility accounting system provides relevant information for each management level.

EXHIBIT 9.22

Responsibility Accounting Performance Reports

Executive Vice President, Operations

Controllable Costs	Budgeted Amount (For July)	Actual Amount (For July)	Over (Under) Budget (For July)
Salaries, VPs	$ 80,000	$ 80,000	$ 0
Quality control costs	21,000	22,400	1,400
Office costs	29,500	28,800	(700)
Operational consulting	**276,700**	**279,500**	**2,800**
Strategic consulting	390,000	380,600	(9,400)
Totals	$ 797,200	$ 791,300	$ (5,900)

Vice President, Operational Consulting

Controllable Costs	Budgeted Amount (For July)	Actual Amount (For July)	Over (Under) Budget (For July)
Salaries, department managers	$ 75,000	$ 78,000	$ 3,000
Depreciation	10,600	10,600	0
Insurance	6,800	6,300	(500)
Benchmarking department	**79,600**	**79,900**	**300**
Cost management department	61,500	60,200	(1,300)
Outsourcing department	24,300	24,700	400
Service department	18,900	19,800	900
Totals	**$276,700**	**$279,500**	**$2,800**

Manager, Benchmarking Department

Controllable Costs	Budgeted Amount (For July)	Actual Amount (For July)	Over (Under) Budget (For July)
Salaries	$ 51,600	$ 52,500	$ 900
Supplies	8,000	7,800	(200)
Other controllable costs	20,000	19,600	(400)
Totals	**$ 79,600**	**$ 79,900**	**$ 300**

Technological advances increase our ability to produce vast amounts of information that often exceed our ability to use it. Good managers select relevant data for planning and controlling the areas under their responsibility. A good responsibility accounting system makes every effort to provide relevant information to the right person (the one who controls the cost) at the right time (before a cost is out of control).

Point: Responsibility accounting usually divides a company into subunits, or *responsibility centers*. A center manager is evaluated on how well the center performs, as reported in responsibility accounting reports.

Quick Check

Answers—p. 343

8. Are the reports of departmental net income and the departmental contribution to overhead useful in assessing a department manager's performance? Explain.
9. Performance reports to evaluate managers should (*a*) include data about controllable expenses, (*b*) compare actual results with budgeted levels, or (*c*) both (*a*) and (*b*).

Decision Analysis — Investment Center Profit Margin and Investment Turnover

A2 Analyze investment centers using profit margin and investment turnover.

We can further examine investment center (division) performance by splitting return on investment into **profit margin** and **investment turnover** as follows

$$\text{Return on investment} = \text{Profit margin} \times \text{Investment turnover}$$

$$\frac{\text{Investment center net income}}{\text{Investment center average assets}} = \frac{\text{Investment center net income}}{\text{Investment center sales}} \times \frac{\text{Investment center sales}}{\text{Investment center average assets}}$$

Profit margin measures the income earned per dollar of sales. **Investment turnover** measures how efficiently an investment center generates sales from its invested assets. Higher profit margin and higher investment turnover indicate better performance. To illustrate, consider **Best Buy** which reports in Exhibit 9.23 results for two divisions (segments): Domestic and International.

EXHIBIT 9.23

Best Buy Division Sales, Income, and Assets

($ millions)	Domestic	International
Sales	$24,616	$2,817
Net income	1,393	49
Average invested assets	8,372	1,922

Profit margin and investment turnover for its Domestic and International divisions are computed and shown in Exhibit 9.24:

EXHIBIT 9.24

Best Buy Division Profit Margin and Investment Turnover

($ millions)	Domestic	International
Profit Margin		
$1,393/$24,616	5.66%	
$49/$2,817		1.74%
Investment Turnover		
$24,616/$8,372	2.94	
$2,817/$1,922		1.47

Best Buy's Domestic division generates 5.66 cents of profit per $1 of sales, while its International division generates only 1.74 cents of profit per dollar of sales. Its Domestic division also uses its assets more efficiently; its investment turnover of 2.94 is twice that of its International division's 1.47. Top management can use profit margin and investment turnover to evaluate the performance of division managers. The measures can also aid management when considering further investment in its divisions.

Decision Maker

Division Manager You manage a division in a highly competitive industry. You will receive a cash bonus if your division achieves an ROI above 12%. Your division's profit margin is 7%, equal to the industry average, and your division's investment turnover is 1.5. What actions can you take to increase your chance of receiving the bonus? [Answer—p. 343]

Demonstration Problem

Management requests departmental income statements for Hacker's Haven, a computer store that has five departments. Three are operating departments (hardware, software, and repairs) and two are service departments (general office and purchasing).

	General Office	Purchasing	Hardware	Software	Repairs
Sales	—	—	$960,000	$600,000	$840,000
Cost of goods sold	—	—	500,000	300,000	200,000
Direct expenses					
Payroll	$60,000	$45,000	80,000	25,000	325,000
Depreciation	6,000	7,200	33,000	4,200	9,600
Supplies	15,000	10,000	10,000	2,000	25,000

The departments incur several indirect expenses. To prepare departmental income statements, the indirect expenses must be allocated across the five departments. Then the expenses of the two service departments must be allocated to the three operating departments. Total cost amounts and the allocation bases for each indirect expense follow.

Indirect Expense	Total Cost	Allocation Basis
Rent	$150,000	Square footage occupied
Utilities	50,000	Square footage occupied
Advertising	125,000	Dollars of sales
Insurance	30,000	Value of assets insured
Service departments		
General office	?	Number of employees
Purchasing	?	Dollars of cost of goods sold

The following additional information is needed for indirect expense allocations.

Department	Square Feet	Sales	Insured Assets	Employees	Cost of Goods Sold
General office	500		$ 60,000		
Purchasing	500		72,000		
Hardware	4,000	$ 960,000	330,000	5	$ 500,000
Software	3,000	600,000	42,000	5	300,000
Repairs	2,000	840,000	96,000	10	200,000
Totals	10,000	$2,400,000	$600,000	20	$1,000,000

Required

1. Prepare a departmental expense allocation spreadsheet for Hacker's Haven.
2. Prepare a departmental income statement reporting net income for each operating department and for all operating departments combined.

Planning the Solution

- Set up and complete four tables to allocate the indirect expenses—one each for rent, utilities, advertising, and insurance.
- Allocate the departments' indirect expenses using a spreadsheet like the one in Exhibit 9.6. Enter the given amounts of the direct expenses for each department. Then enter the allocated amounts of the indirect expenses that you computed.
- Complete two tables for allocating the general office and purchasing department costs to the three operating departments. Enter these amounts on the spreadsheet and determine the total expenses allocated to the three operating departments.
- Prepare departmental income statements like the one in Exhibit 9.15. Show sales, cost of goods sold, gross profit, individual expenses, and net income for each of the three operating departments and for the combined company.

Solution to Demonstration Problem

Allocations of the four indirect expenses across the five departments.

Rent	Square Feet	Percent of Total	Allocated Cost
General office	500	5.0%	$ 7,500
Purchasing	500	5.0	7,500
Hardware	4,000	40.0	60,000
Software	3,000	30.0	45,000
Repairs	2,000	20.0	30,000
Totals	10,000	100.0%	$150,000

Utilities	Square Feet	Percent of Total	Allocated Cost
General office	500	5.0%	$ 2,500
Purchasing	500	5.0	2,500
Hardware	4,000	40.0	20,000
Software	3,000	30.0	15,000
Repairs	2,000	20.0	10,000
Totals	10,000	100.0%	$50,000

Advertising	Sales Dollars	Percent of Total	Allocated Cost
Hardware	$ 960,000	40.0%	$ 50,000
Software	600,000	25.0	31,250
Repairs	840,000	35.0	43,750
Totals	$2,400,000	100.0%	$125,000

Insurance	Assets Insured	Percent of Total	Allocated Cost
General office	$ 60,000	10.0%	$ 3,000
Purchasing	72,000	12.0	3,600
Hardware	330,000	55.0	16,500
Software	42,000	7.0	2,100
Repairs	96,000	16.0	4,800
Totals	$600,000	100.0%	$30,000

1. Allocations of service department expenses to the three operating departments.

General Office Allocations to	Employees	Percent of Total	Allocated Cost
Hardware	5	25.0%	$23,500
Software	5	25.0	23,500
Repairs	10	50.0	47,000
Totals	20	100.0%	$94,000

Purchasing Allocations to	Cost of Goods Sold	Percent of Total	Allocated Cost
Hardware	$ 500,000	50.0%	$37,900
Software	300,000	30.0	22,740
Repairs	200,000	20.0	15,160
Totals	$1,000,000	100.0%	$75,800

HACKER'S HAVEN
Departmental Expense Allocations
For Year Ended December 31, 2009

	Allocation Base	Expense Account Balance	General Office Dept.	Purchasing Dept.	Hardware Dept.	Software Dept.	Repairs Dept.
Direct Expenses							
Payroll		$ 535,000	$ 60,000	$ 45,000	$ 80,000	$ 25,000	$ 325,000
Depreciation		60,000	6,000	7,200	33,000	4,200	9,600
Supplies		62,000	15,000	10,000	10,000	2,000	25,000
Indirect Expenses							
Rent	Square ft.	150,000	7,500	7,500	60,000	45,000	30,000
Utilities	Square ft.	50,000	2,500	2,500	20,000	15,000	10,000
Advertising	Sales	125,000	—	—	50,000	31,250	43,750
Insurance	Assets	30,000	3,000	3,600	16,500	2,100	4,800
Total expenses		1,012,000	94,000	75,800	269,500	124,550	448,150
Service Department Expenses							
General office	Employees		(94,000)		23,500	23,500	47,000
Purchasing	Goods sold			(75,800)	37,900	22,740	15,160
Total expenses allocated to operating departments		$1,012,000	$ 0	$ 0	$330,900	$170,790	$510,310

2. Departmental income statements for Hacker's Haven.

HACKER'S HAVEN
Departmental Income Statements
For Year Ended December 31, 2009

	Hardware	Software	Repairs	Combined
Sales	$ 960,000	$ 600,000	$ 840,000	$2,400,000
Cost of goods sold	500,000	300,000	200,000	1,000,000
Gross profit	460,000	300,000	640,000	1,400,000
Expenses				
Payroll	80,000	25,000	325,000	430,000
Depreciation	33,000	4,200	9,600	46,800
Supplies	10,000	2,000	25,000	37,000
Rent	60,000	45,000	30,000	135,000
Utilities	20,000	15,000	10,000	45,000
Advertising	50,000	31,250	43,750	125,000
Insurance	16,500	2,100	4,800	23,400
Share of general office	23,500	23,500	47,000	94,000
Share of purchasing	37,900	22,740	15,160	75,800
Total expenses	330,900	170,790	510,310	1,012,000
Net income	**$129,100**	**$129,210**	**$129,690**	**$ 388,000**

APPENDIX

Transfer Pricing

9A

Divisions in decentralized companies sometimes do business with one another. For example, a separate division of **Harley-Davidson** manufactures its plastic and fiberglass parts used in the company's motorcycles. **Anheuser-Busch**'s metal container division makes cans and lids used in its brewing operations, and also sells cans and lids to soft-drink companies. A division of **Prince** produces strings used in tennis rackets made by **Prince** and other manufacturers.

C5 Explain transfer pricing and methods to set transfer prices.

Determining the price that should be used to record transfers between divisions in the same company is the focus of this appendix. Because these transactions are transfers within the same company, the price to record them is called the **transfer price.** In decentralized organizations, division managers have input on or decide those prices. Transfer prices can be used in cost, profit, and investment centers. Since these transfers are not with customers outside the company, the transfer price has no direct impact on the company's overall profits. However, transfer prices can impact performance evaluations and, if set incorrectly, lead to bad decisions.

Point: Transfer pricing can impact company profits when divisions are located in countries with different tax rates; this is covered in advanced courses.

Alternative Transfer Prices

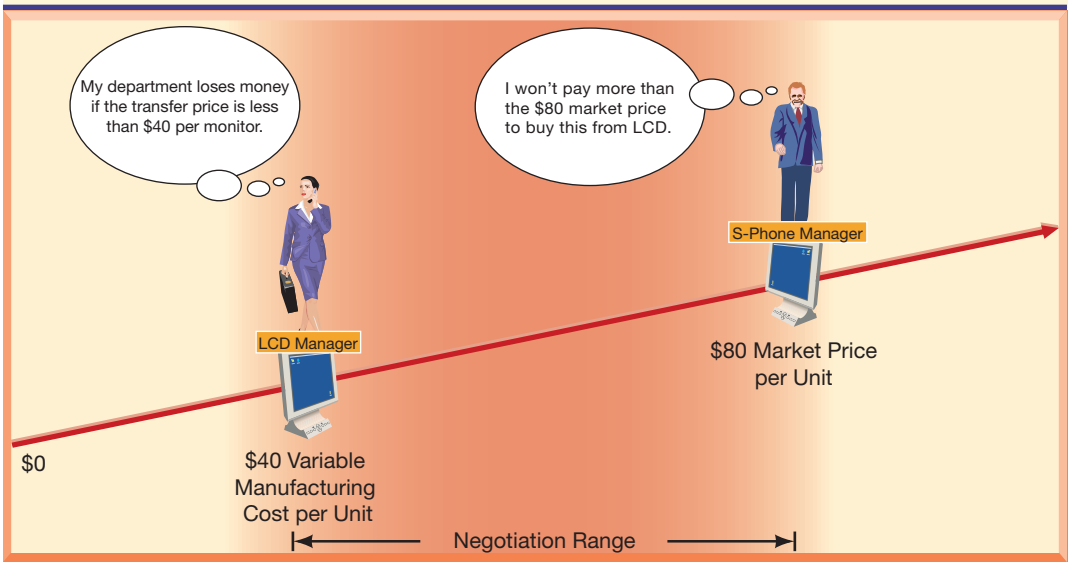
Exhibit 9A.1 reports data on the LCD division of ZTel. LCD manufactures liquid crystal display (LCD) touch-screen monitors for use in ZTel's S-Phone division's smartphones, which sell for $400 each. The monitors can also be used in other products. So, LCD can sell its monitors to buyers other than S-Phone. Likewise, the S-Phone division can purchase monitors from suppliers other than LCD.

Exhibit 9A.1 reveals the range of transfer prices for transfers of monitors from LCD to S-Phone. The manager of LCD wants to report a division profit; thus, this manager will not accept a transfer price less than $40 (variable manufacturing cost per unit) because doing so would cause the division to lose

EXHIBIT 9A.1

LCD Division Manufacturing Information—Monitors

Production capacity	100,000 units
Selling price per unit to outside customers	$80
Variable manufacturing costs per unit	$40
Fixed manufacturing costs	$2,000,000



money on each monitor transferred. The LCD manager will only consider transfer prices of $40 or more. On the other hand, the S-Phone division manager also wants to report a division profit. Thus, this manager will not pay more than $80 per monitor because similar monitors can be bought from outside suppliers at that price. The S-Phone manager will only consider transfer prices of $80 or less. As any transfer price between $40 and $80 per monitor is possible, how does ZTel determine the transfer price? The answer depends in part on whether the LCD division has excess capacity to manufacture monitors.

No Excess Capacity Assume the LCD division can sell every monitor it produces, and thus is producing 100,000 units. In that case, a **market-based transfer price** of $80 per monitor is preferred. At that price, the LCD division manager is willing to either transfer monitors to S-Phone or sell to outside customers. The S-Phone manager cannot buy monitors for less than $80 from outside suppliers, so the $80 price is acceptable. Further, with a transfer price of $80 per monitor, top management of ZTel is indifferent to S-Phone buying from LCD or buying similar-quality monitors from outside suppliers.

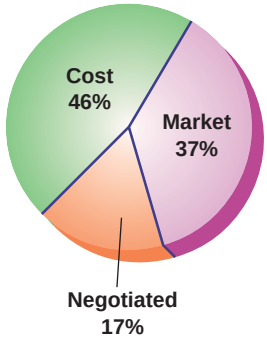
With no excess capacity, the LCD manager will not accept a transfer price less than $80 per monitor. For example, suppose the S-Phone manager suggests a transfer price of $70 per monitor. At that price the LCD manager incurs an unnecessary *opportunity cost* of $10 per monitor (computed as $80 market price minus $70 transfer price). This would lower the LCD division's income and hurt its performance evaluation.

Excess Capacity Assume that the LCD division has excess capacity. For example, the LCD division might currently be producing only 80,000 units. Because LCD has $2,000,000 of fixed manufacturing costs, both LCD and the top management of ZTel prefer that S-Phone purchases its monitors from LCD. For example, if S-Phone purchases its monitors from an outside supplier at the market price of $80 each, LCD manufactures no units. Then, LCD reports a division loss equal to its fixed costs, and ZTel overall reports a lower net income as its costs are higher. Consequently, with excess capacity, LCD should accept any transfer price of $40 per unit or greater and S-Phone should purchase monitors from LCD. This will allow LCD to recover some (or all) of its fixed costs and increase ZTel's overall profits. For example, if a transfer price of $50 per monitor is used, the S-Phone manager is pleased to buy from LCD, since that price is below the market price of $80. For each monitor transferred from LCD to S-Phone at $50, the LCD division receives a *contribution margin* of $10 (computed as $50 transfer price less $40 variable cost) to contribute towards recovering its fixed costs. This form of transfer pricing is called **cost-based transfer pricing.** Under this approach the transfer price might be based on variable costs, total costs, or variable costs plus a markup. Determining the transfer price under excess capacity is complex and is covered in advanced courses.

Additional Issues in Transfer Pricing Several additional issues arise in determining transfer prices which include the following:

- **No market price exists.** Sometimes there is no market price for the product being transferred. The product might be a key component that requires additional conversion costs at the next stage and is not easily replicated by an outside company. For example, there is no market for a console for a Nissan Maxima and there is no substitute console Nissan can use in assembling a Maxima. In this case a market-based transfer price cannot be used.
- **Cost control.** To provide incentives for cost control, transfer prices might be based on standard, rather than actual costs. For example, if a transfer price of actual variable costs plus a markup of $20 per unit is used in the case above, LCD has no incentive to control its costs.
- **Division managers' negotiation.** With excess capacity, division managers will often negotiate a transfer price that lies between the variable cost per unit and the market price per unit. In this case, the **negotiated transfer price** and resulting departmental performance reports reflect, in part, the negotiating skills of the respective division managers. This might not be best for overall company performance.
- **Nonfinancial factors.** Factors such as quality control, reduced lead times, and impact on employee morale can be important factors in determining transfer prices.

Transfer Pricing Approaches Used by Companies



APPENDIX

Joint Costs and Their Allocation

9B

Most manufacturing processes involve **joint costs,** which refer to costs incurred to produce or purchase two or more products at the same time. A joint cost is like an indirect expense in the sense that more than one cost object share it. For example, a sawmill company incurs a joint cost when it buys logs that it cuts into lumber as shown in Exhibit 9B.1. The joint cost includes the logs (raw material) and its cutting (conversion) into boards classified as Clear, Select, No. 1 Common, No. 2 Common, No. 3 Common, and other types of lumber and by-products.

C6 Describe allocation of joint costs across products.

When a joint cost is incurred, a question arises as to whether to allocate it to different products resulting from it. The answer is that when management wishes to estimate the costs of individual products, joint costs are included and must be allocated to these joint products. However, when management needs information to help decide whether to sell a product at a certain point in the production process or to process it further, the joint costs are ignored.

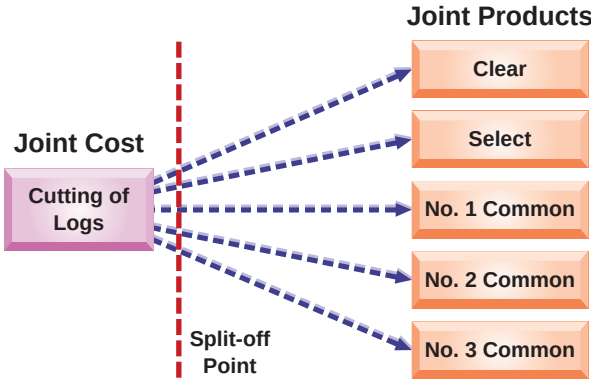


EXHIBIT 9B.1
Joint Products from Logs

Financial statements prepared according to GAAP must assign joint costs to products. To do this, management must decide how to allocate joint costs across products benefiting from these costs. If some products are sold and others remain in inventory, allocating joint costs involves assigning costs to both cost of goods sold and ending inventory.

The two usual methods to allocate joint costs are the (1) *physical basis* and (2) the *value basis.* The physical basis typically involves allocating joint cost using physical characteristics such as the ratio of pounds, cubic feet, or gallons of each joint product to the total pounds, cubic feet, or gallons of all joint products flowing from the cost. This method is not preferred because the resulting cost allocations do not reflect the relative market values the joint cost generates. The preferred approach is the value basis, which allocates joint cost in proportion to the sales value of the output produced by the process at the "split-off point"; see Exhibit 9B.1.

Physical Basis Allocation of Joint Cost To illustrate the physical basis of allocating a joint cost, we consider a sawmill that bought logs for $30,000. When cut, these logs produce 100,000 board feet of lumber in the grades and amounts shown in Exhibit 9B.2. The logs produce 20,000 board feet of No. 3 Common lumber, which is 20% of the total. With physical allocation, the No. 3 Common lumber is assigned 20% of the $30,000 cost of the logs, or $6,000 ($30,000 × 20%). Because this low-grade lumber sells for $4,000, this allocation gives a $2,000 loss from its production and sale. The physical basis for allocating joint costs does not reflect the extra value flowing into some products or the inferior value flowing into others. That is, the portion of a log that produces Clear and Select grade lumber is worth more than the portion used to produce the three grades of common lumber, but the physical basis fails to reflect this.

EXHIBIT 9B.2

Allocating Joint Costs on a Physical Basis

Grade of Lumber	Board Feet Produced	Percent of Total	Allocated Cost	Sales Value	Gross Profit
Clear and Select	10,000	10.0%	$ 3,000	$12,000	$ 9,000
No. 1 Common	30,000	30.0	9,000	18,000	9,000
No. 2 Common	40,000	40.0	12,000	16,000	4,000
No. 3 Common	20,000	20.0	6,000	4,000	(2,000)
Totals	100,000	100.0%	$30,000	$50,000	$20,000

Value Basis Allocation of Joint Cost Exhibit 9B.3 illustrates the value basis method of allocation. It determines the percents of the total costs allocated to each grade by the ratio of each grade's sales value to the total sales value of $50,000 (sales value is the unit selling price multiplied by the number of units produced). The Clear and Select lumber grades receive 24% of the total cost ($12,000/$50,000) instead of the 10% portion using a physical basis. The No. 3 Common lumber receives only 8% of the total cost, or $2,400, which is much less than the $6,000 assigned to it using the physical basis.

EXHIBIT 9B.3

Allocating Joint Costs on a Value Basis

Grade of Lumber	Sales Value	Percent of Total	Allocated Cost	Gross Profit
Clear and Select	$12,000	24.0%	$ 7,200	$ 4,800
No. 1 Common	18,000	36.0	10,800	7,200
No. 2 Common	16,000	32.0	9,600	6,400
No. 3 Common	4,000	8.0	2,400	1,600
Totals	$50,000	100.0%	$30,000	$20,000

Example: Refer to Exhibit 9B.3. If the sales value of Clear and Select lumber is changed to $10,000, what is the revised ratio of the market value of No. 1 Common to the total?
Answer: $18,000/$48,000 = 37.5%

An outcome of value basis allocation is that *each* grade produces exactly the same 40% gross profit at the split-off point. This 40% rate equals the gross profit rate from selling all the lumber made from the $30,000 logs for a combined price of $50,000.

Quick Check

Answers—p. 343

10. A company produces three products, B1, B2, and B3. The joint cost incurred for the current month for these products is $180,000. The following data relate to this month's production:

Product	Units Produced	Unit Sales Value
B1	96,000	$3.00
B2	64,000	6.00
B3	32,000	9.00

The amount of joint cost allocated to product B3 using the value basis allocation is (*a*) $30,000, (*b*) $54,000, or (*c*) $90,000.

Summary

C1 Explain departmentalization and the role of departmental accounting. Companies are divided into departments when they are too large to be effectively managed as a single unit. Operating departments carry out an organization's main functions. Service departments support the activities of operating departments. Departmental accounting systems provide information for evaluating departmental performance.

C2 Distinguish between direct and indirect expenses. Direct expenses are traced to a specific department and are incurred for the sole benefit of that department. Indirect expenses benefit more than one department. Indirect expenses are allocated to departments when computing departmental net income.

C3 Identify bases for allocating indirect expenses to departments. Ideally, we allocate indirect expenses by using a cause-effect relation for the allocation base. When a cause-effect relation is not identifiable, each indirect expense is allocated on a basis reflecting the relative benefit received by each department.

C4 Explain controllable costs and responsibility accounting. A controllable cost is one that is influenced by a specific management level. The total expenses of operating a department often include some items a department manager does not control. Responsibility accounting systems provide information for evaluating the performance of department managers. A responsibility accounting system's performance reports for evaluating department managers should include only the expenses (and revenues) that each manager controls.

C5 Explain transfer pricing and methods to set transfer prices. Transfer prices are used to record transfers of items between divisions of the same company. Transfer prices can be based on costs or market prices, or can be negotiated by division managers.

C6 Describe allocation of joint costs across products. A joint cost refers to costs incurred to produce or purchase two or more products at the same time. When income statements are prepared, joint costs are usually allocated to the resulting joint products using either a physical or value basis.

A1 Analyze investment centers using return on assets, residual income, and balanced scorecard. A financial measure often used to evaluate an investment center manager is the *investment center return on total assets,* also called *return on investment*. This measure is computed as the center's net income divided by the center's average total assets. Residual income, computed as investment center net income minus a target net income is an alternative financial measure of investment center performance. A balanced scorecard uses a combination of financial and non-financial measures to evaluate performance.

A2 Analyze investment centers using profit margin and investment turnover. Return on investment can also be computed as profit margin times investment turnover. Profit margin (equal to net income/sales) measures the income earned per dollar of sales and investment turnover (equal to sales/assets) measures how efficiently a division uses its assets.

P1 Prepare departmental income statements. Each profit center (department) is assigned its expenses to yield its own income statement. These costs include its direct expenses and its share of indirect expenses. The departmental income statement lists its revenues and costs of goods sold to determine gross profit. Its operating expenses (direct expenses and its indirect expenses allocated to the department) are deducted from gross profit to yield departmental net income.

P2 Prepare departmental contribution reports. The departmental contribution report is similar to the departmental income statement in terms of computing the gross profit for each department. Then the direct operating expenses for each department are deducted from gross profit to determine the contribution generated by each department. Indirect operating expenses are deducted *in total* from the company's combined contribution.

Guidance Answers to Decision Maker and Decision Ethics

Center Manager We must first realize that the two investment opportunities are not comparable on the basis of absolute dollars of income or on assets. For instance, the second investment provides a higher income in absolute dollars but requires a higher investment. Accordingly, we need to compute return on total assets for each alternative: (1) \$50,000 ÷ \$250,000 = 20%, and (2) \$175,000 ÷ \$1 million = 17.5%. Alternative 1 has the higher return and is preferred over alternative 2. Do you pursue one, both, or neither? Because alternative 1's return is higher than the center's usual return of 19%, it should be pursued, assuming its risks are acceptable. Also, since alternative 1 requires a small investment, top management is likely to be more agreeable to pursuing it. Alternative 2's return is lower than the usual 19% and is not likely to be acceptable.

Division Manager Your division's ROI without further action is 10.5% (equal to 7% × 1.5). In a highly competitive industry, it is difficult to increase profit margins by raising prices. Your division might be better able to control its costs to increase its profit margin. In addition, you might engage in a marketing program to increase sales without increasing your division's invested assets. Investment turnover and thus ROI will increase if the marketing campaign attracts customers.

Guidance Answers to Quick Checks

1. A departmental accounting system provides information used to evaluate the performance of *departments.* A responsibility accounting system provides information used to evaluate the performance of *department managers.*
2. *d*
3. A cost center, such as a service department, incurs costs without directly generating revenues. A profit center, such as a product division, incurs costs but also generates revenues.

4. *b*

5. *d*

6. (1) Assign the direct expenses to each department. (2) Allocate indirect expenses to all departments. (3) Allocate the service department expenses to the operating departments.

7. *b*

8. No, because many expenses that enter into these calculations are beyond the manager's control, and managers should not be evaluated using costs they do not control.

9. *c*

10. *b*; $180,000 × ([32,000 × $9]/[96,000 × $3 + 64,000 × $6 + 32,000 × $9]) = $54,000.

Key Terms

mhhe.com/wildMA2e

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

Balanced scorecard (p. 323, 332)
Controllable costs (p. 334)
Cost center (p. 323)
Cost-based transfer pricing (p. 340)
Departmental accounting system (p. 322)
Departmental contribution to overhead (p. 329)
Direct expenses (p. 324)
Hurdle rate (p. 332)
Indirect expenses (p. 324)
Investment center (p. 323)
Investment center residual income (p. 331)
Investment center return on total assets (p. 331)
Investment turnover (p. 336)
Joint cost (p. 341)
Market-based transfer price (p. 340)
Negotiated transfer price (p. 341)
Profit center (p. 323)
Profit margin (p. 336)
Responsibility accounting budget (p. 334)
Responsibility accounting performance report (p. 334)
Responsibility accounting system (p. 322)
Transfer price (p. 339)
Uncontrollable costs (p. 334)

Multiple Choice Quiz

Answers on p. 361

mhhe.com/wildMA2e

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

Quiz9

1. A retailer has three departments—housewares, appliances, and clothing—and buys advertising that benefits all departments. Advertising expense is $150,000 for the year, and departmental sales for the year follow: housewares, $356,250; appliances, $641,250; clothing, $427,500. How much advertising expense is allocated to appliances if allocation is based on departmental sales?
a. $37,500
b. $67,500
c. $45,000
d. $150,000
e. $641,250

2. Expenses that are easily traced and assigned to a specific department because they are incurred for the sole benefit of that department are called
a. Uncontrollable expenses
b. Fixed expenses
c. Direct expenses
d. Controllable expenses
e. Indirect expenses

3. A difficult challenge in computing the total expenses of a department is
a. Determining the direct expenses of the department.
b. Determining the amount of sales of the department.
c. Determining the gross profit ratio.
d. Assigning indirect expenses to the department.
e. Assigning direct expenses to the department.

4. A company operates three retail departments as profit centers, and the following information is available for each. Which department has the largest dollar amount of departmental contribution to overhead and what is the dollar amount contributed?

Department	Sales	Cost of Goods Sold	Direct Expenses	Allocated Indirect Expenses
X	$500,000	$350,000	$50,000	$40,000
Y	200,000	75,000	20,000	50,000
Z	350,000	150,000	75,000	10,000

a. Department Y, $ 55,000
b. Department Z, $125,000
c. Department X, $500,000
d. Department Z, $200,000
e. Department X, $ 60,000

5. Using the data in question 4, Department X's contribution to overhead as a percentage of sales is
a. 20%
b. 30%
c. 12%
d. 48%
e. 32%

Superscript letter [A/B] denotes assignments based on Appendix 9A (9B).

Discussion Questions

1. Why are many companies divided into departments?
2. What is the difference between operating departments and service departments?
3. What are two main goals in managerial accounting for reporting on and analyzing departments?
4. Is it possible to evaluate a cost center's profitability? Explain.
5. What is the difference between direct and indirect expenses?
6. Suggest a reasonable basis for allocating each of the following indirect expenses to departments: (a) salary of a supervisor who manages several departments, (b) rent, (c) heat, (d) electricity for lighting, (e) janitorial services, (f) advertising, (g) expired insurance on equipment, and (h) property taxes on equipment.
7. How is a department's contribution to overhead measured?
8. What are controllable costs?
9. Controllable and uncontrollable costs must be identified with a particular _____ and a definite _____ period.
10. Why should managers be closely involved in preparing their responsibility accounting budgets?
11. In responsibility accounting, who receives timely cost reports and specific cost information? Explain.
12. [A] What is a transfer price? Under what conditions is a market-based transfer price most likely to be used?
13. [B] What is a joint cost? How are joint costs usually allocated among the products produced from them?
14. [B] Give two examples of products with joint costs.
15. Each retail store of **Best Buy** has several departments. Why is it useful for its management to (a) collect accounting information about each department and (b) treat each department as a profit center?
16. **Apple** delivers its products to locations around the world. List three controllable and three uncontrollable costs for its delivery department.

Denotes Discussion Questions that involve decision making.

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

QUICK STUDY

QS 9-1
Allocation and measurement terms

C1 C2 C3 C4 A1

In each blank next to the following terms, place the identifying letter of its best description.

1. _____ Cost center
2. _____ Investment center
3. _____ Departmental accounting system
4. _____ Operating department
5. _____ Profit center
6. _____ Responsibility accounting system
7. _____ Service department

A. Engages directly in manufacturing or in making sales directly to customers.
B. Does not directly manufacture products but contributes to profitability of the entire company.
C. Incurs costs and also generates revenues.
D. Provides information used to evaluate the performance of a department.
E. Incurs costs without directly yielding revenues.
F. Provides information used to evaluate the performance of a department manager.
G. Holds manager responsible for revenues, costs, and investments.

QS 9-2
Basis for cost allocation

C3

For each of the following types of indirect expenses and service department expenses, identify one allocation basis that could be used to distribute it to the departments indicated.

1. Computer service expenses of production scheduling for operating departments.
2. General office department expenses of the operating departments.
3. Maintenance department expenses of the operating departments.
4. Electric utility expenses of all departments.

QS 9-3
Allocating costs to departments

P1

Macee Department Store has three departments, and it conducts advertising campaigns that benefit all departments. Advertising costs are $100,000 this year, and departmental sales for this year follows. How much advertising cost is allocated to each department if the allocation is based on departmental sales?

Department	Sales
Department 1	$220,000
Department 2	400,000
Department 3	180,000

QS 9-4
Allocating costs to departments
P1

Mervon Company has two operating departments: Mixing and Bottling. Mixing has 300 employees and occupies 22,000 square feet. Bottling has 200 employees and occupies 18,000 square feet. Indirect factory costs for the current period follow: Administrative, $160,000; and Maintenance, $200,000. Administrative costs are allocated to operating departments based on the number of workers. Determine the administrative cost allocated to each operating department.

QS 9-5
Allocating costs to departments
P1

Refer to the information in QS 9-4. If the maintenance costs are allocated to operating departments based on square footage, determine the amount of maintenance costs allocated to each operating department.

QS 9-6
Departmental contribution to overhead
P2

Use the information in the following table to compute each department's contribution to overhead (both in dollars and as a percent). Which department contributes the largest dollar amount to total overhead? Which contributes the highest percent (as a percent of sales)?

	Dept. A	Dept. B	Dept. C
Sales	$106,000	$360,000	$168,000
Cost of goods sold	68,370	207,400	99,120
Gross profit	37,630	152,600	68,880
Total direct expenses	6,890	74,120	15,120
Contribution to overhead	$	$	$
Contribution percent	%	%	%

QS 9-7
Investment center analysis
A1

Compute return on assets for each of these **Best Buy** divisions (each is an investment center). Comment on the relative performance of each investment center.

Investment Center	Net Income	Average Assets	Return on Assets
Cameras and camcorders	$4,500,000	$20,000,000	
Phones and communications	1,500,000	12,500,000	
Computers and accessories	800,000	10,000,000	

QS 9-8
Computing residual income
A1

Refer to information in QS 9-7. Assume a target income of 12% of average invested assets. Compute residual income for each of Best Buy's divisions.

QS 9-9
Computing performance measures
A1 A2

A company's shipping division (an investment center) has sales of $2,700,000, net income of $216,000, and average invested assets of $2,000,000. Compute the division's return on invested assets, profit margin, and investment turnover.

QS 9-10
Performance measures
A1 A2

Fill in the blanks in the schedule below for two separate investment centers A and B.

	Investment Center	
	A	B
Sales	$_____	$3,200,000
Net income	$126,000	$_____
Average invested assets	$700,000	_____
Profit margin	6%	_____%
Investment turnover	_____	1.6
Return on assets	_____%	10%

QS 9-11
Performance measures—balanced scorecard
A1

Classify each of the performance measures below into the most likely balanced scorecard perspective it relates to. Label your answers using C (customer), P (internal process), I (innovation and growth), or F (financial).

1. Change in market share _____
2. Employee training sessions attended _____
3. Number of days of employee absences _____
4. Customer wait time _____
5. Number of new products introduced _____
6. Length of time raw materials are in inventory _____
7. Profit margin _____
8. Customer satisfaction index _____

QS 9-12
Performance measures—balanced scorecard
A1

Walt Disney reports the following information for its two Parks and Resorts divisions.

	East Coast		West Coast	
	Current year	Prior year	Current year	Prior year
Hotel occupancy rates	89%	86%	92%	93%

Assume **Walt Disney** uses a balanced scorecard and sets a target of 90% occupancy in its resorts. Using Exhibit 9.20 as a guide, show how the company's performance on hotel occupancy would appear on a balanced scorecard report.

QS 9-13[A]
Determining transfer prices without excess capacity
C5

The Windshield division of Chee Cycles makes windshields for use in Chee's Assembly division. The Windshield division incurs variable costs of $175 per windshield and has capacity to make 50,000 windshields per year. The market price is $300 per windshield. The Windshield division incurs total fixed costs of $1,500,000 per year. If the Windshield division is operating at full capacity, what transfer price should be used on transfers between the Windshield and Assembly divisions? Explain.

QS 9-14[A]
Determining transfer prices with excess capacity
C5

Refer to information in QS 9-13. If the Windshield division has excess capacity, what is the range of possible transfer prices that could be used on transfers between the Windshield and Assembly divisions? Explain.

QS 9-15[B]
Joint cost allocation
C6

A company purchases a 10,020 square foot commercial building for $500,000 and spends an additional $50,000 to divide the space into two separate rental units and prepare it for rent. Unit A, which has the desirable location on the corner and contains 3,340 square feet, will be rented for $2.00 per square foot. Unit B contains 6,680 square feet and will be rented for $1.50 per square foot. How much of the joint cost should be assigned to Unit B using the value basis of allocation?

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

EXERCISES

Exercise 9-1

Departmental expense allocations

C3

Firefly Co. has four departments: materials, personnel, manufacturing, and packaging. In a recent month, the four departments incurred three shared indirect expenses. The amounts of these indirect expenses and the bases used to allocate them follow.

Indirect Expense	Cost	Allocation Base
Supervision	$ 80,000	Number of employees
Utilities	61,000	Square feet occupied
Insurance	16,700	Value of assets in use
Total	$157,700	

Departmental data for the company's recent reporting period follow.

Department	Employees	Square Feet	Asset Values
Materials	40	27,000	$ 60,000
Personnel	22	5,000	1,200
Manufacturing	104	45,000	42,000
Packaging	34	23,000	16,800
Total	200	100,000	$120,000

(1) Use this information to allocate each of the three indirect expenses across the four departments. (2) Prepare a summary table that reports the indirect expenses assigned to each of the four departments.

Check (2) Total of $40,820 assigned to Materials Dept.

Exercise 9-2

Rent expense allocated to departments

C3

Expert Garage pays $128,000 rent each year for its two-story building. The space in this building is occupied by five departments as specified here.

Paint department	1,200 square feet of first-floor space
Engine department	3,600 square feet of first-floor space
Window department	1,920 square feet of second-floor space
Electrical department	1,056 square feet of second-floor space
Accessory department	1,824 square feet of second-floor space

The company allocates 65% of total rent expense to the first floor and 35% to the second floor, and then allocates rent expense for each floor to the departments occupying that floor on the basis of space occupied. Determine the rent expense to be allocated to each department. (Round percents to the nearest one-tenth and dollar amounts to the nearest whole dollar.)

Check Allocated to Paint Dept., $20,800

Exercise 9-3

Departmental expense allocation spreadsheet

C3

Off-Road Cycle Shop has two service departments (advertising and administration) and two operating departments (cycles and clothing). During 2009, the departments had the following direct expenses and occupied the following amount of floor space.

Department	Direct Expenses	Square Feet
Advertising	$ 21,000	1,820
Administrative	15,000	1,540
Cycles	102,000	6,440
Clothing	12,000	4,200

The advertising department developed and distributed 100 advertisements during the year. Of these, 72 promoted cycles and 28 promoted clothing. The store sold $300,000 of merchandise during the year. Of this amount, $228,000 is from the cycles department, and $72,000 is from the clothing department. The

utilities expense of $65,000 is an indirect expense to all departments. Prepare a departmental expense allocation spreadsheet for Off-Road Cycle Shop. The spreadsheet should assign (1) direct expenses to each of the four departments, (2) the $65,000 of utilities expense to the four departments on the basis of floor space occupied, (3) the advertising department's expenses to the two operating departments on the basis of the number of ads placed that promoted a department's products, and (4) the administrative department's expenses to the two operating departments based on the amount of sales. Provide supporting computations for the expense allocations.

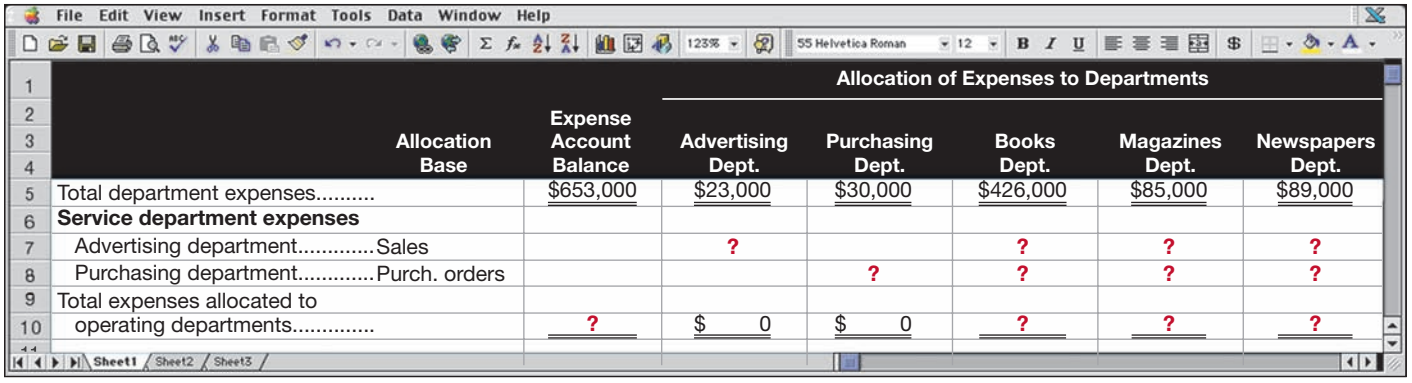
Check Total expenses allocated to Cycles Dept., $169,938

Exercise 9-4

Service department expenses allocated to operating departments

P1

The following is a partially completed lower section of a departmental expense allocation spreadsheet for Haston Bookstore. It reports the total amounts of direct and indirect expenses allocated to its five departments. Complete the spreadsheet by allocating the expenses of the two service departments (advertising and purchasing) to the three operating departments.



	Allocation Base	Expense Account Balance	Allocation of Expenses to Departments: Advertising Dept.	Purchasing Dept.	Books Dept.	Magazines Dept.	Newspapers Dept.
Total department expenses.....		$653,000	$23,000	$30,000	$426,000	$85,000	$89,000
Service department expenses							
Advertising department.....	Sales		?		?	?	?
Purchasing department.....	Purch. orders			?	?	?	?
Total expenses allocated to operating departments.....		?	$ 0	$ 0	?	?	?

Advertising and purchasing department expenses are allocated to operating departments on the basis of dollar sales and purchase orders, respectively. Information about the allocation bases for the three operating departments follows.

Department	Sales	Purchase Orders
Books	$440,000	400
Magazines	160,000	250
Newspapers	200,000	350
Total	$800,000	1,000

Check Total expenses allocated to Books Dept., $450,650

Exercise 9-5

Indirect payroll expense allocated to departments

C3

Jaria Stevens works in both the jewelry department and the hosiery department of a retail store. Stevens assists customers in both departments and arranges and stocks merchandise in both departments. The store allocates Stevens' $35,000 annual wages between the two departments based on a sample of the time worked in the two departments. The sample is obtained from a diary of hours worked that Stevens kept in a randomly chosen two-week period. The diary showed the following hours and activities spent in the two departments. Allocate Stevens' annual wages between the two departments.

Selling in jewelry department	41 hours
Arranging and stocking merchandise in jewelry department	4 hours
Selling in hosiery department	24 hours
Arranging and stocking merchandise in hosiery department	6 hours
Idle time spent waiting for a customer to enter one of the selling departments	5 hours

Check Assign $14,000 to Hosiery

Exercise 9-6
Managerial performance evaluation
C4

Rex Stanton manages an auto dealership's service department. The recent month's income statement for his department follows. (1) Analyze the items on the income statement and identify those that definitely should be included on a performance report used to evaluate Stanton's performance. List them and explain why you chose them. (2) List and explain the items that should definitely be excluded. (3) List the items that are not definitely included or excluded and explain why they fall into that category.

Revenues		
Sales of parts	$ 72,000	
Sales of services	105,000	$177,000
Costs and expenses		
Cost of parts sold	30,000	
Building depreciation	9,300	
Income taxes allocated to department	8,700	
Interest on long-term debt	7,500	
Manager's salary	12,000	
Payroll taxes	8,100	
Supplies	15,900	
Utilities	4,400	
Wages (hourly)	16,000	
Total costs and expenses		111,900
Departmental net income		$ 65,100

Exercise 9-7
Investment center analysis
A1

You must prepare a return on investment analysis for the regional manager of Veggie Burgers. This growing chain is trying to decide which outlet of two alternatives to open. The first location (A) requires a $500,000 investment and is expected to yield annual net income of $85,000. The second location (B) requires a $200,000 investment and is expected to yield annual net income of $42,000. Compute the return on investment for each Veggie Burgers alternative and then make your recommendation in a one-half page memorandum to the regional manager. (The chain currently generates an 18% return on total assets.)

Exercise 9-8
Computing performance measures
A1

ZMart, a retailer of consumer goods, provides the following information on two of its departments (each considered an investment center).

Investment Center	Sales	Net Income	Average Invested Assets
Electronics	$10,000,000	$750,000	$3,750,000
Sporting goods	8,000,000	800,000	5,000,000

(1) Compute return on investment for each department. Using return on investment, which department is most efficient at using assets to generate returns for the company? (2) Assume a target income level of 12% of average invested assets. Compute residual income for each department. Which department generated the most residual income for the company? (3) Assume the Electronics department is presented with a new investment opportunity that will yield a 15% return on assets. Should the new investment opportunity be accepted? Explain.

Exercise 9-9
Computing performance measures
A2

Refer to information in Exercise 9-8. Compute profit margin and investment turnover for each department. Which department generates the most net income per dollar of sales? Which department is most efficient at generating sales from average invested assets?

Exercise 9-10
Performance measures—balanced scorecard
A1

MidCoast Airlines uses the following performance measures. Classify each of the performance measures below into the most likely balanced scorecard perspective it relates to. Label your answers using C (customer), P (internal process), I (innovation and growth), or F (financial).

1. Percentage of ground crew trained _____
2. On-time flight percentage _____
3. Percentage of on-time departures _____
4. Market value _____
5. Flight attendant training sessions attended _____
6. Revenue per seat _____
7. Customer complaints _____
8. Time airplane is on ground between flights _____
9. Number of reports of mishandled or lost baggage _____
10. Cash flow from operations _____
11. Accidents or safety incidents per mile flown _____
12. Airplane miles per gallon of fuel _____
13. Return on investment _____
14. Cost of leasing airplanes _____

Exercise 9-11[A]
Determining transfer prices
C5

The Trailer department of Sprint Bicycles makes bike trailers that attach to bicycles and can carry children or cargo. The trailers have a retail price of $100 each. Each trailer incurs $40 of variable manufacturing costs. The Trailer department has capacity for 20,000 trailers per year, and incurs fixed costs of $500,000 per year.

Required

1. Assume the Assembly division of Sprint Bicycles wants to buy 5,000 trailers per year from the Trailer division. If the Trailer division can sell all of the trailers it manufactures to outside customers, what price should be used on transfers between Sprint Bicycle's divisions? Explain.
2. Assume the Trailer division currently only sells 10,000 trailers to outside customers, and the Assembly division wants to buy 5,000 trailers per year from the Trailer division. What is the range of acceptable prices that could be used on transfers between Sprint Bicycle's divisions? Explain.
3. Assume transfer prices of either $40 per trailer or $70 per trailer are being considered. Comment on the preferred transfer prices from the perspectives of the Trailer division manager, the Assembly division manager, and the top management of Sprint Bicycles.

Exercise 9-12[B]
Joint real estate costs assigned
C6

Mountain Home Properties is developing a subdivision that includes 300 home lots. The 225 lots in the Canyon section are below a ridge and do not have views of the neighboring canyons and hills; the 75 lots in the Hilltop section offer unobstructed views. The expected selling price for each Canyon lot is $50,000 and for each Hilltop lot is $100,000. The developer acquired the land for $2,500,000 and spent another $2,000,000 on street and utilities improvements. Assign the joint land and improvement costs to the lots using the value basis of allocation and determine the average cost per lot.

Check Total Canyon cost, $2,700,000

Exercise 9-13[B]
Joint product costs assigned
C6

Ocean Seafood Company purchases lobsters and processes them into tails and flakes. It sells the lobster tails for $20 per pound and the flakes for $15 per pound. On average, 100 pounds of lobster are processed into 57 pounds of tails and 24 pounds of flakes, with 19 pounds of waste. Assume that the company purchased 3,000 pounds of lobster for $6.00 per pound and processed the lobsters with an additional labor cost of $1,800. No materials or labor costs are assigned to the waste. If 1,570 pounds of tails and 640 pounds of flakes are sold, what is (1) the allocated cost of the sold items and (2) the allocated cost of the ending inventory? The company allocates joint costs on a value basis.

Check (2) Inventory cost, $1,760

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

PROBLEM SET A

Problem 9-1A

Allocation of building occupancy costs to departments

C3

eXcel

mhhe.com/wildMA2e

Citizens Bank has several departments that occupy both floors of a two-story building. The departmental accounting system has a single account, Building Occupancy Cost, in its ledger. The types and amounts of occupancy costs recorded in this account for the current period follow.

Depreciation—Building	$ 31,500
Interest—Building mortgage	47,000
Taxes—Building and land	14,000
Gas (heating) expense	4,425
Lighting expense	5,250
Maintenance expense	9,625
Total occupancy cost	$111,800

The building has 5,000 square feet on each floor. In prior periods, the accounting manager merely divided the $111,800 occupancy cost by 10,000 square feet to find an average cost of $11.18 per square foot and then charged each department a building occupancy cost equal to this rate times the number of square feet that it occupied.

Helen Lanya manages a first-floor department that occupies 1,000 square feet, and Jose Jimez manages a second-floor department that occupies 1,700 square feet of floor space. In discussing the departmental reports, the second-floor manager questions whether using the same rate per square foot for all departments makes sense because the first-floor space is more valuable. This manager also references a recent real estate study of average local rental costs for similar space that shows first-floor space worth $40 per square foot and second-floor space worth $10 per square foot (excluding costs for heating, lighting, and maintenance).

Required

Check (1) Total allocated to Lanya and Jimez, $30,186 (2) Total occupancy cost to Lanya, $16,730

1. Allocate occupancy costs to the Lanya and Jimez departments using the current allocation method.
2. Allocate the depreciation, interest, and taxes occupancy costs to the Lanya and Jimez departments in proportion to the relative market values of the floor space. Allocate the heating, lighting, and maintenance costs to the Lanya and Jimez departments in proportion to the square feet occupied (ignoring floor space market values).

Analysis Component

3. Which allocation method would you prefer if you were a manager of a second-floor department? Explain.

Problem 9-2A

Departmental contribution to income

P2

Vortex Company operates a retail store with two departments. Information about those departments follows.

	Department A	Department B
Sales	$800,000	$450,000
Cost of goods sold	497,000	291,000
Direct expenses		
Salaries	125,000	88,000
Insurance	20,000	10,000
Utilities	24,000	14,000
Depreciation	21,000	12,000
Maintenance	7,000	5,000

The company also incurred the following indirect costs.

Salaries	$36,000
Insurance	6,000
Depreciation	15,000
Office expenses	50,000

Indirect costs are allocated as follows: salaries on the basis of sales; insurance and depreciation on the basis of square footage; and office expenses on the basis of number of employees. Additional information about the departments follows.

Department	Square footage	Number of employees
A	28,000	75
B	12,000	50

Required

1. For each department, determine the departmental contribution to overhead and the departmental net income.
2. Should Department B be eliminated? Explain.

Check (1) Dept. A net income, $38,260

Problem 9-3A
Departmental income statements; forecasts
P1

Warton Company began operations in January 2009 with two operating (selling) departments and one service (office) department. Its departmental income statements follow.

WARTON COMPANY
Departmental Income Statements
For Year Ended December 31, 2009

	Clock	Mirror	Combined
Sales	$170,000	$95,000	$265,000
Cost of goods sold	83,300	58,900	142,200
Gross profit	86,700	36,100	122,800
Direct expenses			
Sales salaries	21,000	7,100	28,100
Advertising	2,100	700	2,800
Store supplies used	550	350	900
Depreciation—Equipment	2,300	900	3,200
Total direct expenses	25,950	9,050	35,000
Allocated expenses			
Rent expense	7,040	3,780	10,820
Utilities expense	2,800	1,600	4,400
Share of office department expenses	13,500	6,500	20,000
Total allocated expenses	23,340	11,880	35,220
Total expenses	49,290	20,930	70,220
Net income	$ 37,410	$15,170	$ 52,580

Warton plans to open a third department in January 2010 that will sell paintings. Management predicts that the new department will generate $50,000 in sales with a 45% gross profit margin and will require the following direct expenses: sales salaries, $8,500; advertising, $1,100; store supplies, $400; and equipment depreciation, $1,000. It will fit the new department into the current rented space by taking some square footage from the other two departments. When opened the new painting department will fill one-fifth of the space presently used by the clock department and one-fourth used by the mirror department. Management does not predict any increase in utilities costs, which are allocated to the departments in proportion to occupied space (or rent expense). The company allocates office department expenses to the operating departments in proportion to their sales. It expects the painting department to increase total office department expenses by $8,000. Since the painting department will bring new customers into the store, management expects sales in both the clock and mirror departments to increase by 8%. No changes for those departments' gross profit percents or their direct expenses are expected except for store supplies used, which will increase in proportion to sales.

Required

Prepare departmental income statements that show the company's predicted results of operations for calendar year 2010 for the three operating (selling) departments and their combined totals. (Round percents to the nearest one-tenth and dollar amounts to the nearest whole dollar.)

Check 2010 forecasted combined net income (sales), $65,832 ($336,200)

Problem 9-4A

Responsibility accounting performance reports; controllable and budgeted costs

C4 P2

Billie Whitehorse, the plant manager of Travel Free's Ohio plant, is responsible for all of that plant's costs other than her own salary. The plant has two operating departments and one service department. The camper and trailer operating departments manufacture different products and have their own managers. The office department, which Whitehorse also manages, provides services equally to the two operating departments. A budget is prepared for each operating department and the office department. The company's responsibility accounting system must assemble information to present budgeted and actual costs in performance reports for each operating department manager and the plant manager. Each performance report includes only those costs that a particular operating department manager can control: raw materials, wages, supplies used, and equipment depreciation. The plant manager is responsible for the department managers' salaries, utilities, building rent, office salaries other than her own, and other office costs plus all costs controlled by the two operating department managers. The annual departmental budgets and actual costs for the two operating departments follow.

	Budget			Actual		
	Campers	Trailers	Combined	Campers	Trailers	Combined
Raw materials	$195,900	$276,200	$ 472,100	$194,800	$273,600	$ 468,400
Employee wages	104,200	205,200	309,400	107,200	208,000	315,200
Dept. manager salary	44,000	53,000	97,000	44,800	53,900	98,700
Supplies used	34,000	92,200	126,200	32,900	91,300	124,200
Depreciation—Equip.	63,000	127,000	190,000	63,000	127,000	190,000
Utilities	3,600	5,200	8,800	4,500	4,700	9,200
Building rent	5,700	10,000	15,700	6,200	9,300	15,500
Office department costs	67,750	67,750	135,500	68,550	68,550	137,100
Totals	$518,150	$836,550	$1,354,700	$521,950	$836,350	$1,358,300

The office department's annual budget and its actual costs follow.

	Budget	Actual
Plant manager salary	$100,000	$ 84,000
Other office salaries	46,500	30,100
Other office costs	22,000	21,000
Totals	$168,500	$135,100

Required

1. Prepare responsibility accounting performance reports like those in Exhibit 9.22 that list costs controlled by the following:

a. Manager of the camper department.

b. Manager of the trailer department.

c. Manager of the Ohio plant.

In each report, include the budgeted and actual costs and show the amount that each actual cost is over or under the budgeted amount.

Check (1a) $800 total over budget

(1c) Ohio plant controllable costs, $15,400 total under budget

Analysis Component

2. Did the plant manager or the operating department managers better manage costs? Explain.

Problem 9-5A[B]

Allocation of joint costs

C6

Florida Orchards produced a good crop of peaches this year. After preparing the following income statement, the company believes it should have given its No. 3 peaches to charity and saved its efforts.

FLORIDA ORCHARDS Income Statement For Year Ended December 31, 2009	No. 1	No. 2	No. 3	Combined
Sales (by grade)				
No. 1: 300,000 lbs. @ $1.50/lb	$450,000			
No. 2: 250,000 lbs. @ $0.75/lb		$187,500		
No. 3: 600,000 lbs. @ $0.50/lb			$300,000	
Total sales				$937,500
Costs				
Tree pruning and care @ $0.40/lb	120,000	100,000	240,000	460,000
Picking, sorting, and grading @ $0.10/lb	30,000	25,000	60,000	115,000
Delivery costs	15,000	15,000	37,500	67,500
Total costs	165,000	140,000	337,500	642,500
Net income (loss)	$285,000	$ 47,500	$ (37,500)	$295,000

In preparing this statement, the company allocated joint costs among the grades on a physical basis as an equal amount per pound. The company's delivery cost records show that $30,000 of the $67,500 relates to crating the No. 1 and No. 2 peaches and hauling them to the buyer. The remaining $37,500 of delivery costs is for crating the No. 3 peaches and hauling them to the cannery.

Required

1. Prepare reports showing cost allocations on a sales value basis to the three grades of peaches. Separate the delivery costs into the amounts directly identifiable with each grade. Then allocate any shared delivery costs on the basis of the relative sales value of each grade.

2. Using your answers to part 1, prepare an income statement using the joint costs allocated on a sales value basis.

Check (1) $147,200 tree pruning and care costs allocated to No. 3

(2) Net income from No. 1 & No. 2 peaches, $152,820 & $63,680

Analysis Component

3. Do you think delivery costs fit the definition of a joint cost? Explain.

PROBLEM SET B

Problem 9-1B

Allocation of building occupancy costs to departments

C3

Marshall's has several departments that occupy all floors of a two-story building that includes a basement floor. Marshall rented this building under a long-term lease negotiated when rental rates were low. The departmental accounting system has a single account, Building Occupancy Cost, in its ledger. The types and amounts of occupancy costs recorded in this account for the current period follow.

Building rent	$320,000
Lighting expense	20,000
Cleaning expense	32,000
Total occupancy cost	$372,000

The building has 7,500 square feet on each of the upper two floors but only 5,000 square feet in the basement. In prior periods, the accounting manager merely divided the $372,000 occupancy cost by 20,000 square feet to find an average cost of $18.60 per square foot and then charged each department a building occupancy cost equal to this rate times the number of square feet that it occupies.

Riley Miller manages a department that occupies 2,000 square feet of basement floor space. In discussing the departmental reports with other managers, she questions whether using the same rate per square foot for all departments makes sense because different floor space has different values. Miller checked a recent real estate report of average local rental costs for similar space that shows first-floor space worth $48 per square foot, second-floor space worth $24 per square foot, and basement space worth $12 per square foot (excluding costs for lighting and cleaning).

Required

Check Total costs allocated to Miller's Dept., (1) $37,200; (2) $18,000

1. Allocate occupancy costs to Miller's department using the current allocation method.
2. Allocate the building rent cost to Miller's department in proportion to the relative market value of the floor space. Allocate to Miller's department the lighting and heating costs in proportion to the square feet occupied (ignoring floor space market values). Then, compute the total occupancy cost allocated to Miller's department.

Analysis Component

3. Which allocation method would you prefer if you were a manager of a basement department?

Problem 9-2B

Departmental contribution to income

P2

Sadar Company operates a store with two departments: videos and music. Information about those departments follows.

	Videos Department	Music Department
Sales	$370,500	$279,500
Cost of goods sold	320,000	175,000
Direct expenses		
Salaries	35,000	25,000
Maintenance	12,000	10,000
Utilities	5,000	4,500
Insurance	4,200	3,700

The company also incurred the following indirect costs.

Advertising	$15,000
Salaries	27,000
Office expenses	3,200

Indirect costs are allocated as follows: advertising on the basis of sales; salaries on the basis of number of employees; and office expenses on the basis of square footage. Additional information about the departments follows.

Department	Square footage	Number of employees
Videos	5,000	3
Music	3,000	2

Required

Check (1) Music dept. net income, $42,850

1. For each department, determine the departmental contribution to overhead and the departmental net income.
2. Should the video department be eliminated? Explain.

Problem 9-3B

Departmental income statements; forecasts

P1

Collosal Entertainment began operations in January 2009 with two operating (selling) departments and one service (office) department. Its departmental income statements follow.

COLLOSAL ENTERTAINMENT
Departmental Income Statements
For Year Ended December 31, 2009

	Movies	Video Games	Combined
Sales	$900,000	$300,000	$1,200,000
Cost of goods sold	630,000	231,000	861,000
Gross profit	270,000	69,000	339,000
Direct expenses			
Sales salaries	55,500	22,500	78,000
Advertising	18,750	9,000	27,750
Store supplies used	6,000	1,500	7,500
Depreciation—Equipment	6,750	4,500	11,250
Total direct expenses	87,000	37,500	124,500

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Allocated expenses			
Rent expense	61,500	13,500	75,000
Utilities expense	11,070	2,430	13,500
Share of office department expenses	84,375	28,125	112,500
Total allocated expenses	156,945	44,055	201,000
Total expenses	243,945	81,555	325,500
Net income (loss)	$ 26,055	$ (12,555)	$ 13,500

The company plans to open a third department in January 2010 that will sell compact discs. Management predicts that the new department will generate $450,000 in sales with a 35% gross profit margin and will require the following direct expenses: sales salaries, $27,000; advertising, $15,000; store supplies, $3,000; and equipment depreciation, $1,800. The company will fit the new department into the current rented space by taking some square footage from the other two departments. When opened, the new compact disc department will fill one-fourth of the space presently used by the movie department and one-third of the space used by the video game department. Management does not predict any increase in utilities costs, which are allocated to the departments in proportion to occupied space (or rent expense). The company allocates office department expenses to the operating departments in proportion to their sales. It expects the compact disc department to increase total office department expenses by $15,000. Since the compact disc department will bring new customers into the store, management expects sales in both the movie and video game departments to increase by 8%. No changes for those departments' gross profit percents or for their direct expenses are expected, except for store supplies used, which will increase in proportion to sales.

Required

Prepare departmental income statements that show the company's predicted results of operations for calendar year 2010 for the three operating (selling) departments and their combined totals. (Round percents to the nearest one-tenth and dollar amounts to the nearest whole dollar.)

Check 2010 forecasted movies net income (sales), $78,674 ($972,000)

Problem 9-4B

Responsibility accounting performance reports; controllable and budgeted costs

C4 P2

Warren Brown, the plant manager of LMN Co.'s San Diego plant, is responsible for all of that plant's costs other than his own salary. The plant has two operating departments and one service department. The refrigerator and dishwasher operating departments manufacture different products and have their own managers. The office department, which Brown also manages, provides services equally to the two operating departments. A monthly budget is prepared for each operating department and the office department. The company's responsibility accounting system must assemble information to present budgeted and actual costs in performance reports for each operating department manager and the plant manager. Each performance report includes only those costs that a particular operating department manager can control: raw materials, wages, supplies used, and equipment depreciation. The plant manager is responsible for the department managers' salaries, utilities, building rent, office salaries other than his own, and other office costs plus all costs controlled by the two operating department managers. The April departmental budgets and actual costs for the two operating departments follow.

	Budget			Actual		
	Refrigerators	Dishwashers	Combined	Refrigerators	Dishwashers	Combined
Raw materials	$ 480,000	$240,000	$ 720,000	$ 462,000	$242,400	$ 704,400
Employee wages	204,000	96,000	300,000	209,640	97,800	307,440
Dept. manager salary	66,000	58,800	124,800	66,000	55,800	121,800
Supplies used	18,000	10,800	28,800	16,800	11,640	28,440
Depreciation—Equip.	63,600	44,400	108,000	63,600	44,400	108,000
Utilities	36,000	21,600	57,600	41,400	24,840	66,240
Building rent	75,600	20,400	96,000	78,960	19,800	98,760
Office department costs	84,600	84,600	169,200	90,000	90,000	180,000
Totals	$1,027,800	$576,600	$1,604,400	$1,028,400	$586,680	$1,615,080

The office department's budget and its actual costs for April follow.

	Budget	Actual
Plant manager salary	$ 96,000	$102,000
Other office salaries	48,000	42,240
Other office costs	25,200	35,760
Totals	$169,200	$180,000

Required

1. Prepare responsibility accounting performance reports like those in Exhibit 9.22 that list costs controlled by the following:

a. Manager of the refrigerator department.

b. Manager of the dishwasher department.

c. Manager of the San Diego plant.

In each report, include the budgeted and actual costs for the month and show the amount by which each actual cost is over or under the budgeted amount.

Check (1a) $13,560 total under budget

(1c) San Diego plant controllable costs, $4,680 total over budget

Analysis Component

2. Did the plant manager or the operating department managers better manage costs? Explain.

Problem 9-5B[B]

Allocation of joint costs

C6

Rita and Rick Redding own and operate a tomato grove. After preparing the following income statement, Rita believes they should have offered the No. 3 tomatoes to the public for free and saved themselves time and money.

RITA AND RICK REDDING
Income Statement
For Year Ended December 31, 2009

	No. 1	No. 2	No. 3	Combined
Sales (by grade)				
No. 1: 600,000 lbs. @ $1.80/lb	$1,080,000			
No. 2: 480,000 lbs. @ $1.25/lb		$600,000		
No. 3: 120,000 lbs. @ $0.40/lb			$ 48,000	
Total sales				$1,728,000
Costs				
Land preparation, seeding, and cultivating @ $0.70/lb	420,000	336,000	84,000	840,000
Harvesting, sorting, and grading @ $0.04/lb	24,000	19,200	4,800	48,000
Delivery costs	20,000	14,000	6,000	40,000
Total costs	464,000	369,200	94,800	928,000
Net income (loss)	$ 616,000	$230,800	$(46,800)	$ 800,000

In preparing this statement, Rita and Rick allocated joint costs among the grades on a physical basis as an equal amount per pound. Also, their delivery cost records show that $34,000 of the $40,000 relates to crating the No. 1 and No. 2 tomatoes and hauling them to the buyer. The remaining $6,000 of delivery costs is for crating the No. 3 tomatoes and hauling them to the cannery.

Required

1. Prepare reports showing cost allocations on a sales value basis to the three grades of tomatoes. Separate the delivery costs into the amounts directly identifiable with each grade. Then allocate any shared delivery costs on the basis of the relative sales value of each grade. (Round percents to the nearest one-tenth and dollar amounts to the nearest whole dollar.)

Check (1) $1,344 harvesting, sorting and grading costs allocated to No. 3

2. Using your answers to part 1, prepare an income statement using the joint costs allocated on a sales value basis.

(2) Net income from No. 1 & No. 2 tomatoes, $503,138 & $279,726

Analysis Component

3. Do you think delivery costs fit the definition of a joint cost? Explain.

BEYOND THE NUMBERS

REPORTING IN ACTION

C4

BTN 9-1 Review **Best Buy**'s income statement in Appendix A and identify its revenues for the years ended March 3, 2007, February 25, 2006, and February 26, 2005. For the year ended March 3, 2007, Best Buy reports the following product revenue mix. (Assume that its product revenue mix is the same for each of the three years reported when answering the requirements.)

Home Office	Entertainment Software	Consumer Electronics	Appliances
33%	12%	45%	10%

Required

1. Compute the amount of revenue from each of its product lines for the years ended March 3, 2007, February 25, 2006, and February 26, 2005.

2. If Best Buy wishes to evaluate each of its product lines, how can it allocate its operating expenses to each of them to determine each product line's profitability?

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 (**sec.gov**). Compute its revenues for its product lines for the most recent year(s). Compare those results to those from part 1. How has its product mix changed?

COMPARATIVE ANALYSIS

P1

BTN 9-2 **Best Buy**, **Circuit City**, and **RadioShack** compete across the country in several markets. The most common competitive markets for these companies are by location.

Required

1. Design a three-tier responsibility accounting organizational chart assuming that you have available internal information for all three companies. Use Exhibit 9.21 as an example. The goal of this assignment is to design a reporting framework for the companies; numbers are not required. Limit your reporting framework to sales activity only.

2. Explain why it is important to have similar performance reports when comparing performance within a company (and across different companies). Be specific in your response.

ETHICS CHALLENGE

P1

BTN 9-3 Senior Security Co. offers a range of security services for senior citizens. Each type of service is considered within a separate department. Mary Pincus, the overall manager, is compensated partly on the basis of departmental performance by staying within the quarterly cost budget. She often revises operations to make sure departments stay within budget. Says Pincus, "I will not go over budget even if it means slightly compromising the level and quality of service. These are minor compromises that don't significantly affect my clients, at least in the short term."

Required

1. Is there an ethical concern in this situation? If so, which parties are affected? Explain.

2. Can Mary Pincus take action to eliminate or reduce any ethical concerns? Explain.

3. What is Senior Security's ethical responsibility in offering professional services?

COMMUNICATING IN PRACTICE

C4 C5 P1

BTN 9-4 Home Station is a national home improvement chain with more than 100 stores throughout the country. The manager of each store receives a salary plus a bonus equal to a percent of the store's net income for the reporting period. The following net income calculation is on the Denver store manager's performance report for the recent monthly period.

Sales	$2,500,000
Cost of goods sold	800,000
Wages expense	500,000
Utilities expense	200,000
Home office expense	75,000
Net income	$925,000
Manager's bonus (0.5%)	$ 4,625

In previous periods, the bonus had also been 0.5% of net income, but the performance report had not included any charges for the home office expense, which is now assigned to each store as a percent of its sales.

Required

Assume that you are the national office manager. Write a one-half page memorandum to your store managers explaining why home office expense is in the new performance report.

TAKING IT TO THE NET

A1

BTN 9-5 This chapter described and used spreadsheets to prepare various managerial reports (see Exhibit 9-6). You can download from Websites various tutorials showing how spreadsheets are used in managerial accounting and other business applications.

Required

1. Link to the Website **Lacher.com**. Scroll down past "Microsoft Excel Examples" and select "Business Solutions." Identify and list three tutorials for review.
2. Describe in a one-half page memorandum to your instructor how the applications described in each tutorial are helpful in business and managerial decision making.

TEAMWORK IN ACTION

C1 C2

BTN 9-6 Refer to Problem 9-1A involving the allocation of building occupancy costs to departments to answer the following requirements.

Required

1. Separate the class into 3-person teams. Each member of the 3-person team is assigned to complete one of the following tasks individually: (i) Allocate occupancy costs to the Lanya and Jimez departments using the current allocation method. (ii) Allocate the depreciation, interest, and taxes occupancy costs to the Lanya and Jimez departments in proportion to the relative market values of floor space. (iii) Allocate the heating, lighting, and maintenance costs to the Lanya and Jimez departments in proportion to the square feet occupied (ignoring floor space market values). Confirm your answers with the instructor.
2. The two people assigned to task *ii* and task *iii* from part 1 are to meet and determine the total occupancy costs allocated to the Lanya and Jimez departments. The person assigned to task *i* is to help with this determination.
3. Using answers for parts 1 and 2, the 3-person team is to discuss and explain which allocation method a manager of a second-floor department would prefer. Each team should be prepared to present their solutions to the class.

ENTREPRENEURIAL DECISION

P1

BTN 9-7 **RockBottomGolf** is an Internet retailer and the focus of this chapter's opener. It sells discounted golf merchandise through departments such as clubs, bags, apparel, and accessories. The company plans to expand to include many other types of sporting goods.

Required

1. How can RockBottomGolf use departmental income statements to assist in understanding and controlling operations?

2. Are departmental income statements always the best measure of a department's performance? Explain.

3. Provide examples of nonfinancial performace indicators RockBottomGolf might use as part of a balanced scorecard system of performance evaluation.

HITTING THE ROAD

P1

BTN 9-8 Visit a local movie theater and check out both its concession area and its showing areas. The manager of a theater must confront questions such as:

- How much return do we earn on concessions?
- What types of movies generate the greatest sales?
- What types of movies generate the greatest net income?

Required

Assume that you are the new accounting manager for a 16-screen movie theater. You are to set up a responsibility accounting reporting framework for the theater.

1. Recommend how to segment the different departments of a movie theater for responsibility reporting.

2. Propose an expense allocation system for heat, rent, insurance, and maintenance costs of the theater.

GLOBAL DECISION

DSG

BTN 9-9 Selected product data from **DSG international plc** (www.DSGiplc.com) follow.

Product Segment for Year Ended (£ millions)	Net Sales		Operating Income	
	April 28, 2007	April 29, 2006	April 28, 2007	April 29, 2006
Computing	£2,198	£2,040	£97	£107
Electrical	5,281	4,912	193	198
e-commerce	451	26	1	0

Required

1. Compute the percentage growth in net sales for each product line from fiscal year 2006 to 2007.

2. Which product line's net sales grew the fastest?

3. Which segment was the most profitable?

4. How can DSG's managers use this information?

ANSWERS TO MULTIPLE CHOICE QUIZ

1. b; [$641,250/($356,250 + $641,250 + $427,500)] × $150,000 = $67,500

2. c

3. d

4. b;

	Department X	Department Y	Department Z
Sales	$500,000	$200,000	$350,000
Cost of goods sold	350,000	75,000	150,000
Gross profit	150,000	125,000	200,000
Direct expenses	50,000	20,000	75,000
Departmental contribution	$100,000	$105,000	$125,000

5. a; $100,000/$500,000 = 20%