The bottling plant will pay Hunter $380 per week this year and 7% more next summer. At the meat-packing plant, he could work 20 hours per week at $8.75 per hour. Hunter believes that the experience he gains this summer will qualify him for a full-time accounting position with the meat-packing plant next summer. That position will pay $550 per week.

Hunter sees two additional benefits of working part-time this summer. By working only part-time, he could take two accounting courses this summer (tuition is $225 per hour for each of the four-hour courses) and reduce his studying workload during the Fall and Spring semesters. Second, he would have the time to work as a grader in the university's accounting department during the 15-week fall term and make additional income. Grading pays $50 per week.

Requirements

1. Suppose that Hunter ignores the time value of money in decisions that cover this short time period. Suppose also that his sole goal is to make as much money as possible between now and the end of next summer. What should he do? What nonquantitative factors might Hunter consider? What would *you* do if you were faced with these alternatives?
2. Now suppose that Hunter considers the time value of money for all cash flows that he expects to receive one year or more in the future. Which alternative does this consideration favor? Why?

• Fraud Case 21-1

John Johnson's landscape company was on its last legs, so when John got a call from Capital Funding, Ltd., offering a non-secured loan, he thought it might be his last chance to keep the business afloat. The loan officer explained that the government was promoting loans to keep small businesses from folding during the recession, and that his company qualified. John knew his credit rating was terrible, but he didn't want to lay off his staff of six and look for work himself, so he put aside his doubts and showed up at the office to fill out the paperwork. The gentleman was professional and reassuring. Two days later, John got a call assuring him that the funds would be transferred as soon as they received a "processing fee" of $900. This was a bit of shock for John, but he delivered the check. He could hardly sleep that night, and he called back first thing the next morning. There was no answer. He drove by the loan office. It was vacant. They had vanished without a trace.

Requirements

1. Did John have reason to be suspicious? What were the warning signs?
2. What should small businesses do when they are in financial trouble?

• Communication Activity 21-1

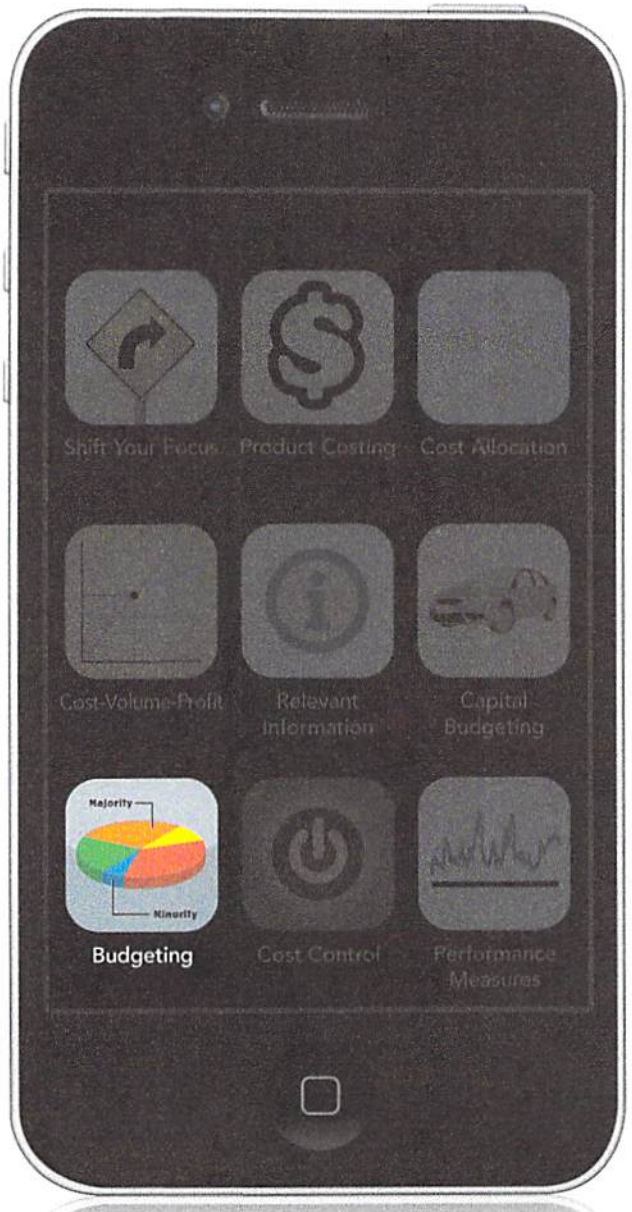
In 70 words or fewer, explain the difference between NPV and IRR.

Quick Check Answers

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

For online homework, exercises, and problems that provide you immediate feedback, please visit myaccountinglab.com.

22 The Master Budget and Responsibility Accounting



Learning Objectives

1. Learn why managers use budgets
2. Understand the components of the master budget
3. Prepare an operating budget
4. Prepare a financial budget
5. Use sensitivity analysis in budgeting
6. Prepare performance reports for responsibility centers and account for traceable and common shared fixed costs

You're set to graduate in a few weeks and already have a great job offer. Your excitement, however, is paired with some anxiety. You'll be financially independent for the first time, not relying on your parents for financial support. You want to make sure you'll be able to live within your means. You've heard of friends who graduated and quickly created a financial mess by carelessly using credit cards, so you've decided to make a budget for your first year out of college. Your salary will be your only source of income. Your expenses will include rent, food, utilities, car operation and maintenance, insurance, and entertainment. You also need a more professional wardrobe and will have some expenses related to setting up your new apartment. Also, you have a student loan that will need to be repaid beginning six months after graduation, so you need to include your student loan payment in your budget. Some of these expenses will be the same each month, like your rent. Some will vary from month to month, like interest expense on your student loan.

Creating a budget will help you make critical decisions, such as how much rent you can afford. You'll also use the budget to plan and control your other expenses. Careful budgeting helps both individuals and businesses set goals that help plan for the future.

As you will see throughout this chapter, knowing how *costs* behave continues to be important when organizations are forming budgets. Total fixed costs will not change as volume changes within the relevant range. However, total variable costs must be adjusted when sales volume is expected to fluctuate. In this chapter, we'll continue to use Smart Touch Learning and Greg's Tunes to demonstrate budgeting.

Why Managers Use Budgets

1 Learn why managers use budgets

Let's continue our study of budgets by moving from your personal budget to see how a small service business develops a simple budget. When Smart Touch Learning, Inc., first began, it was a small online service company that provided e-learning services to customers. Assume Smart Touch wants to earn $550,000 a month and expects to sell 20,000 e-learning services per month at a price of $30 each. Over the past six months, it paid an average of $18,000 a month to its Internet service provider, and spent an additional $20,000 per month on salaries. Smart Touch expects these monthly costs to remain about the same, so these are the monthly fixed costs. Smart Touch spent 5% of its revenues for banner ads on other Web sites. Smart Touch also incurs $2.25 in server space expense for each e-learning service provided. Because advertising and server space expenses fluctuate with revenue, advertising and server space expenses are variable.

Exhibit 22-1 shows how to compute a budgeted income statement using the variable costing approach. The **budgeted income statement** projects operating income for the period. A budgeted income statement shows *estimated* (budgeted) values, whereas an income statement shows *actual* results.

EXHIBIT 22-1 | Service Company Budget

SMART TOUCH LEARNING, INC.
Budgeted Income Statement
For the Month Ended May 31, 2014

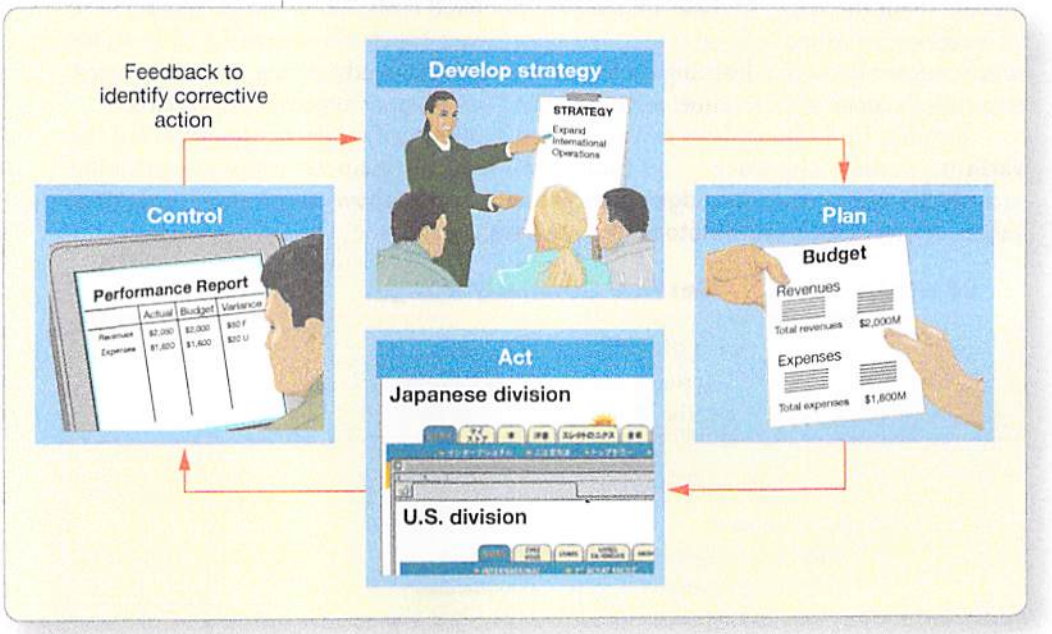
Service revenue (20,000 × $30 each)	$600,000
Variable expenses:	
Server space expense (20,000 × $2.25 each)	$ 45,000
Advertising expense (5% × $600,000 revenue)	30,000
Total variable expenses	75,000
Contribution margin	$525,000
Fixed expenses:	
Salary expense	$ 20,000
Internet access expense	18,000
Total fixed expenses	38,000
Budgeted operating income	$487,000

As you can see from the exhibit, Smart Touch's contribution margin is strong, at $525,000. For each e-learning service sold, 87.5% ($525,000/$600,000) of revenue is contributing to the covering of fixed costs and to making a profit. Smart Touch's budgeted operating income of $487,000 will not meet its $550,000 per month operating income goal. It will have to increase revenue (perhaps through word-of-mouth advertising) or cut expenses (perhaps by reducing server space expense of $2.25 per service or by reducing the other variable and/or fixed costs).

Using Budgets to Plan and Control

Large international for-profit companies, such as **Amazon.com**, and nonprofit organizations, such as **Habitat for Humanity**, use budgets for the same reasons as you do in your personal life or in your small business—to plan and control actions and the related revenues and expenses. Managers also use budgets to plan for technology upgrades, other capital asset replacements, improvements, or expansions. Strategic as well as operational plans are budgeted for as well. Exhibit 22-2 shows how managers use budgets in fulfilling their major responsibilities. First, they develop strategies—overall business goals like **Amazon**'s goal to expand its international operations, or **Gateway**'s goal to be a value leader in the personal computer market while diversifying into other markets. Companies then plan and budget for specific actions to achieve those goals. The next step is to act. For example, **Amazon** planned for and then added a grocery feature to its Web sites.

EXHIBIT 22-2 **Managers Use Budgets to Plan and Control Business Activities**



After acting, managers compare actual results with the budget. This feedback allows them to determine what, if any, corrective action to take. If, for example, **Amazon** spent more than expected to add the grocery feature to its Web sites, managers must cut other costs or increase revenues. These decisions affect the company's future strategies and plans.

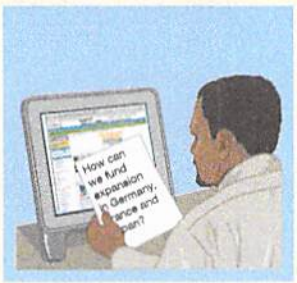
Amazon has a number of budgets, as its managers develop budgets for their own divisions. Software then combines the division budgets to create an organization-wide budget for the whole company. Managers also prepare both long-term and short-term budgets. Some of the budgets are long-term forecasts that project demand for various business segments for the next 20 years. Keep in mind that all budgets incorporate management's strategic and operational plans.

However, most companies budget their cash flows monthly, weekly, and even daily to ensure that they have enough cash. They also budget revenues and expenses—and operating income—for months, quarters, and years. This chapter focuses on short-term budgets of one year or less. Chapter 21 explained how companies budget for major capital expenditures on property, plant, and equipment.

Benefits of Budgeting

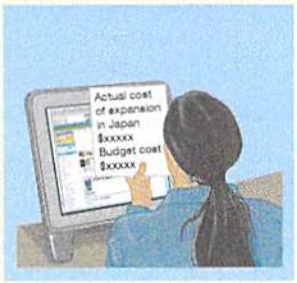
Exhibit 22-3 summarizes three key benefits of budgeting. Budgeting forces managers to plan, promotes coordination and communication, and provides a benchmark for evaluating actual performance. The budget really represents the plan the company has in place to achieve its goals.

EXHIBIT 22-3 | Benefits of Budgeting



Budgets force managers to plan.

Budgets promote coordination and communication.



Budgets provide a benchmark that motivates employees and helps managers evaluate performance against planned goals.

Planning

Exhibit 22-1 shows the expected income from Smart Touch's online e-learning business is $487,000. This is short of the target operating income of $550,000. The sooner Smart Touch learns of the expected shortfall, the more time it has to modify its plan and to devise strategies to increase revenues or cut expenses so the company can achieve its planned goals. The better Smart Touch's plan, and the more time it has to act on the plan, the more likely it will be to find a way to meet the target.

Coordination and Communication

The master budget coordinates a company's activities. Creating a master budget facilitates coordination and communication by requiring managers at different levels and in different functions across the entire value chain to work together to make a single, unified, comprehensive plan for the business. For example, **Amazon** stimulates sales by offering free shipping on orders over a specified dollar amount. If sales increase, the shipping department may have to hire additional employees to handle the increase in shipments. The budget encourages communication among managers to ensure that the extra profits from increased sales outweigh the revenue lost from not charging for shipping.

Benchmarking

Budgets provide a benchmark that motivates employees and helps managers evaluate performance. In most companies, part of the manager's performance evaluation depends on how actual results compare to the budget. So, for example, the budgeted expenses for international expansion encourage **Amazon**'s employees to increase the efficiency of international warehousing operations and to find less-expensive technology to support the Web sites.

Let's return to Smart Touch's e-learning business. Suppose that comparing actual results to the budget in Exhibit 22-1 leads to the performance report in Exhibit 22-4.

EXHIBIT 22-4 **Service Company Income Statement Performance Report**

SMART TOUCH LEARNING, INC.
Income Statement Performance Report
For the Month Ended May 31, 2014

	Actual	Budget	Variance (Actual–Budget)
Number of e-learning services:	19,000	20,000	(1,000)
Service revenue	$589,000	$600,000	$(11,000)
Variable expenses:			
Server space expense	$ 38,000	$ 45,000	$ (7,000)
Advertising expense	29,450	30,000	(550)
Total variable expenses	67,450	75,000	(7,550)
Contribution margin	$521,550	$525,000	$ (3,450)
Fixed expenses:			
Salary expense	$ 20,000	$ 20,000	$ —
Internet access expense	18,000	18,000	—
Total fixed expenses	38,000	38,000	—
Budgeted operating income	$483,550	$487,000	$ (3,450)

This report identifies areas where the actual results differed from the budget. The differences are itemized below:

1. Actual service revenue was $11,000 less than budgeted service revenue. This was caused by two factors. First, Smart Touch sold 1,000 fewer services than it planned to sell (19,000 actual – 20,000 budgeted). Second, Smart Touch was able to sell at a higher average price per service $31 ($589,000/19,000 services) than the $30 per service it planned.
2. Variable expenses were less than budgeted for both server space expense and advertising expense. Actual server space expense was less than budgeted server space expense because Smart Touch sold 1,000 fewer services and because Smart Touch reduced the server space expense per service from $2.25 budgeted to $2.00 ($38,000/19,000 services) actual per service. Advertising expense remained constant at 5% of revenues, but due to the $11,000 reduction in revenues, advertising expense was $550 less ($11,000 × 5%).
3. Actual fixed expenses were exactly the same as budgeted fixed expenses. Although not common, considering Smart Touch's fixed expenses, one wouldn't expect these to change unless Smart Touch changed the pay rate or number of employees or unless Smart Touch negotiated a new contract with its Internet service provider.

Key Takeaway

A budgeted income statement shows estimated amounts, whereas the income statement shows actual results. Managers use budgets to develop strategies (overall business goals) and to create plans and follow actions that enable them to achieve those goals. They also review results against the goals (control), often using a performance report that compares budgeted amounts to actual amounts.

After management reviews the variances, Smart Touch will want to consider how it can implement new strategies to meet its goals. Can Smart Touch increase the number of services sold at the new higher price? Should the company increase its advertising budget in hopes of increasing the number of services sold? Can Smart Touch reduce any of its fixed expenses?

Smart Touch needs to know the answers to these kinds of questions to decide how to meet its goals.

Understanding the Components of the Master Budget

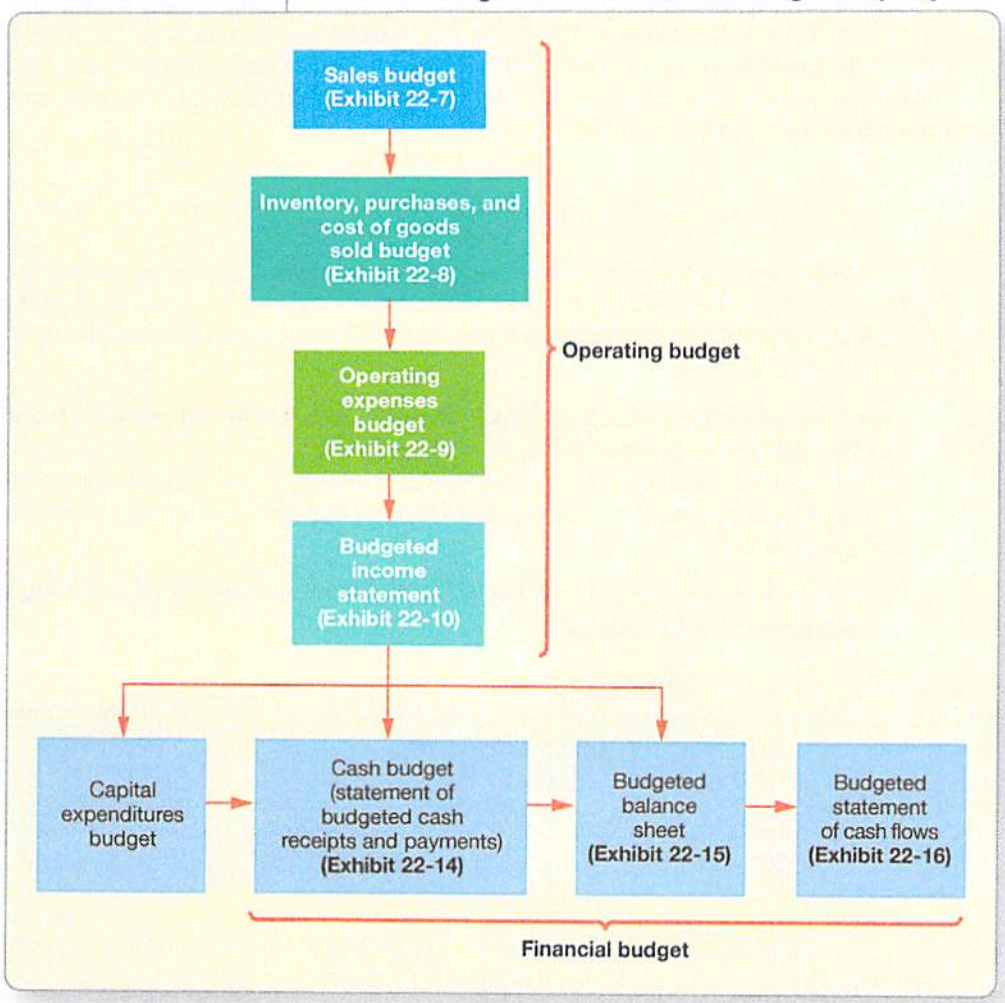
Now that you know *why* managers go to the trouble of developing budgets, let's consider the steps managers take to prepare a budget.

2 Understand the components of the master budget

Components of the Master Budget

The **master budget** is the set of budgeted financial statements and supporting schedules for the entire organization. Exhibit 22-5 shows the order in which managers prepare the components of the master budget for a merchandiser such as **Amazon** or Greg's Tunes.

EXHIBIT 22-5 | Master Budget for a Merchandising Company



The exhibit shows that the master budget includes three types of budgets:

1. The operating budget
2. The capital expenditures budget
3. The financial budget

The **operating budget** is the set of budgets that project sales revenue, cost of goods sold, and operating expenses, leading to the budgeted income statement that projects operating income for the period. The first component of the operating budget is the sales budget, the cornerstone of the master budget. Why? Because sales affect most other components of the master budget. After projecting sales revenue, cost of goods sold, and operating expenses, management prepares the end result of the operating budget: the budgeted income statement that projects operating income for the period.

The second type of budget is the **capital expenditures budget.** This budget presents the company's plan for purchasing property, plant, equipment, and other long-term assets.

The third type of budget is the **financial budget.** Prior components of the master budget, including the budgeted income statement and the capital expenditures budget, along with plans for raising cash and paying debts, provide information for the first element of the financial budget: the cash budget. The **cash budget** details how the business expects to go from the beginning cash balance to the desired ending cash balance and feeds into the budgeted balance sheet, which, in turn, feeds into the budgeted statement of cash flows. These budgeted financial statements look exactly like ordinary statements. The only difference is that they list budgeted (projected) amounts rather than actual amounts.

Data for Greg's Tunes

In this chapter, we will use Greg's Tunes to see how managers prepare operating and financial budgets. Chapter 21 explained the capital budgeting process. Here is the information you have. We will refer back to this information as we create the operating and financial budgets.

1. **You manage Greg's Tunes, Inc., which carries a complete line of music CDs and DVDs.** You are to prepare the store's master budget for April, May, June, and July, the main selling season. The division manager and the head of the accounting department will arrive from headquarters next week to review the budget with you.

2. **Your store's balance sheet at March 31, 2014, the beginning of the budget period, appears in Exhibit 22-6.**

EXHIBIT 22-6 Balance Sheet

GREG'S TUNES, INC.
Balance Sheet
March 31, 2014

Assets		Liabilities	
Current assets:		Current liabilities:	
Cash	$ 16,400	Accounts payable	$ 16,800
Accounts receivable	16,000	Salary and commissions payable	4,250
Inventory	48,000	Total liabilities	$ 21,050
Prepaid insurance	1,800		
Total current assets	$ 82,200	Stockholders' Equity	
Plant assets:		Common stock, no par	20,000
Equipment and fixtures	32,000	Retained earnings	60,350
Less: Accumulated depreciation	12,800	Total stockholders' equity	$ 80,350
Total plant assets	$ 19,200	Total liabilities and stockholders'	
Total assets	$101,400	equity	$101,400

3. **Sales in March were $40,000. The sales manager predicts the following monthly sales:**

April	$50,000
May	80,000
June	60,000
July	50,000
August	40,000

Sales are 60% cash and 40% on credit (on account). Greg's Tunes collects all credit sales the month after the sale. The $16,000 of accounts receivable at March 31, 2014, is March's credit sales ONLY (40% of $40,000). There are no other accounts receivable. Uncollectible accounts are immaterial and thus aren't included in the master budget.

4. **Greg's Tunes has a rule of thumb for maintaining enough inventory so that it does not run out of stock and potentially lose sales. It wants to have inventory at the end of each month of $20,000, plus it wants to keep an additional amount equal to 80% of what it expects to sell in the coming month.** So the rule is that ending inventory should be equal to $20,000 plus 80% of next month's cost of goods sold. Cost of goods sold averages 70% of sales. This is a variable cost.

5. **The accounts payable balance is only inventory purchases not yet paid.** Greg's pays for inventory purchases as follows: 50% during the month of purchase and 50% the month after purchase. Accounts payable consists of inventory purchases only. March purchases were $33,600, so accounts payable on Greg's March 31, 2014, balance sheet shows $16,800 ($33,600 × 0.50).

6. **Monthly payroll is salary of $2,500 plus sales commissions equal to 15% of sales.** This is a mixed cost, with both a fixed and a variable component. The company pays half this amount during the month and half early in the following month. Therefore, at the end of each month, Greg's reports salary and commissions payable equal to half the month's payroll. The $4,250 balance in Salaries and commissions payable in Exhibit 22-6 is half the March payroll of $8,500:

March payroll = Salary of $2,500 + Sales commissions of $6,000 (0.15 × $40,000)
= $8,500

7. **Other monthly expenses are as follows:**

Rent expense (fixed cost)	$2,000, paid as incurred
Depreciation expense, including truck (fixed cost)	500
Insurance expense (fixed cost)	200 expiration of prepaid amount
Miscellaneous expenses (variable cost)	5% of sales, paid as incurred

8. **Greg's plans to purchase a used delivery truck in April for $3,000 cash.**

9. **Greg's requires a minimum cash balance of $10,000 before financing at the end of each month.** The store can borrow money in $1,000 increments at an annual interest rate of 12%. Management borrows no more than the amount needed to maintain the $10,000 minimum cash balance before financing. Total interest expense will vary (variable cost) as the amount of borrowing varies from month to month. Notes payable require $1,000 payments of principal, plus

Key Takeaway

The master budget is the set of budgeted financial statements and supporting schedules for the entire organization. It contains the operating budget, the capital expenditures budget, and the financial budget. There are many budgets that compose each of the three types. Each budget provides a portion of the plan that maps the company's planned direction and goals for a period of time.

monthly interest on the unpaid principal balance. Borrowing and all principal and interest payments occur at the end of the month.

10. Income taxes are ignored in order to simplify the process.

As you prepare the master budget, remember that you are developing the store's operating and financial plan for the next four months. The steps in this process may seem mechanical, but are easily calculated with the use of Excel. (Workpapers in Excel are provided in myaccountinglab.com for every end of chapter problem.) Additionally, the template for the two Summary Problems is provided in myaccountinglab.com as a tool for you to use. In creating the master budget, you must think carefully about pricing, product lines, job assignments, needs for additional equipment, and negotiations with banks. Successful managers use this opportunity to make decisions that affect the future course of business.

Preparing the Operating Budget

3 Prepare an operating budget

The first three components of the operating budget as shown in Exhibit 22-5 are as follows:

1. Sales budget (Exhibit 22-7)
2. Inventory, purchases, and cost of goods sold budget (Exhibit 22-8)
3. Operating expenses budget (Exhibit 22-9)

The results of these three budgets feed into the fourth element of the operating budget: the budgeted income statement (Exhibit 22-10). We consider each, in turn.

The Sales Budget

The forecast of sales revenue is the cornerstone of the master budget because the level of sales affects expenses and almost all other elements of the master budget. Budgeted total sales for each product equals the sales price multiplied by the expected number of units sold. The overall sales budget in Exhibit 22-7 is the sum of the budgets for the individual products. Trace the April through July total sales of $240,000 to the budgeted income statement in Exhibit 22-10.

EXHIBIT 22-7 | Sales Budget

GREG'S TUNES, INC.
Sales Budget
April–July 2014

	April	May	June	July	April–July Total
Cash sales, 60%	$30,000	$48,000	$36,000	$30,000	
Credit collections, one month after sale, 40%	20,000	32,000	24,000	20,000	
Total sales, 100%	$50,000	$80,000	$60,000	$50,000	$240,000

The Inventory, Purchases, and Cost of Goods Sold Budget

This budget determines cost of goods sold for the budgeted income statement, ending inventory for the budgeted balance sheet, and purchases for the cash budget. The familiar cost of goods sold computation specifies the relations among these items:

Beginning inventory + Purchases – Ending inventory = Cost of goods sold

Beginning inventory is known from last month's balance sheet, budgeted cost of goods sold averages 70% of sales, and budgeted ending inventory is a computed amount. Recall that Greg's minimum inventory rule is as follows: Ending inventory should be equal to $20,000 plus 80% of next month's cost of goods sold. You must solve for the budgeted purchases figure. To do this, rearrange the previous equation to isolate purchases on the left side:

Purchases = Cost of goods sold + Ending inventory – Beginning inventory

This equation makes sense. How much inventory does Greg's Tunes need to purchase? Greg's should have the minimum amount of inventory to be sure the company balances providing goods to customers with turning over (selling) the inventory efficiently. Keeping inventory at the minimum level that meets these needs helps reduce inventory storage costs, insurance costs, and warehousing costs, and reduces the potential for inventory to become obsolete (not sellable). Exhibit 22-8 shows Greg's inventory, purchases, and cost of goods sold budget.

EXHIBIT 22-8 | Inventory, Purchases, and Cost of Goods Sold Budget

GREG'S TUNES, INC.
Inventory, Purchases, and Cost of Goods Sold Budget
April–July 2014

	April	May	June	July	April–July Total	Source
Cost of goods sold (70% × sales)	$ 35,000	$ 56,000	$ 42,000	$ 35,000	$168,000	Exhibit 22-7
Desired ending inventory [$20,000 + (80% × COGS for next month)]	64,800†	53,600	48,000	42,400^		
Total inventory required	$ 99,800	$109,600	$ 90,000	$ 77,400		
Beginning inventory	(48,000)*	(64,800)	(53,600)	(48,000)		
Purchases	$ 51,800	$ 44,800	$ 36,400	$ 29,400		

†$20,000 + (0.80 × $56,000) = $64,800
*Balance at March 31 (Exhibit 22-6)
^$20,000 + [0.80 × (0.70 × $40,000)]

Trace the total budgeted cost of goods sold from Exhibit 22-8 of $168,000 to the budgeted income statement in Exhibit 22-10. We will use the budgeted inventory and purchases amounts later.

The Operating Expenses Budget

Recall that Greg's operating expenses include variable and fixed expenses. One of Greg's expenses is fixed salaries of $2,500. One of Greg's variable expenses is sales commissions equal to 15% of sales (from item 6 on page 1057). Half the total salary and commission expense is paid in the month incurred and the remaining half is paid in the following month. Greg's variable operating expenses also include miscellaneous expenses of 5% of sales for the month. Greg's also has other fixed expenses of $2,000 rent, $500 depreciation, and $200 of insurance expense (from item 7 on page 1057). Exhibit 22-9 shows the operating expenses budget. Study each expense to make sure you know how it is computed. For example, sales commissions and miscellaneous expenses fluctuate with sales (variable). Salary, rent, depreciation, and insurance are the same each month (fixed).

Trace the April through July totals from the operating expenses budget in Exhibit 22-9 (commissions of $36,000, miscellaneous expenses of $12,000, and so on) to the budgeted income statement in Exhibit 22-10.

EXHIBIT 22-9 | Operating Expenses Budget

GREG'S TUNES, INC.
Operating Expenses Budget
April–July 2014

	April	May	June	July	April–July Total	Source
Variable operating expenses:						
Commission expense, 15% of sales	$ 7,500	$12,000	$ 9,000	$ 7,500	$36,000	Exhibit 22-7
Miscellaneous expenses, 5% of sales	2,500	4,000	3,000	2,500	12,000	Exhibit 22-7
Total variable operating expenses:	$10,000	$16,000	$12,000	$10,000	$48,000	
Fixed operating expenses:						
Salary expense, fixed amount	2,500	2,500	2,500	2,500	10,000	
Rent expense, fixed amount	2,000	2,000	2,000	2,000	8,000	
Depreciation expense, fixed amount	500	500	500	500	2,000	
Insurance expense, fixed amount	200	200	200	200	800	
Total fixed operating expenses	$ 5,200	$ 5,200	$ 5,200	$ 5,200	$20,800	
Total operating expenses	$15,200	$21,200	$17,200	$15,200	$68,800	

The Budgeted Income Statement

Use the sales budget (Exhibit 22-7); the inventory, purchases, and cost of goods sold budget (Exhibit 22-8); and the operating expenses budget (Exhibit 22-9) to prepare the budgeted income statement in Exhibit 22-10. (We explain the computation of interest expense as part of the cash budget in the next section.) Notice that the income statement highlights the contribution margin, which you learned about in Chapter 19. Recall that the contribution margin is Revenue minus Variable costs. The contribution margin should be large enough to cover fixed expenses and to make a profit for Greg's.

EXHIBIT 22-10 | Budgeted Income Statement

GREG'S TUNES, INC.
Budgeted Income Statement
Four Months Ending July 31, 2014

		Amount	Source
Sales revenue		$240,000	Exhibit 22-7
Cost of goods sold		168,000	Exhibit 22-8
Gross profit		$ 72,000	
Variable operating expenses:			
Commissions expense	$36,000		Exhibit 22-9
Miscellaneous expenses	12,000		Exhibit 22-9
Total variable operating expenses		48,000	
Contribution margin		$ 24,000	
Fixed operating expenses:			
Salary expense	$10,000		Exhibit 22-9
Rent expense	8,000		Exhibit 22-9
Depreciation expense	2,000		Exhibit 22-9
Insurance expense	800		Exhibit 22-9
Total fixed operating expenses		20,800	
Operating income		$ 3,200	
Interest expense		(210)	*Exhibit 22-14
Net income (loss)		$ 2,990	

* $80 + $70 + $60

Key Takeaway

The first three components of the operating budget include the sales budget; the inventory, purchases, and cost of goods sold budget; and the operating expenses budget. The sales budget depicts the breakdown of sales based on the terms of collection. The inventory, purchases, and cost of goods sold budget aids in planning for adequate inventory to meet sales (COGS) and for inventory purchases. The operating expenses budget captures the planned variable and fixed operating expenses necessary for normal operations. The three budgets help to form the budgeted income statement. Together these form the operational budget that depicts the company's operational strategy for a period of time.

Take this opportunity to solidify your understanding of operating budgets by carefully working out Summary Problem 22-1.

Summary Problem 22-1

Review the Greg's Tunes example. You now think July sales might be $40,000 instead of the projected $50,000 in Exhibit 22-7. You also assume a change in sales collections as follows:

60% in the month of the sale

20% in the month after the sale

19% two months after the sale

1% never collected

You want to see how this change in sales affects the budget.

Requirement

1. Revise the sales budget (Exhibit 22-7); the inventory, purchases, and cost of goods sold budget (Exhibit 22-8); and the operating expenses budget (Exhibit 22-9). Prepare a revised budgeted income statement for the four months ended July 31, 2014.

Solution

Requirement

1. Revised figures appear in color for emphasis.

EXHIBIT 22-7R | Revised—Sales Budget

GREG'S TUNES, INC.
Revised—Sales Budget
April–July 2014

	April	May	June	July	April–July Total
Cash sales, 60%	$30,000	$48,000	$36,000	$24,000	
Credit collections, one month after sale, 20%	10,000	16,000	12,000	8,000	
Credit collections, two months after sale, 19%	9,500	15,200	11,400	7,600	
Bad debts, 1%	500	800	600	400	
Total sales, 100%	$50,000	$80,000	$60,000	$40,000	$230,000

EXHIBIT 22-8R | Revised—Inventory, Purchases, and Cost of Goods Sold Budget

GREG'S TUNES, INC.
Revised—Inventory, Purchases, and Cost of Goods Sold Budget
April–July 2014

	April		May	June	July	April–July Total	Source
Cost of goods sold, (70% × sales)	$ 35,000		$ 56,000	$ 42,000	$ 28,000	$161,000	Exhibit 22-7R
Desired ending inventory [$20,000 + (80% × COGS for next month)]	64,800		53,600	42,400	42,400		
Total inventory required	$ 99,800		$109,600	$ 84,400	$ 70,400		
Beginning inventory	(48,000)	*	(64,800)	(53,600)	(42,400)		
Purchases	$ 51,800		$ 44,800	$ 30,800	$ 28,000		

*March 31 inventory balance (Exhibit 22-6)

EXHIBIT 22-9R | **Revised—Operating Expenses Budget**

GREG'S TUNES, INC.
Revised—Operating Expenses Budget
April–July 2014

	April	May	June	July	April–July Total	Source
Variable operating expenses:						
Commission expense, 15% of sales	$ 7,500	$12,000	$ 9,000	$ 6,000	$34,500	Exhibit 22-7R
Miscellaneous expenses, 5% of sales	2,500	4,000	3,000	2,000	11,500	Exhibit 22-7R
Bad debt expense, 1% of sales	500	800	600	400	2,300	Exhibit 22-7R
Total variable operating expenses:	$10,500	$16,800	$12,600	$ 8,400	$48,300	
Fixed operating expenses:						
Salary expense, fixed amount	2,500	2,500	2,500	2,500	10,000	
Rent expense, fixed amount	2,000	2,000	2,000	2,000	8,000	
Depreciation expense, fixed amount	500	500	500	500	2,000	
Insurance expense, fixed amount	200	200	200	200	800	
Total fixed operating expenses	$ 5,200	$ 5,200	$ 5,200	$ 5,200	$20,800	
Total operating expenses	$15,700	$22,000	$17,800	$13,600	$69,100	

EXHIBIT 22-10R | **Revised—Budgeted Income Statement**

GREG'S TUNES, INC.
Revised—Budgeted Income Statement
Four Months Ending July 31, 2014

			Source
Sales revenue		$230,000	Exhibit 22-7R
Cost of goods sold		161,000	Exhibit 22-8R
Gross profit		$ 69,000	
Variable operating expenses:			
Commission expense	$34,500		Exhibit 22-9R
Miscellaneous expenses	11,500		Exhibit 22-9R
Bad debt expense	2,300		
Total variable operating expenses		48,300	
Contribution margin		$ 20,700	
Fixed operating expenses:			
Salary expense	$10,000		Exhibit 22-9R
Rent expense	8,000		Exhibit 22-9R
Depreciation expense	2,000		Exhibit 22-9R
Insurance expense	800		Exhibit 22-9R
Total fixed operating expenses		20,800	
Operating income (loss)		$ (100)	
Interest expense		(450)	* Exhibit 22-14R
Net income (loss)		$ (550)	

* $160 + $150 + $140

Preparing the Financial Budget

4 Prepare a financial budget

Armed with a clear understanding of Greg's Tunes' operating budget, you are now ready to prepare the financial budget. Exhibit 22-5 shows that the financial budget includes the cash budget, the budgeted balance sheet, and the budgeted statement of cash flows. We start with the cash budget.

Preparing the Cash Budget

The *cash budget*, or statement of budgeted cash receipts and payments, details how the business expects to go from the beginning cash balance to the desired ending balance. The cash budget has four major parts:

- Budgeted cash collections from customers (Exhibit 22-11)
- Budgeted cash payments for purchases (Exhibit 22-12)
- Budgeted cash payments for operating expenses (Exhibit 22-13)
- Budgeted cash payments for capital expenditures (for example, the $3,000 capital expenditure to acquire the delivery truck). Recall that we don't cover the preparation of the capital expenditures budget in this chapter.

Cash collections and payments depend on revenues and expenses, which appear in the operating budget. This is why you cannot prepare the cash budget until you have finished the operating budget.

Budgeted Cash Collections from Customers

Recall from item 3 on page 1057 that Greg's sales are 60% cash and 40% on credit. The 40% credit sales are collected the month after the sale is made. Exhibit 22-11 shows that April's budgeted cash collections consist of two parts: (1) April's cash sales from the sales budget in Exhibit 22-7 ($30,000) plus (2) collections of March's credit sales ($16,000 from the March 31 balance sheet, Exhibit 22-6). Trace April's $46,000 ($30,000 + $16,000) total cash collections to the cash budget in Exhibit 22-14 on page 1066.

EXHIBIT 22-11 | Budgeted Cash Collections

GREG'S TUNES, INC.
Budgeted Cash Collections from Customers
April–July 2014

	April	May	June	July	April–July Total	Source
Cash sales, 60%	$30,000	$48,000	$36,000	$30,000		Exhibit 22-7
Credit collections, one month after sale, 40%	16,000*	20,000	32,000	24,000		Exhibit 22-7
Total collections	$46,000	$68,000	$68,000	$54,000	$236,000	

*March 31 accounts receivable (Exhibit 22-6)

Budgeted Cash Payments for Purchases

Recall from item 5 on page 1057 that Greg's pays for inventory purchases 50% during the month of purchase and 50% the month after purchase. Exhibit 22-12 uses the inventory, purchases, and cost of goods sold budget from Exhibit 22-8 to compute budgeted cash payments for purchases of inventory. April's cash payments for purchases consist of two parts: (1) payment of 50% of March's purchases ($16,800 accounts payable balance from the March 31 balance sheet, Exhibit 22-6) plus (2) payment for 50% of April's purchases (50% × $51,800 = $25,900). Trace April's $42,700 ($16,800 + $25,900) cash payment for purchases to the cash budget in Exhibit 22-14.

EXHIBIT 22-12 | Budgeted Cash Payments for Purchases

GREG'S TUNES, INC.
Budgeted Cash Payments for Purchases
April–July 2014

	April	May	June	July	April–July Total	Source
50% of last month's purchases	$16,800*	$25,900	$22,400	$18,200		Exhibit 22-8
50% of this month's purchases	25,900	22,400	18,200	14,700		Exhibit 22-8
Total payments for purchases	$42,700	$48,300	$40,600	$32,900	$164,500	

*March 31 accounts payable (Exhibit 22-6)

Budgeted Cash Payments for Operating Expenses

Exhibit 22-13 uses the operating expenses budget (Exhibit 22-9) and Greg's payment information to compute cash payments for operating expenses. Greg's pays half the salary in the month incurred and half in the following month. Recall that Greg's operating expenses also include $2,000 rent, $500 depreciation, $200 of insurance expense, and miscellaneous expenses of 5% of sales for the month (from item 7 on page 1057). Greg's pays all those expenses in the month incurred except for insurance and depreciation. Recall that the insurance was prepaid insurance, so the cash payment for insurance was made before this budget period; therefore, no cash payment is made for insurance during April–July. Depreciation is a noncash expense, so it's not included in the budgeted cash payments for operating expenses. April's cash payments for operating expenses consist of four items:

Payment of 50% of March's salary and commissions (from March 31 balance sheet, Exhibit 22-6)	$ 4,250
Payment of 50% of April's salary and commissions (50% × $10,000, Exhibit 22-9)	5,000
Payment of rent expense (Exhibit 22-9)	2,000
Payment of miscellaneous expenses (Exhibit 22-9)	2,500
Total April cash payments for operating expenses	$13,750

Follow April's $13,750 cash payments for operating expenses from Exhibit 22-13 to the cash budget in Exhibit 22-14.

EXHIBIT 22-13 | Budgeted Cash Payments for Operating Expenses

GREG'S TUNES, INC
Budgeted Cash Payments for Operating Expenses
April–July 2014

	April	May	June	July	April–July Total	Source
Variable operating expenses						
50% of last month's commission expenses	$ 3,000	$ 3,750	$ 6,000	$ 4,500		Exhibit 22-9
50% of this month's commission expenses	3,750	6,000	4,500	3,750		Exhibit 22-9
Miscellaneous expenses, 5% of sales	2,500	4,000	3,000	2,500		Exhibit 22-9
Total payments for variable operating expenses	9,250	13,750	13,500	10,750		
Fixed operating expenses:						
50% of last month's salary expenses	$ 1,250	$ 1,250	$ 1,250	$ 1,250		Exhibit 22-9
50% of this month's salary expenses	1,250	1,250	1,250	1,250		Exhibit 22-9
Rent expense	2,000	2,000	2,000	2,000		Exhibit 22-9
Total payments for fixed operating expenses	4,500	4,500	4,500	4,500		
Total payments for operating expenses	$13,750	$18,250	$18,000	$15,250	$65,250	

Stop & Think...

Why are depreciation expense and insurance expense from the operating expenses budget (Exhibit 22-9) *excluded* from the budgeted cash payments for operating expenses in Exhibit 22-13?

Answer: These expenses do not require cash outlays in the current period. Depreciation is the periodic write-off of the cost of the equipment and fixtures that Greg's Tunes acquired previously. Insurance expense is the expiration of insurance paid for in a previous period; thus, no cash payment was made to the insurance company this period.

The Cash Budget

To prepare the cash budget in Exhibit 22-14, start with the beginning cash balance (Exhibit 22-6) and add the budgeted cash collections from Exhibit 22-11 to determine the cash available. Then, subtract cash payments for purchases (Exhibit 22-12), operating expenses (Exhibit 22-13), and any capital expenditures. This yields the ending cash balance before financing.

Item 9 on page 1057 states that Greg's Tunes requires a minimum cash balance before financing of $10,000. April's $2,950 budgeted cash balance before financing falls $7,050 short of the minimum required ($10,000 – $2,950). To be able to access short-term financing, Greg's must have secured an existing line of credit with the company's bank. Securing this credit in advance is crucial to having the credit available to draw upon when cash shortages arise. Because Greg's borrows in $1,000 increments, the company will have to borrow $8,000 to cover April's expected shortfall. The budgeted ending cash balance equals the "ending cash balance before financing," adjusted for the total effects of the financing (an $8,000 inflow in April). Exhibit 22-14 shows that Greg's expects to end April with $10,950 of cash ($2,950 + $8,000). Recall additionally that when Greg's borrows, the amount borrowed is to be paid back in $1,000 installments plus interest at 12% annually. Note that in May, Greg's begins to pay the $8,000 borrowed in April. Greg's must also pay interest at 12%. For May, the interest paid is calculated as $8,000 owed × 12% × ½ of the year, or $80 interest. For June, Greg's interest owed will change because the principal of the note has been paid down $1,000 in May. June interest is calculated as ($8,000 – $1,000) owed × 12% × ½ of the year, or $70 interest. For July, interest is ($8,000 – $1,000 – $1,000) owed × 12% × ½

of the year, or $60 interest. Exhibit 22-14 also shows the cash balance at the end of May, June, and July.

EXHIBIT 22-14 | Cash Budget

GREG'S TUNES, INC.
Cash Budget
Four Months Ending July 31, 2014

	April	May	June	July	Source
Beginning cash balance	$ 16,400*	$ 10,950	$ 11,320	$ 19,650	
Cash collections	46,000	68,000	68,000	54,000	Exhibit 22-11
Cash available	$ 62,400	$ 78,950	$ 79,320	$ 73,650	
Cash payments:					
Purchases of inventory	42,700	48,300	40,600	32,900	Exhibit 22-12
Operating expenses	13,750	18,250	18,000	15,250	Exhibit 22-13
Purchase of delivery truck	3,000				
Total cash payments	59,450	66,550	58,600	48,150	
(1) Ending cash balance before financing	$ 2,950	$ 12,400	$ 20,720	$ 25,500	
Minimum cash balance desired	(10,000)	(10,000)	(10,000)	(10,000)	
Cash excess (deficiency)	$ (7,050)	$ 2,400	$ 10,720	$ 15,500	
Financing of cash deficiency:					
Borrowing (at end of month)[a]	8,000	—	—	—	
Principal payments (at end of month, at $1,000)		(1,000)	(1,000)	(1,000)	
Interest expense (at 12% annually)[b]		(80)	(70)	(60)	
(2) Total effects of financing	8,000	(1,080)	(1,070)	(1,060)	
Ending cash balance (1) + (2)	$ 10,950	$ 11,320	$ 19,650	$ 24,440	

*March 31 cash balance (Exhibit 22-6)
[a] Borrowing occurs in multiples of $1,000 and only for the amount needed to maintain a minimum cash balance before financing of $10,000
[b] Interest expense: May: $8,000 × (0.12 × 1/12) = $80; June: ($8,000 – $1,000) × (0.12 × 1/12) = $70; July: ($8,000 – $1,000 – $1,000) × (0.12 × 1/12) = $60

The cash balance at the end of July of $24,440 is the cash balance in the July 31 budgeted balance sheet in Exhibit 22-15.

EXHIBIT 22-15 | Budgeted Balance Sheet

GREG'S TUNES, INC.
Budgeted Balance Sheet
July 31, 2014

Assets		Source
Current assets:		
Cash	$ 24,440	Exhibit 22-14
Accounts receivable	20,000	Exhibit 22-7
Inventory	42,400	Exhibit 22-8
Prepaid insurance	1,000	Beg. Bal. $1,800 – (Exhibit 22-9) ($200 per month expiration × 4 months)
Total current assets	$ 87,840	
Plant assets:		
Equipment and fixtures	$ 35,000	Beg. Bal. $32,000 + (Item 8, p 1057) $3,000 truck acquisition
Less: Accumulated depreciation	14,800	Beg. Bal. $12,800 + (Exhibit 22-9) ($500 per month depreciation × 4 months)
Total plant assets	20,200	
Total assets	$108,040	
Liabilities		
Current liabilities:		
Accounts payable	$ 14,700	July purchases from Exhibit 22-8 of $29,400 × 50% paid in month after purchase
Salary and commissions payable	5,000	(July salary of $2,500 plus July commissions of $7,500 from Exhibit 22-9) × 50% paid in month after incurred
Short-term notes payable	5,000	$8,000 borrowed in April (revised cash budget) – ($1,000 principal repayments × 3 months) (Exhibit 22-14)
Total liabilities	$ 24,700	
Stockholders' Equity		
Common stock, no par	$ 20,000	Exhibit 22-6
Retained earnings	63,340	Beg. Bal. $60,350 + net income from Exhibit 22-10 income statement $2,990
Total stockholders' equity	83,340	
Total liabilities and stockholders' equity	$108,040	

The Budgeted Balance Sheet

To prepare the budgeted balance sheet, project each asset, liability, and stockholders' equity account based on the plans outlined in the previous exhibits.

Study the budgeted balance sheet in Exhibit 22-15 to make certain you understand the computation of each figure. For example, on the budgeted balance sheet as of July 31, 2014, budgeted cash equals the ending cash balance from the cash budget in Exhibit 22-14. Accounts receivable as of July 31 equal July's credit sales of $20,000, shown in the sales budget (Exhibit 22-7). July 31 inventory of $42,400 is July's desired ending inventory in the inventory, purchases, and cost of goods sold budget in Exhibit 22-8. Detailed computations for each of the other accounts appear in Exhibit 22-15.

The Budgeted Statement of Cash Flows

The final step is preparing the budgeted statement of cash flows. Use the information from the schedules of cash collections and payments, the cash budget, and the beginning balance of cash to project cash flows from operating, investing, and financing activities. Take time to study Exhibit 22-16 on the next page and make sure you understand the origin of each figure.

EXHIBIT 22-16 | Budgeted Statement of Cash Flows

GREG'S TUNES, INC.
Budgeted Statement of Cash Flows
Four Months Ending July 31, 2014

			Source
Cash flows from operating activities:			
Receipts:			
Collections from customers	$ 236,000		Exhibit 22-11
Total cash receipts		$ 236,000	
Payments:			
To suppliers for purchases of inventory	(164,500)		Exhibit 22-12
For operating expenses	(65,250)		Exhibit 22-13
For interest	(210)		Exhibit 22-14
Total cash payments		(229,960)	
Net cash provided by operating activities		$ 6,040	
Cash flows from investing activities:			
Acquisition of delivery truck	(3,000)		
Net cash used by investing activities		(3,000)	
Cash flows from financing activities:			
Proceeds from issuance of notes payable	8,000		Exhibit 22-14
Payment of notes payable	(3,000)		Exhibit 22-14
Net cash provided by financing activities		5,000	
Net increase in cash		$ 8,040	
Cash balance, April 1, 2014		16,400	Exhibit 22-6
Cash balance, July 31, 2014		$ 24,440	Exhibit 22-14

Getting Employees to Accept the Budget

What is the most important part of Greg's Tunes' budgeting system? Despite all the numbers we have crunched, it is not the mechanics. It is getting managers and employees to accept the budget so Greg's can reap the planning, coordination, and control benefits illustrated in Exhibit 22-3.

Few people enjoy having their work monitored and evaluated. So if managers use the budget as a benchmark to evaluate employees' performance, managers must first motivate employees to accept the budget's goals. Here is how they can do it:

- Managers must support the budget themselves, or no one else will.
- Managers must show employees how budgets can help them achieve better results.
- Managers must have employees participate in developing the budget.

But these principles alone are not enough. As the manager of Greg's, your performance is evaluated by comparing actual results to the budget. When you develop the company's budget, you may be tempted to build in *slack*. For example, you might want to budget fewer sales and higher purchases than you expect. This increases the chance that actual performance will be better than the budget and that you will receive a good evaluation. But adding slack into the budget makes it less accurate—and less useful for planning and control. When the division manager and the head of the accounting department arrive from headquarters next week, they will scour your budget to find any slack you may have inserted.

Now, we'll continue our budget example started in Summary Problem 22-1 in Summary Problem 22-2.

Key Takeaway

The cash budget details how the business expects to go from the beginning cash balance to the desired ending balance each period. The cash budget has four major parts: cash collections from customers, cash payments for purchases, cash payments for operating expenses, and cash payments for capital expenditures. The results of these budgets are combined to form the cash budget. After preparing the cash budget, the rest of the financial statement budgets are prepared, including the budgeted balance sheet and budgeted statement of cash flows. These budgets depict the financial plan that implements the strategic goals of the company.

Summary Problem 22-2

Continue the revised Greg's Tunes illustration from Summary Problem 22-1. Recall that you think July sales will be $40,000 instead of $50,000, as projected in Exhibit 22-7. You also assume a change in sales collections as follows:

60% in the month of the sale

20% in the month after the sale

19% two months after the sale

1% never collected

How will this affect the financial budget?

Requirements

1. Revise the schedule of budgeted cash collections (Exhibit 22-11), the schedule of budgeted cash payments for purchases (Exhibit 22-12), and the schedule of budgeted cash payments for operating expenses (Exhibit 22-13).
2. Prepare a revised cash budget (Exhibit 22-14), a revised budgeted balance sheet at July 31, 2014 (Exhibit 22-15), and a revised budgeted statement of cash flows for the four months ended July 31, 2014 (Exhibit 22-16). *Note: Round values to the nearest dollar.*

Solution

Requirement 1

1. Revised figures appear in color for emphasis.

EXHIBIT 22-11R Revised—Budgeted Cash Collections from Customers

GREG'S TUNES, INC.
Revised—Budgeted Cash Collections from Customers
April–July 2014

	April	May	June	July	April–July Total	Source
Cash sales, 60%	$30,000	$48,000	$36,000	$24,000		Exhibit 22-7R
Credit collections, one month after sale, 20%	8,000	10,000	16,000	12,000		Exhibit 22-7R
Credit collections, two months after sale, 19%	^	7,600	9,500	15,200		Exhibit 22-7R
Total collections	$38,000	$65,600	$61,500	$51,200	$216,300	

*Notice that $400 (1% × $40,000 sales) of the March 31 Accounts receivable balance (Exhibit 22-6) of $16,000 is never collected (bad debt) and thus should appear as an expense on the March 31 income statement and will reduce the March 31 balance in Retained earnings.
^There were no accounts receivable for February.

EXHIBIT 22-12R Revised—Budgeted Cash Payments for Purchases

GREG'S TUNES, INC.
Revised—Budgeted Cash Payments for Purchases
April–July 2014

	April	May	June	July	April–July Total	Source
50% of last month's purchases	$16,800*	$25,900	$22,400	$15,400		Exhibit 22-8R
50% of this month's purchases	25,900	22,400	15,400	14,000		Exhibit 22-8R
Total payments for purchases	$42,700	$48,300	$37,800	$29,400	$158,200	

*March 31 accounts payable (Exhibit 22-6)

EXHIBIT 22-13R | **Revised—Budgeted Cash Payments for Operating Expenses**

GREG'S TUNES, INC
Revised—Budgeted Cash Payments for Operating Expenses
April–July 2014

	April	May	June	July	April–July Total	Source
Variable operating expenses:						
50% of last month's commission expense	$ 3,000	$ 3,750	$ 6,000	$ 4,500		Exhibit 22-9R
50% of this month's commission expense	3,750	6,000	4,500	3,000		Exhibit 22-9R
Miscellaneous expenses, 5% of sales	2,500	4,000	3,000	2,000		Exhibit 22-9R
Total payments for variable operating expenses	9,250	13,750	13,500	9,500		
Fixed operating expenses:						
50% of last month's salary expense	$ 1,250	$ 1,250	$ 1,250	$ 1,250		Exhibit 22-9R
50% of this month's salary expense	1,250	1,250	1,250	1,250		Exhibit 22-9R
Rent expense	2,000	2,000	2,000	2,000		Exhibit 22-9R
Total payments for fixed operating expenses	4,500	4,500	4,500	4,500		
Total payments for operating expenses	$13,750	$18,250	$18,000	$14,000	$64,000	

Requirement 2

EXHIBIT 22-14R | **Revised—Cash Budget**

GREG'S TUNES, INC.
Revised—Cash Budget
Four Months Ending July 31, 2014

	April	May	June	July	Source
Beginning cash balance	$ 16,400*	$ 10,950	$ 8,840	$ 13,390	
Cash collections	38,000	65,600	61,500	51,200	Exhibit 22-11R
Cash available	$ 54,400	$ 76,550	$ 70,340	$ 64,590	
Cash payments:					
Purchases of inventory	42,700	48,300	37,800	29,400	Exhibit 22-12R
Operating expenses	13,750	18,250	18,000	14,000	Exhibit 22-13R
Purchase of delivery truck	3,000				
Total cash payments	59,450	66,550	55,800	43,400	
(1) Ending cash balance before financing	$ (5,050)	$ 10,000	$ 14,540	$ 21,190	
Minimum cash balance desired	(10,000)	(10,000)	(10,000)	(10,000)	
Cash excess (deficiency)	$(15,050)	$ —	$ 4,540	$ 11,190	
Financing of cash deficiency					
Borrowing (at end of month)[a]	16,000	—	—	—	
Principal payments (at end of month, at $1,000)		(1,000)	(1,000)	(1,000)	
Interest expense (at 12% annually)[b]		(160)	(150)	(140)	
(2) Total effects of financing	16,000	(1,160)	(1,150)	(1,140)	
Ending cash balance (1) + (2)	$ 10,950	$ 8,840	$ 13,390	$ 20,050	

*March 31 cash balance (Exhibit 22-6)
[a] Borrowing occurs in multiples of $1,000 and only for the amount needed to maintain a minimum cash balance before financing of $10,000
[b] Interest expense: May: $16,000 × (0.12 × 1/12) = $160; June: ($16,000 – $1,000) × (0.12 × 1/12) = $150; July: ($16,000 – $1,000 – $1,000) × (0.12 × 1/12) = $140

EXHIBIT 22-15R | Revised—Budgeted Balance Sheet

GREG'S TUNES, INC.
Revised—Budgeted Balance Sheet
July 31, 2014

Assets		Source
Current assets:		
Cash	$ 20,050	Revised cash budget (Exhibit 22-14R)
Accounts receivable	27,000	Revised sales budget (Exhibit 22-7R)—collections not made yet (June, $11,400 + July, $8,000 + July, $7,600)
Inventory	42,400	Revised inventory, purchases, and COGS budget (Exhibit 22-8R)
Prepaid insurance	1,000	Beg. Bal. $1,800 – (200 per month expiration × 4 months)
Total current assets	$ 90,450	
Plant assets:		
Equipment and fixtures	$ 35,000	April Beg. Bal. $32,000 (Exhibit 22-6) + $3,000 truck acquisition
Less: Accumulated depreciation	14,800	April Beg. Bal. $12,800 (Exhibit 22-6) + ($500 per month depreciation × 4 months)
Total plant assets	20,200	
Total assets	$110,650	
Liabilities		
Current liabilities:		
Accounts payable	$ 14,000	July purchases of $28,000 × 50% paid in month after purchase
Salary and commissions payable	4,250	July salary and comissions of $8,500 × 50% paid in month after incurred
Short-term notes payable	13,000	$16,000 borrowed in April (revised cash budget Exhibit 22-14R) – ($1,000 principal repayments × 3 months)
Total liabilities	$ 31,250	
Stockholders' Equity		
Common stock	$ 20,000	Exhibit 22-6
Retained earnings	59,400	Beg. Bal. $60,350 – March accounts receivable never collected $400 – loss from revised income statement $550
Total stockholders' equity	79,400	
Total liabilities and stockholders' equity	$110,650	

EXHIBIT 22-16R | Revised—Budgeted Statement of Cash Flows

GREG'S TUNES, INC.
Revised—Budgeted Statement of Cash Flows
Four Months Ending July 31, 2014

			Source
Cash flows from operating activities:			
Receipts:			
Collections from customers	$216,300		Revised budgeted cash collections (Exhibit 22-11R)
Total cash receipts		$ 216,300	
Payments:			
To suppliers for purchases of inventory	(158,200)		Revised budgeted cash payments for purchases (Exhibit 22-12R)
For operating expenses	(64,000)		Revised budgeted cash payments for operating expenses (Exhibit 22-13R)
For interest	(450)		Revised cash budget (Exhibit 22-14R)
Total cash payments		(222,650)	
Net cash provided by operating activities		$ (6,350)	
Cash flows from investing activities:			
Acquisition of delivery truck	(3,000)		
Net cash used by investing activities		(3,000)	
Cash flows from financing activities:			
Proceeds from issuance of notes payable	16,000		Revised cash budget (Exhibit 22-14R)
Payment of notes payable	(3,000)		Revised cash budget (Exhibit 22-14R)
Net cash provided by financing activities		13,000	
Net increase in cash		$ 3,650	
Cash balance, April 1, 2014		16,400	Exhibit 22-6
Cash balance, July 31, 2014		$ 20,050	Exhibit 22-14R

Using Information Technology for Sensitivity Analysis and Rolling Up Unit Budgets

5 Use sensitivity analysis in budgeting

Exhibits 22-7 through 22-16 show that managers must prepare many calculations to develop the master budget for just one of the retail stores in the Greg's Tunes merchandising chain. Technology makes it more cost-effective for managers to

- conduct sensitivity analysis on their own unit's budget, and
- combine individual unit budgets to create the companywide master budget.

Sensitivity Analysis

The master budget models the company's *planned* activities. Top management pays special attention to ensure that the results of the budgeted income statement (Exhibit 22-10), the cash budget (Exhibit 22-14), and the budgeted balance sheet (Exhibit 22-15) support key strategies.

But actual results often differ from plans, so management wants to know how budgeted income and cash flows would change if key assumptions turned out to be incorrect. In Chapter 19, we defined *sensitivity analysis* as a *what-if* technique that asks *what* a result will be *if* a predicted amount is not achieved or *if* an underlying

assumption changes. *What if* the stock market crashes? How will this affect **Amazon.com**'s sales? Will it have to postpone a planned expansion in Asia and Europe? *What* will Greg's Tunes' cash balance be on July 31 *if* the period's sales are 45% cash, not 60% cash? Will Greg's have to borrow more cash?

Most companies use computer spreadsheet programs like Excel to prepare master budget schedules and statements. Today, what-if budget questions are easily changed within Excel with a few keystrokes. (Note: All the budgets presented in the chapter material and in both Summary Problems are available online at myaccountinglab.com for your use.)

Technology makes it cost-effective to perform more comprehensive sensitivity analyses. Armed with a better understanding of how changes in sales and costs are likely to affect the company's bottom line, today's managers can react quickly if key assumptions underlying the master budget (such as sales price or quantity) turn out to be wrong. Summary Problems 22-1 and 22-2 are examples of sensitivity analysis for Greg's Tunes.

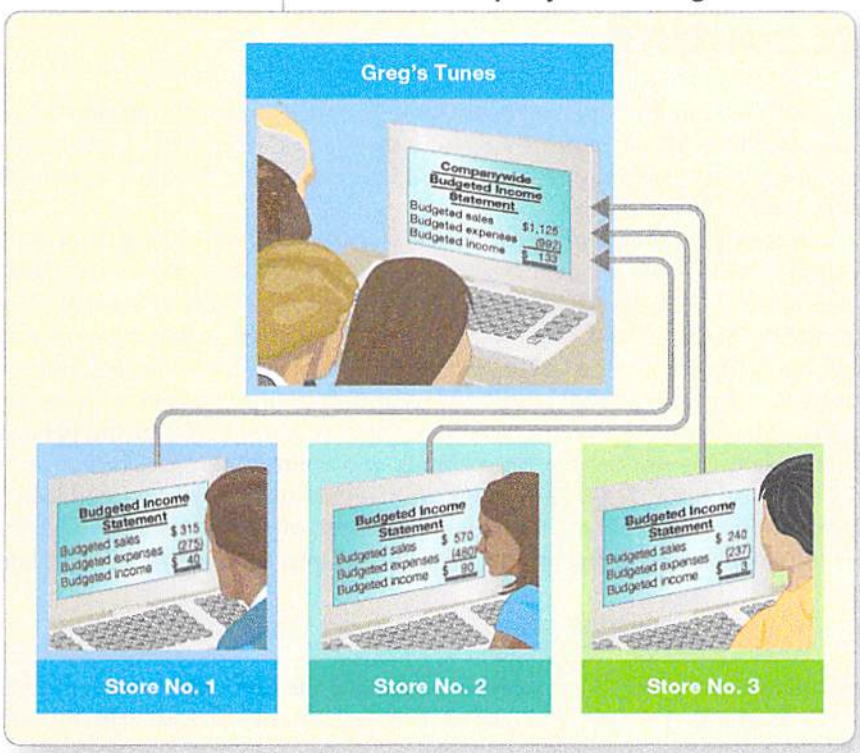
Connect To: Business

Have you ever heard the phrase "garbage in/garbage out"? This could be said about budgets. The better the information, the more useful the budgets will be in decision making. Once management makes the decisions and gathers the necessary information, actually creating the budgets is more a function of the level of technology available within the company than of skill. So why budget at all when so many variables go into the realization of the actual results? Just like you have a plan to finish your degree, companies must have plans to be able to make the best decisions. The differences between budgeted numbers and actual numbers serve as a signal to managers that the actual results were different than the plan. Management can then investigate why the differences, whether good or bad, occurred and incorporate new, more informed strategies into their decisions.

Rolling Up Individual Unit Budgets into the Companywide Budget

Greg's Tunes operates three retail stores. As Exhibit 22-17 shows, Greg's Tunes' headquarters must roll up the budget data from each of the stores to prepare the companywide master budgeted income statement. This roll-up can be difficult for companies whose units use different spreadsheets to prepare the budgets.

EXHIBIT 22-17 **Rolling Up Individual Unit Budgets into the Companywide Budget**



Companies like **Sunoco** turn to budget-management software to solve this problem. Often designed as a component of the company's Enterprise Resource Planning (ERP) system (or data warehouse), this software helps managers develop and analyze budgets.

Software allows managers to conduct sensitivity analyses on their own unit's data. When the manager is satisfied with his or her budget, he or she can enter it in the companywide budget easily. His or her unit's budget automatically rolls up with budgets from all other units around the world.

Whether at headquarters or on the road, top executives can log into the budget system through the Internet and conduct their own sensitivity analyses on individual units' budgets or on the companywide budget. The result: Managers spend less time compiling and summarizing data and more time analyzing and making decisions that ensure the budget leads the company to achieve its key strategic goals.

Key Takeaway

Sensitivity budgeting was once a time-consuming task. Now, with technology, modifying the budget assumptions is easy. Individual managers can easily modify the budgets of their specific units, and that data is automatically updated in the companywide budget plans. Being able to modify this data easily allows managers to be more responsive to business changes and plan better; thus, better, more timely decisions that benefit the company may be made.

Stop & Think...

Consider two budget situations: (1) Greg's Tunes' marketing analysts produce a forecast for four-month sales of $4,500,000 for the company's three stores. (2) Much uncertainty exists about the period's sales. The most likely amount is $4,500,000, but marketing considers any amount between $3,900,000 and $5,100,000 to be possible. How will the budgeting process differ in these two circumstances?

Answer: Greg's will prepare a master budget for the expected sales level of $4,500,000 in either case. Because of the uncertainty in the second situation, executives will want a set of budgets covering the entire range of volume rather than a single level. Greg's Tunes' managers may prepare budgets based on sales of, for example, $3,900,000, $4,200,000, $4,500,000, $4,800,000, and $5,100,000. These budgets will help managers plan for sales levels throughout the forecasted range.

Responsibility Accounting

6 Prepare performance reports for responsibility centers and account for traceable and common shared fixed costs.

You have now seen how managers set strategic goals and then develop plans and budget resources for activities that will help reach those goals. Let's look more closely at how managers *use* reports to control operations. We'll use Smart Touch's information for this analysis.

Each manager is responsible for planning and controlling some part of the firm's activities. A **responsibility center** is a part of the organization for which a manager has decision-making authority and accountability for the results of those decisions. A responsibility center is the part of the organization that a particular manager is responsible for. Lower-level managers are often responsible for budgeting and controlling costs of a single value-chain function. For example, one manager is responsible for planning and controlling the *production* of Smart Touch's DVDs at the plant, while another manager is responsible for planning and controlling the *distribution* of the product to customers. Lower-level managers report to higher-level managers, who have broader responsibilities. Managers in charge of production and distribution report to senior managers responsible for profits earned by an entire product line.

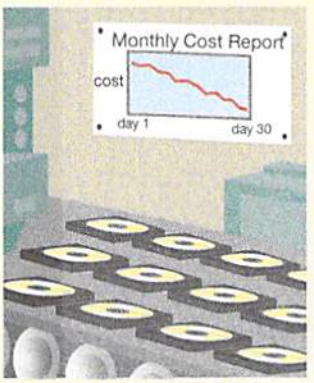
Four Types of Responsibility Centers

Responsibility accounting is a system for evaluating the performance of each responsibility center and its manager. The goal of these reports is to provide relevant information to those managers empowered to make decisions.

This decentralization highlights the need for reports on individual *segments*, which are parts of the company for which managers need reports. Segments are typically defined as one of the types of responsibility centers illustrated in Exhibit 22-18. The four types of responsibility centers are as follows:

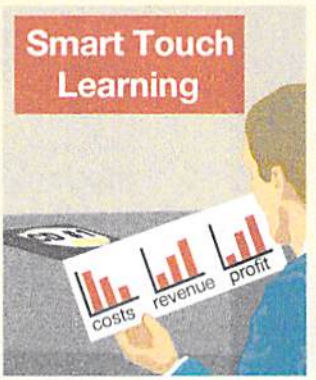
1. **In a cost center, managers are accountable for costs (expenses) only.** Manufacturing operations, such as the CD production lines, are cost centers. The line foreman

EXHIBIT 22-18 | **Four Types of Responsibility Centers**



1. In a **cost center**, such as a production line for CDs, managers are responsible for costs.

2. In a **revenue center**, such as the Midwest sales region, managers are responsible for generating sales revenue.



3. In a **profit center**, such as a line of products, managers are responsible for both revenues and costs.

4. In an **investment center**, such as the CD, DVD, and e-learning divisions, managers are responsible for investments, revenues, and costs.

controls costs by monitoring materials costs, repairs and maintenance expenses, employee costs (wages, salaries, and benefits), and employee efficiency. The foreman is *not* responsible for generating revenues because he or she is not involved in selling the product. The plant manager evaluates the foreman on his or her ability to control *costs* by comparing actual costs to budgeted costs (covered in the next chapter).

2. **In a revenue center, managers are primarily accountable for revenues.** Examples include the Midwest and Southeast sales regions of businesses that carry Smart Touch's products, such as CDs and DVDs.

3. **In a profit center, managers are accountable for both revenues and costs (expenses) and, therefore, profits.** The (higher-level) manager responsible for the entire CD product line would be accountable for increasing sales revenue *and* controlling costs to achieve the profit goals. Profit center reports include both revenues and expenses to show the profit center's income.

4. **In an investment center, managers are accountable for investments, revenues, and costs (expenses).** Examples include the Chevrolet division (subsidiary) of General Motors and the DVD division of Smart Touch. Managers of investment centers are responsible for (1) generating sales, (2) controlling expenses, (3) managing the amount of capital required to earn the income (revenues minus expenses), and (4) planning future investments for growth and expansion of the company.

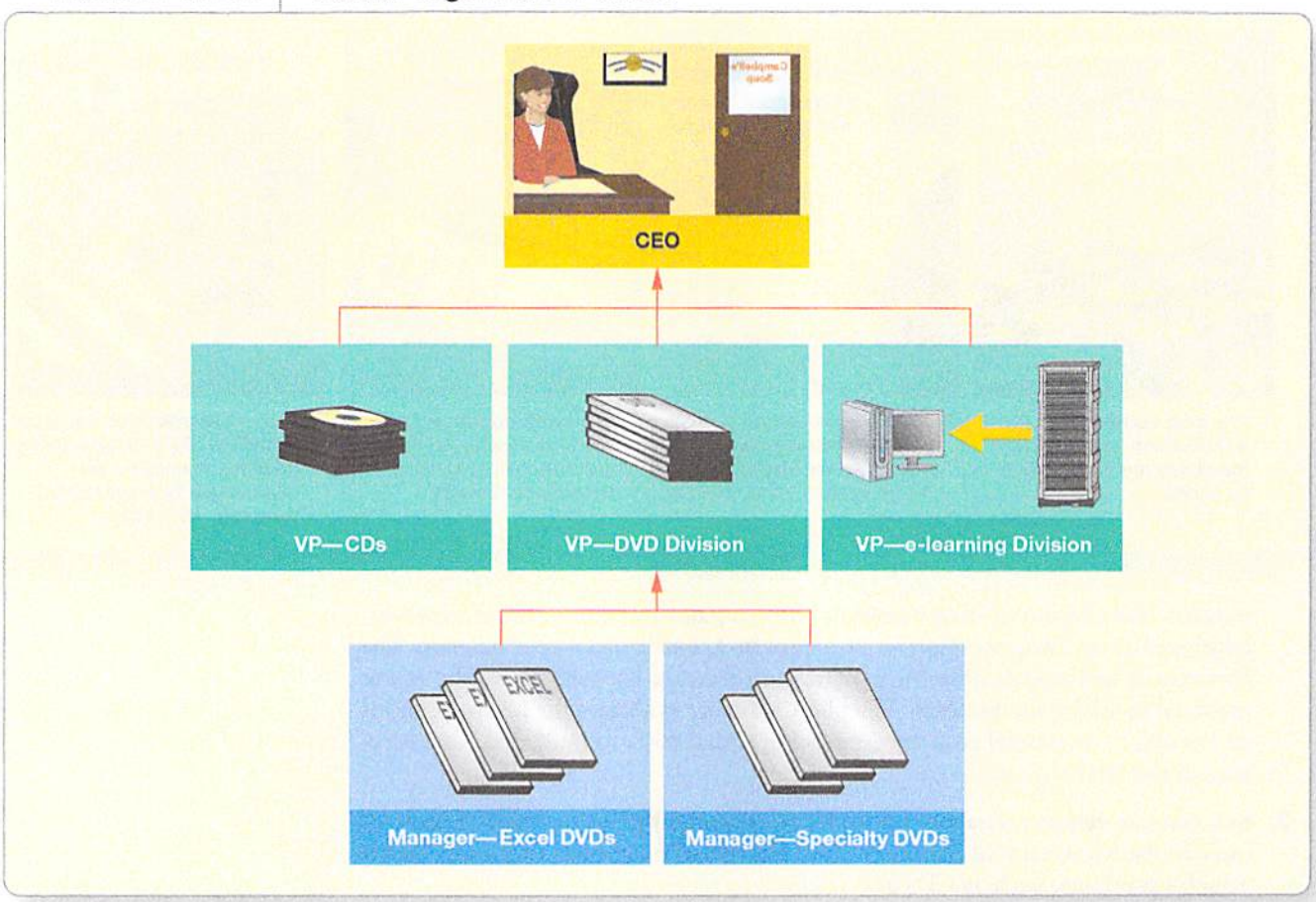
Top management often evaluates investment center managers based on return on investment (ROI), residual income (RI), or economic value added (EVA). Chapter 24 explains how these measures are calculated and used. All else being equal, the manager will receive a more favorable evaluation if the division's actual ROI, RI, or EVA exceeds the amount budgeted.

Responsibility Accounting Performance Reports

Exhibit 22-19 shows how an organization like Smart Touch may assign responsibility.

At the top level, the CEO oversees each of the three divisions. Division managers generally have broad responsibility, including deciding how to use assets to maximize ROI. Most companies classify divisions as *investment centers*.

EXHIBIT 22-19 | **Partial Organization Chart**



Each division manager supervises all the product lines in that division. Exhibit 22-19 shows that the VP of the DVD division oversees the Excel and Specialty DVD lines. Product lines are generally considered *profit centers*. Thus, the manager of the Excel DVD product line is responsible for evaluating lower-level managers of both

- *cost centers* (such as plants that make Excel DVD products) and
- *revenue centers* (such as managers responsible for selling Excel DVD products).

Learn about Service Departments

In most companies, there are departments that provide services to multiple departments or divisions for the company. These shared resources are often called *service departments* because they provide *services* to other departments at the same company. Another common characteristic of service departments is that they usually do not generate revenues. This is similar to the shared production overhead we allocated in the activity-based costing chapter, only now we are talking about nonproduction related service departments. Some examples of service departments follow:

- Payroll and Human Resources
- Accounting
- Copying/Graphic Services

- Physical Plant (repairs and maintains administrative and production facilities)
- Advertising (companywide, not specific products)
- Mail and Shipping Services
- Shared Facilities (such as meeting rooms used by various departments)
- Legal Services
- Travel Booking Services

This list is not all-inclusive, but merely some common centralized functions. For example, at your college or university, there are many similar shared services that support academic departments such as the library, admissions, counseling center and information technology. The key is that a service department is a centralized, nonrevenue generating department that provides services to many departments within a company.

It is clear these service costs provide value to other parts of the company. But should we charge these costs to those divisions, products, or segments? The key to that question is to determine if the cost is *traceable* to a particular product, division, or business segment. If the costs are purely variable, tracing those costs to a specific product, division, or segment is easily identifiable. If the costs are fixed, it becomes a bit more challenging. **Traceable fixed costs** are fixed costs that can be directly associated with an individual product, division, or business segment. A traceable fixed cost would disappear if the company discontinued making the product or discontinued operating the division or the segment. For example, Smart Touch's DVD manager's salary is traceable to the DVD product line. **Untraceable fixed costs (or common fixed costs)** are those fixed costs that cannot be directly associated with an individual product, division, or business segment. For example, the salary of Sheena Bright, president of Smart Touch, is not traceable to a specific product line, division, or business segment. Therefore, her salary would be an untraceable fixed cost.

Assigning Traceable Service Department Costs

So, how do companies charge various departments for their use of service departments? Let's start with an example. Suppose Smart Touch incurs $40,000 per month to operate the Centralized Ordering Department. $30,000 is considered traceable fixed costs of the three divisions: CDs, DVDs, and e-Learning. $10,000 of the total $40,000 of Centralized Ordering Department costs are considered untraceable (common). How should the company assign the $30,000 traceable fixed cost among the three divisions? Splitting the cost equally—charging each division $10,000—may not be fair, especially if the three units do not use the services equally. Smart Touch's data for assigning the payroll costs follows in Exhibit 22-20, showing not only the three divisions but also a further separation of information, for the DVD division.

Ideally, the company should assign the $30,000 traceable fixed costs based on each division's use of centralized ordering services. The company should use the primary activity that drives (increases or decreases) the cost of central ordering services as the assignment base. As you may recall from Chapter 18, companies identify cost drivers when they implement activity-based costing (ABC). Therefore, a company that has already implemented ABC should know what cost drivers would be suitable for assigning traceable service department charges. For example, order processing cost may be driven by the number of orders placed. Exhibit 22-21 provides several examples of centralized services and common assignment bases.

EXHIBIT 22-20 | **Smart Touch Learning's Data for Traceable Cost Assignment**

Divisions Sharing Order Processing Services	Number of Orders (assignment base)	Sales Revenue	Variable Expenses (includes variable COGS)
CD	100,000	$3,600,000	$3,040,000
DVD	140,000	1,200,000	850,000
e-Learning	160,000	3,840,000	3,350,000
Total	400,000	$8,640,000	$7,240,000
Departments in the DVD Division Sharing Order Processing Services	**Number of Orders (assignment base)**	**Sales Revenue**	**Variable Expenses (includes variable COGS)**
Excel DVDs	84,000	$ 960,000	$680,000
Specialty DVDs	56,000	240,000	170,000
Total	140,000	$1,200,000	$850,000

EXHIBIT 22-21 | **Common Service Departments**

Centralized Service Departments	Examples of Departments' Cost	Typical Base Used to Assign Traceable Portion
Payroll and Human Resources	Payroll and human resources' salaries, depreciation on equipment and facilities, payroll software	Number of employees
Accounting	Accounting personnel salaries, depreciation on equipment and facilities used by accounting staff, accounting software costs	Number of reports prepared
Copying/Graphic Services	Copier depreciation, toner and paper, salaries of Copying/Graphic Services	Number of copies made for department
Physical Plant	Salaries of physical plant employees, depreciation on physical plant equipment, cost of repair and maintenance parts, plant supplies (glue, bolts, small tools)	Number of repairs made
Order Processing	Cost of telephone lines and employee salaries	Number of orders
Mail and Shipping Services	Cost of shipping/mailing, salaries of shipping personnel, depreciation on equipment and facilities used by mail personnel	Pieces of mail processed
Shared Facilities	Depreciation on furniture and fixtures, utilities cost	Allocation based on hours of use
Legal	Salaries of legal department personnel, depreciation on legal department equipment, software costs	Number of hours spent on legal matters
Travel	Salaries of travel department personnel, depreciation on travel department equipment, software costs	Number of business trips booked

Based on the data in Exhibit 22-20, Smart Touch would probably chose the "number of orders" as the cost driver for assigning the $30,000 in traceable fixed ordering costs as this would closely match how much each division uses the Order Processing Department. First, Smart Touch would calculate a cost per order of $0.075 ($30,000/400,000 orders). Smart Touch's data is in Exhibit 22-20. Exhibit 22-22 shows the assignment of the $30,000 traceable costs based on the total number of orders placed for each division.

EXHIBIT 22-22 **Smart Touch's Assignment of Traceable Order Processing Services (Three Divisions) Using Number of Orders**

Divisions Sharing Order Processing Services	Number of Orders (assignment base)	Cost per Order	Service Department Charge (Orders × $0.075 per order)
CD	100,000	$0.075	$ 7,500
DVD	140,000	$0.075	10,500
e-Learning	160,000	$0.075	12,000
Total	400,000	$0.075	$30,000

The assignment of the Order Processing Department's traceable costs for Smart Touch can be further broken down by product line. We determined in Exhibit 22-22 that the DVD division was allocated $10,500 of the total $30,000 traceable Order Processing Department costs when we used number of orders as an activity base. From earlier chapters we know that Smart Touch's DVD division mainly produces two types of DVDs—Excel DVDs and Specialty DVDs. Of the $10,500 in traceable order processing costs of the DVD division, only $7,000 of those costs are traceable to the two products and $3,500 of those costs are untraceable (common). We need to assign the $7,000 in traceable order processing costs for the DVD division to the two product lines within the DVD division to determine the profit from each product line. First, Smart Touch would calculate a cost per order of $0.05 ($7,000/140,000 orders). Then, Smart Touch would assign the $7,000 traceable order processing costs between Excel and Specialty DVDs as before and as shown in Exhibit 22-23.

EXHIBIT 22-23 **Smart Touch's Assignment of Traceable Order Processing Services (DVD Division) Using Number of Orders**

Divisions Sharing Order Processing Services	Number of Orders (assignment base)	Cost per Order	Service Department Charge (orders × $0.05)
Excel DVD	84,000	$0.05	$4,200
Specialty DVD	56,000	$0.05	2,800
Total	140,000	$0.05	$7,000

Step 3 would calculate income by division and by product line after assigning all traceable costs. To simplify the example, we assume the only traceable fixed costs are from the Order Processing Department. Exhibit 22-24 illustrates responsibility accounting reports for each of the levels of management shown in Exhibit 22-19. Responsibility accounting reports show the results of the segment or division for which a particular manager is responsible. This is illustrated in Exhibit 22-24 for the divisions and the whole company, and in Exhibit 22-25 for the DVD division and its products only.

Notice the headings in blue for the segment-specific income: Divisional segment margin and Product segment margin. Assume you were Smart Touch's DVD division manager. How would this information help you make better decisions? By highlighting costs in a contribution margin format and reporting results by division, it helps managers to have the best information to make decisions. As shown in previous chapters' analyses, the Excel DVD division continues to stand out as the most profitable product for the DVD division.

EXHIBIT 22-24 | Smart Touch Income Statement—Segments Defined as Divisions

SMART TOUCH LEARNING, INC.
Income Statement
For the Year Ended December 31, 2014

	Total Company	CD	DVD	e-Learning
Sales revenue	$8,640,000	$3,600,000	$1,200,000	$3,840,000
Less: Variable expenses	7,240,000	3,040,000	850,000	3,350,000
Contribution margin	1,400,000	560,000	350,000	490,000
Less: Traceable fixed expenses (Exhibit 22-22)	30,000	7,500	10,500	12,000
Divisional segment margin	1,370,000	$ 552,500	$ 339,500	$ 478,000
Less: Common fixed expenses not traceable to specific divisions	10,000			
Net operating income (loss)	$1,360,000			

EXHIBIT 22-25 | Smart Touch Income Statement—Segments Defined as Product Lines Within the DVD Division

SMART TOUCH LEARNING, INC.
Divisional Income Statement
For the Year Ended December 31, 2014

	DVD Division	Excel DVD	Specialty DVD
Sales revenue	$1,200,000	$960,000	$240,000
Less: Variable expenses	850,000	680,000	170,000
Contribution margin	350,000	280,000	70,000
Less: Traceable fixed expenses (Exhibit 22-23)	7,000	4,200	2,800
Product segment margin	343,000	$275,800	$ 67,200
Less: Common fixed expenses not traceable to specific products	3,500		
Divisional segment margin	$ 339,500		

Further, managers could compare these values to the budgeted values to determine where the actual results differed from the budget plan, which we'll review in the next chapter.

Key Takeaway

Responsibility centers are parts of the company for which managers have decision-making authority and accountability over. Responsibility accounting is performance reporting for those responsibility centers. There are four types of responsibility centers: cost centers, revenue centers, profit centers, and investment centers. Traceable fixed costs are those costs that would disappear if a company quit making a particular product or discontinued a division or segment. Common fixed costs (untraceable) are those costs that aren't traceable to a specific product, division, or segment.

Stop & Think...

Say you and your roommate share groceries at your apartment. The last grocery trip was $200. How do you split up the costs? There are many ways you could divide the grocery bill. You could split the total grocery cost between the two of you evenly, $100 each. You could split the bill based on the number of meals each of you eats a week. If you eat at the apartment 5 times a week, but your roommate eats at the apartment 15 times a week, then your roommate would rightfully pay a bigger part of the grocery bill ($200 × 15/20 meals, or $150). Your roommate may balk at this, arguing that your meals are larger than hers. Then how do you split the bill? This is the same logic we use in assigning shared cost. Maybe there's an item on the grocery bill, such as spices, that isn't really traceable to either roommate but is more of a common cost. No system is perfect, but you aim for the assignment that best measures the traceable costs to the correct business segment.

The Decision Guidelines on the next page review budgets and responsibility accounting. Study these guidelines before working on Summary Problem 22-3.

Decision Guidelines 22-1

THE MASTER BUDGET AND RESPONSIBILITY ACCOUNTING

Amazon.com's initial strategy was to "get big fast." But without a budget, spending got out of control. So founder and CEO Jeff Bezos added a second strategic goal—to become the world's most cost-efficient, high-quality e-tailer. Today, **Amazon**'s managers use budgets to help reach both the growth and cost-efficiency goals. Let's consider some of the decisions **Amazon** made as it set up its budgeting process.

Decision	Guidelines
• What benefits should **Amazon** expect to obtain from developing a budget?	• Requires managers to *plan* how to increase sales and how to cut costs • Promotes *coordination and communication*, such as communicating the importance of the cost-efficiency goal • Provides a *benchmark* that motivates employees and helps managers evaluate how well employees contributed to the sales growth and cost-efficiency goals
• In what order should **Amazon**'s managers prepare the components of the master budget?	Begin with the *operating budget*. • Start with the *sales budget*, which feeds into all other budgets. • The sales budget determines the *inventory, purchases, and cost of goods sold budget*. • The sales, cost of goods sold, and *operating expenses budgets* determine the *budgeted income statement*. Next, prepare the *capital expenditures budget*. Finally, prepare the *financial budget*. • Start with the *cash budget*. • The cash budget provides the ending cash balance for the *budgeted balance sheet* and the details for the *budgeted statement of cash flows*.
• What extra steps should **Amazon** take given the uncertainty of Internet-based sales forecasts?	Prepare a *sensitivity analysis* and project budgeted results at different sales levels.
• How does **Amazon** compute budgeted purchases?	$\text{Purchases} = \text{Cost of goods sold} + \text{Ending inventory} - \text{Beginning inventory}$
• What kind of a responsibility center does each manager supervise?	• *Cost center*: The manager is responsible for costs. • *Revenue center*: The manager is responsible for revenues. • *Profit center*: The manager is responsible for both revenues and costs, and, therefore, profits. • *Investment center*: The manager is responsible for revenues, costs, and the amount of the investment required to earn the income.
• What is the difference between traceable fixed costs and common fixed costs?	*Traceable fixed costs* are fixed costs that can be directly associated with an individual product, division, or business segment. A traceable fixed costs would disappear if the company discontinued making the product or discontinued operating the division or segment. *Common fixed costs* (or *untraceable fixed costs*) are those fixed costs that cannot be directly associated with an individual product, division, or segment.

Summary Problem 22-3

Wilke's Tool-a-Rama manufactures small tools and tool sets. The company utilizes a shared warehouse facility that stores the inventory. The Small Tools division uses 150,000 square feet of the warehouse and the Tool Set division uses 100,000 square feet of the warehouse. The total cost of the warehouse facility was $30,000, of which $25,000 are traceable fixed costs. Further, the Small Tools division has two main products: wrenches and screwdrivers. The wrenches use 60,000 square feet of the warehouse and the screwdrivers use 75,000 square feet. The remaining 15,000 square feet is used by the Small Tools division manager, so it isn't traceable to either Small Tools division product. Additionally, income and expense data for each division for the month of August 2013 follows.

Additional data:	Small Tools		Tool Set
	Wrenches	Screwdrivers	
Sales revenue	$65,000	$35,000	$140,000
Variable cost of goods sold	31,200	16,800	56,000
Fixed cost of goods sold	12,000	8,000	25,000
Variable selling expenses	8,000	10,000	13,000

Requirements

1. Calculate the cost per square foot for the warehouse facility and show the cost used by each division. Calculate the cost used by each product of the Small Tools division.
2. Prepare an income statement by division and by product for the month ended August 31, 2013.

Solution

Requirements

1. $25,000/250,000 square feet of space = $0.10 per square foot.

Divisions Sharing Warehouse Facilities	Number of Square Feet (assignment base)	Cost per Square Foot	Traceable Warehouse Costs (number of square feet × $0.10 per square foot)
Small Tools	150,000	$0.10	$15,000
Tools Sets	100,000	$0.10	10,000
Total	250,000	$0.10	$25,000

Products Sharing Warehouse Facilities	Number of Square Feet (assignment base)	Cost per Square Foot	Traceable Warehouse Costs (number of square feet × $0.10 per square foot)
Wrenches	60,000	$0.10	$ 6,000
Screwdrivers	75,000	$0.10	7,500
Total	135,000	$0.10	$13,500

2.

WILKE'S TOOL-A-RAMA
Income Statement
For the Month Ended August 31, 2013

	Total Company	Small Tools	Tool Set
Sales revenue	$240,000	$100,000	$140,000
Less: Variable COGS	104,000	48,000	56,000
Variable selling expenses	31,000	18,000	13,000
Contribution margin	$105,000	$ 34,000	$ 71,000
Less: Fixed COGS	45,000	20,000	25,000
Traceable fixed expenses (from Requirement 1)	25,000	15,000	10,000
Divisional segment margin	$ 35,000	$ (1,000)	$ 36,000
Less: Common fixed expenses not traceable to specific divisions	5,000		
Net operating income (loss)	$ 30,000		

WILKE'S TOOL-A-RAMA
Divisional Income Statement
For the Month Ended August 31, 2013

	Small Tools Division	Wrenches	Screwdrivers
Sales revenue	$100,000	$65,000	$35,000
Less: Variable COGS	48,000	31,200	16,800
Variable selling expenses	18,000	8,000	10,000
Contribution margin	$ 34,000	$25,800	$ 8,200
Less: Fixed COGS	20,000	12,000	8,000
Traceable fixed expenses (from Requirement 1)	13,500	6,000	7,500
Product segment margin	$ 500	$ 7,800	$ (7,300)
Less: Common fixed expenses not traceable to specific products	1,500		
Divisional segment margin	$ (1,000)		

Review The Master Budget and Responsibility Accounting

Accounting Vocabulary

Budgeted Income Statement (p. 1051)
Statement that projects operating income for a period.

Capital Expenditures Budget (p. 1056)
A company's plan for purchases of property, plant, equipment, and other long-term assets.

Cash Budget (p. 1056)
Details how the business expects to go from the beginning cash balance to the desired ending cash balance.

Common Fixed Costs (p 1077)
Fixed costs that cannot be directly associated with an individual product, division, or business segment. Also called **untraceable fixed costs**.

Financial Budget (p. 1056)
The cash budget (cash inflows and outflows), the budgeted income statement, the budgeted balance sheet, and the budgeted statement of cash flows.

Master Budget (p. 1055)
The set of budgeted financial statements and supporting schedules for the entire organization. Includes the operating budget, the capital expenditures budget, and the financial budget.

Operating Budget (p. 1056)
Set of budgets that project sales revenue, cost of goods sold, and operating expenses, leading to the budgeted income statement that projects operating income for the period.

Responsibility Accounting (p. 1074)
A system for evaluating the performance of each responsibility center and its manager.

Responsibility Center (p. 1074)
A part of the organization for which a manager has decision-making authority and accountability for the results of those decisions.

Traceable Fixed Costs (p. 1077)
Fixed costs that can be directly associated with an individual product, division, or business segment. A traceable fixed cost would disappear if the company discontinued making the product or discontinued operating the division or the segment.

Untraceable Fixed Costs (p. 1077)
Fixed costs that cannot be directly associated with an individual product, division, or business segment. Also called **common fixed costs**.

Destination: Student Success

Student Success Tips

The following are hints on some common trouble areas for students in this chapter:

- Remember that the master budget represents the company's plan of action.
- Keep in mind the three types of budgets within the master budget: operating, capital expenditures, and financial.
- Recall that the operating budget includes the sales budget; the inventory, purchases, and COGS budget; the operating expenses budget; and the income statement. These budgets show the accrual basis planned operations.
- Keep in mind that the capital expenditures budget shows the company's plan for purchasing long-term assets.
- Recall the financial budget includes many budgets. The cash collections from customers, cash payments for purchases, and cash payments for operating expenses budgets help create the cash budget. The budgeted balance sheet and budgeted statement of cash flows round out the financial budgets.
- Keep in mind the four different types of responsibility centers: cost centers, revenue centers, profit centers, and investment centers.
- Remember that traceable fixed costs are those costs that would eventually disappear if the company ceased to sell the individual segment (such as a product). Common fixed costs (untraceable) are those costs that cannot be traced to a specific product, division, or segment.

Getting Help

If there's a learning objective from the chapter you aren't confident about, try using one or more of the following resources:

- Review the Excel templates at myaccountinglab.com for the in-chapter problem and for Summary Problems 22-1 and 22-2.
- Review Decision Guidelines 22-1 in the chapter.
- Review Summary Problem 22-1 in the chapter to reinforce your understanding of the operating budget.
- Review Summary Problem 22-2 in the chapter to reinforce your understanding of the financial budget.
- Review Summary Problem 22-3 in the chapter to reinforce your understanding of segment performance reporting and traceable fixed costs.
- Practice additional exercises or problems at the end of Chapter 22 that cover the specific learning objective that is challenging you.
- Watch the white board videos for Chapter 22 located at myaccountinglab.com under the Chapter Resources button.
- Go to myaccountinglab.com and select the Study Plan button. Choose Chapter 22 and work the questions covering that specific learning objective until you've mastered it.
- Work the Chapter 22 pre/post tests in myaccountinglab.com.
- Consult the Check Figures for End of Chapter starters, exercises, and problems, located at myaccountinglab.com.
- Visit the learning resource center on your campus for tutoring.