Units:	
Beginning work in process inventory	65 rolls
Transferred in from Spinning Department during July	570 rolls
Completed during July	520 rolls
Ending work in process (80% complete as to conversion work)	115 rolls
Costs:	
Beginning work in process (transferred-in cost, $3,900; materials cost, $1,625; conversion costs, $5,555)	$ 11,080
Transferred in from Spinning Department during July	19,595
Materials cost added during July	9,805
Conversion costs added during July (manufacturing wages, $9,450; manufacturing overhead, $43,135)	52,585

Requirements

1. Prepare a timeline for Carol's Dyeing Department.
2. Use the timeline to help you compute the equivalent units, cost per equivalent unit, and total costs to account for in Carol's Dyeing Department for July.
3. Prepare the July production cost report for Carol's Dyeing Department.
4. Journalize all transactions affecting Carol's Dyeing Department during July, including the entries that have already been posted.

P17A-20B (6) Computing equivalent units for a second department with beginning work in process inventory; assigning costs to completed units and ending work in process; weighted average method [50–60 min]

OceanBound uses three processes to manufacture lifts for personal watercrafts: forming a lift's parts from galvanized steel, assembling the lift, and testing the completed lifts. The lifts are transferred to finished goods before shipment to marinas across the country.

OceanBound's Testing Department requires no direct materials. Conversion costs are incurred evenly throughout the testing process. Other information follows:

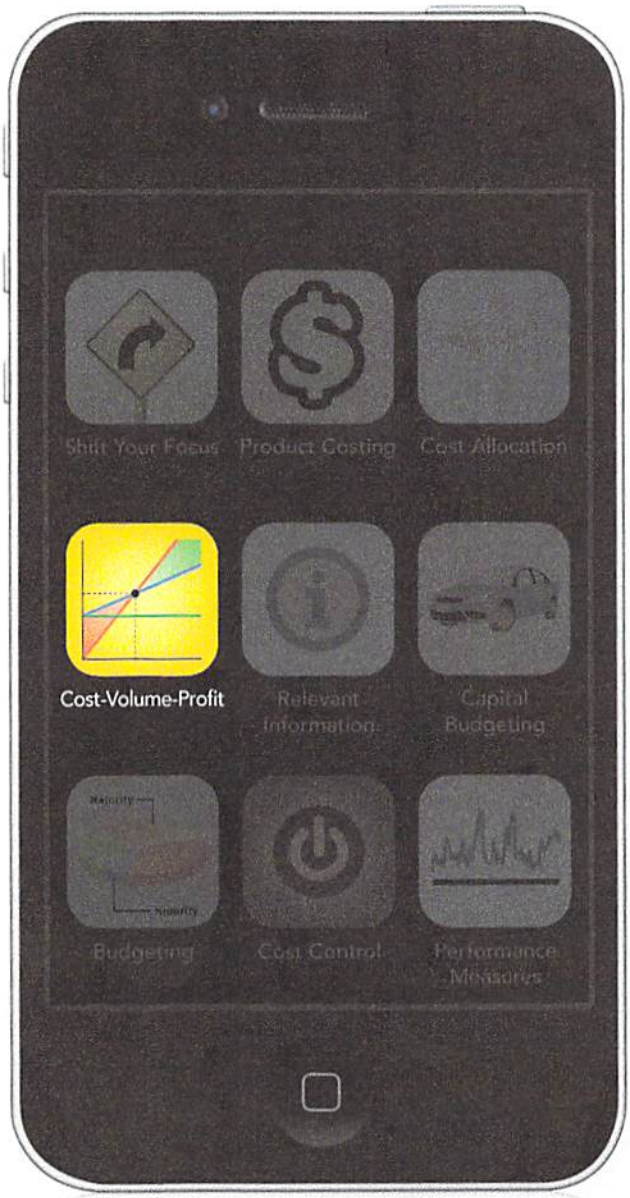
Units:	
Beginning work in process	2,200 units
Transferred in from the Assembling Dept. during the period	7,100 units
Completed during the period	4,200 units
Ending work in process (40% complete as to conversion work)	5,100 units
Costs:	
Beginning work in process (transferred in cost, $93,800; conversion costs, $18,200)	$ 112,000
Transferred in from the Assembling Dept. during the period	706,000
Conversion costs added during the period	44,200

The cost transferred into Finished goods inventory is the cost of the lifts transferred out of the Testing Department. OceanBound uses weighted-average process costing.

Requirements

1. Draw a timeline for the Testing Department.
2. Use the timeline to compute the number of equivalent units of work performed by the Testing Department during the period.
3. Compute OceanBound's transferred-in and conversion costs per equivalent unit. Use the unit costs to assign total costs to (a) units completed and transferred out of Testing and (b) units in Testing's ending Work in process inventory.
4. Compute the cost per unit for lifts completed and transferred out to Finished goods inventory. Why would management be interested in this cost?

19 Cost-Volume-Profit Analysis



Learning Objectives

1. Identify how changes in volume affect costs
2. Use CVP analysis to compute breakeven points
3. Use CVP analysis for profit planning, and graph the CVP relations
4. Use CVP methods to perform sensitivity analyses
5. Calculate the breakeven point for multiple products or services
6. Distinguish between variable costing and absorption costing (see Appendix 19A, located at myaccountinglab.com)

You and your friends head out to a favorite restaurant for dinner. The restaurant serves a meat dish with three side dishes for a reasonable price. The combination of good food at a good price has made this "meat and three" restaurant popular. However, when you arrive at the restaurant this time, it is not as crowded as usual. You also notice the restaurant has increased the price for a meal.

After you are seated and order, you and your friends discuss the changes. No one seems surprised by the price increase. You've all noticed that food prices have increased at the grocery store and speculate that the restaurant's supplier has also increased prices. If food costs increase, the business would have to increase the sales price per meal in order for the meals to remain profitable. Is this what is keeping some customers away? What will be the effect on profits if the restaurant charges more per meal but serves fewer meals? At what point will the business begin to operate at a loss rather than a profit? How long will the restaurant remain open if it loses a large number of customers?

These are the type of questions asked by managers in every business—what is the relationship among costs, volume, and profit? In this chapter, you'll learn about **cost-volume-profit (CVP) analysis**, a tool managers use to answer these questions. We continue this analysis using Greg's Tunes in this chapter.

Cost Behavior

1 Identify how changes in volume affect costs

Some costs, like COGS, increase as the volume of activity increases. Other costs, like straight-line depreciation expense, are not affected by volume changes. Managers need to know how a business's costs are affected by changes in its volume of activity. Let's look at the three different types of costs:

- Variable costs
- Fixed costs
- Mixed costs

Variable Costs

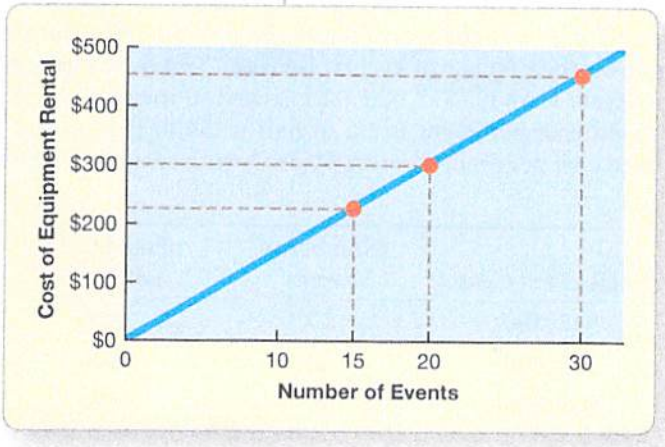
Variable costs are those costs that increase or decrease in total in direct proportion to increases or decreases in the volume of activity. **Total variable costs** change in direct proportion to changes in the volume of activity. Volume is the measure or degree of an activity of a business action that affects costs—the more volume, the more cost is incurred. Those activities include selling, producing, driving, and calling. The volume of activities can be measured in many different ways, such as number of units sold, number of units produced, number of miles driven by a delivery vehicle, and the number of phone calls placed.

As you may recall, Greg's Tunes offers DJ services for parties, weddings, and other events. For each event, Greg's spends $15 for equipment rental. Greg's can perform at 15 to 30 events per month. To calculate total variable costs, Natalie Blanding, the office manager, would show the following:

Number of Events per Month	Equipment Rental Cost per Event	Total Equipment Rental Cost per Month
15	$15	$225
20	$15	$300
30	$15	$450

As you can see, the total variable cost of equipment rental increases proportionately as the number of events increases. But the equipment rental cost per event does not change. Exhibit 19-1 graphs total variable cost for equipment rental as the number of events increases from 0 to 30, but the cost for each equipment rental stays at $15 per event.

EXHIBIT 19-1 | **Total Variable Costs**



If there are no events, Greg's incurs no equipment rental cost, so the total variable cost line begins at the bottom left corner. This point is called the *origin*, and it

represents zero volume and zero cost. The *slope* of the variable cost line is the change in equipment rental cost (on the vertical axis) divided by the change in the number of events (on the horizontal axis). The slope of the graph equals the variable cost per unit. In Exhibit 19-1, the slope of the variable cost line is 15 because Greg's spends $15 on equipment rental for each event.

If Greg's Tunes performs at 15 events during the month, it will spend a total of $225 (15 events × $15 each) for equipment rental. Follow this total variable cost line to the right to see that doubling the number of events to 30 likewise doubles the total variable cost to $450 (30 × $15 = $450). Exhibit 19-1 shows how the *total variable cost* of equipment rental varies directly with the number of events. But again, note that *the per-event cost remains constant* at $15.

Remember this important fact about *variable costs*:

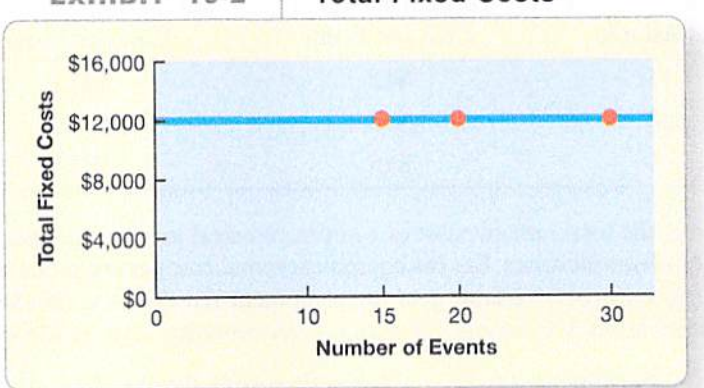
> **Total variable costs fluctuate with changes in volume, but the variable cost per unit remains constant.**

Fixed Costs

In contrast, **total fixed costs** are costs that do not change over wide ranges of volume. **Fixed costs** tend to remain the same in amount, regardless of variations in level of activity. Greg's fixed costs include depreciation on the cars, as well as the part-time manager's salary. Greg's has these fixed costs regardless of the number of events—15, 20, or 30.

Suppose Greg's incurs $12,000 of fixed costs each month, and the number of monthly events is between 15 and 30. Exhibit 19-2 graphs total fixed costs as a flat line that intersects the cost axis at $12,000, because Greg's will incur the same $12,000 of fixed costs regardless of the number of events.

EXHIBIT 19-2 | Total Fixed Costs



Total fixed cost does not change, as shown in Exhibit 19-2. But the *fixed cost per event* depends on the number of events. If Greg's Tunes performs at 15 events, the fixed cost per event is $800 ($12,000 ÷ 15 events). If the number of events doubles to 30, the fixed cost per event is cut in half to $400 ($12,000 ÷ 30 events). Therefore, the fixed cost per event is *inversely* proportional to the number of events, as follows:

Total Fixed Costs	Number of Events	Fixed Cost per Event
$12,000	15	$800
$12,000	20	$600
$12,000	30	$400

Remember the following important fact about *fixed costs*:

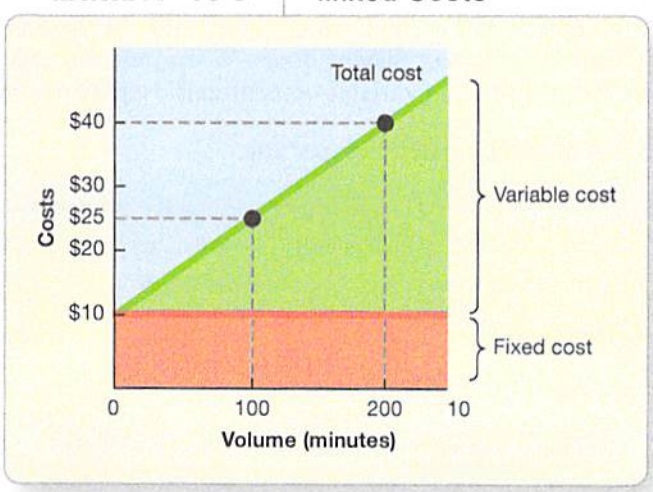
> Total fixed costs remain constant, but the fixed cost per unit is inversely proportional to volume.

Mixed Costs

Costs that have both variable and fixed components are called **mixed costs**. For example, Greg's Tunes' cell phone company charges $10 a month to provide the service and $0.15 for each minute of use. If the cell phone is used for 100 minutes, the company will bill Greg's $25 [$10 + (100 minutes × $0.15)].

Exhibit 19-3 shows how Greg's can separate its cell-phone bill into fixed and variable components. The $10 monthly charge is a fixed cost because it is the same no matter how many minutes the company uses the cell phone. The $0.15-per-minute charge is a variable cost that increases in direct proportion to the number of minutes of use. If Greg's uses the phone for 100 minutes, its total variable cost is $15 (100 minutes × $0.15). If it doubles the use to 200 minutes, total variable cost also doubles to $30 (200 minutes × $0.15), and the total bill rises to $40 ($10 + $30).

EXHIBIT 19-3 | Mixed Costs



Stop & Think...

Think about your costs related to taking this class. Which ones are fixed? Which ones are variable? The cost of your tuition and books are fixed costs, because you pay one price for the class and your books, no matter how many days you come to class. If you drive to class, the cost of gas put in your car is variable, because you only incur gas costs when you come to class. Are there any mixed costs associated with your class? Maybe your cell phone provider charges you a flat fee each month for a certain amount of minutes. If you go over that limit because you call your classmates a lot, then that would be a mixed cost associated with your class.

High-Low Method to Separate Fixed Costs from Variable Costs

An easy method to separate mixed costs into variable and fixed components is the **high-low method.** This method requires you to identify the highest and lowest levels of activity over a period of time. Using this information, complete the following three steps:

STEP 1: Calculate the variable cost per unit.

> Variable cost per unit = Change in total cost ÷ Change in volume of activity

STEP 2: Calculate the total fixed cost.

Total fixed cost = Total mixed cost – Total variable cost

STEP 3: Create and use an equation to show the behavior of a mixed cost.

Total mixed cost = (Variable cost per unit × number of units) + Total fixed costs

Let's revisit the Greg's Tunes illustration. A summary of Greg's Tunes' music equipment maintenance costs for the past year shows the following costs for each quarter:

	Event-Playing Hours	Total Maintenance Cost	
1st Quarter	360	$1,720	
2nd Quarter	415	1,830	
3rd Quarter	480	1,960	← Highest Volume
4th Quarter	240	1,480	← Lowest Volume

The highest volume is 480 event-playing hours in the 3rd quarter of the year, and the lowest volume is 240 event-playing hours. We can use the high-low method to identify Greg's Tunes' fixed and variable costs of music equipment maintenance.

STEP 1: Calculate the variable cost per unit.

Variable cost per unit = Change in total cost ÷ Change in volume of activity
= ($1,960 – $1,480) ÷ (480 hours – 240 hours)
= $480 ÷ 240 hours
= $2 per event-playing hour

STEP 2: Calculate the total fixed cost.

Total fixed cost = Total mixed cost – Total variable cost
= $1,960 – ($2 × 480)
= $1,960 – $960
= $1,000

This example uses the highest cost and volume to calculate the total fixed cost, but you can use any volume and calculate the same $1,000 total fixed cost.

STEP 3: Create and use an equation to show the behavior of a mixed cost.

Total mixed cost = (Variable cost per unit × number of units) + Total fixed cost
Total equipment maintenance cost = ($2 per event-playing hour × no. of hours) + $1,000

Using this equation, the estimated music equipment maintenance cost for 400 event-playing hours would be as follows:

($2 × 400 event-playing hours) + $1,000 = $1,800

This method provides a rough estimate of fixed and variable costs for cost-volume-profit analysis. The high and low volumes become the relevant range, which we discuss in the next section. Managers find the high-low method to be quick and easy, but regression analysis provides the most accurate estimates and is discussed in cost accounting textbooks.

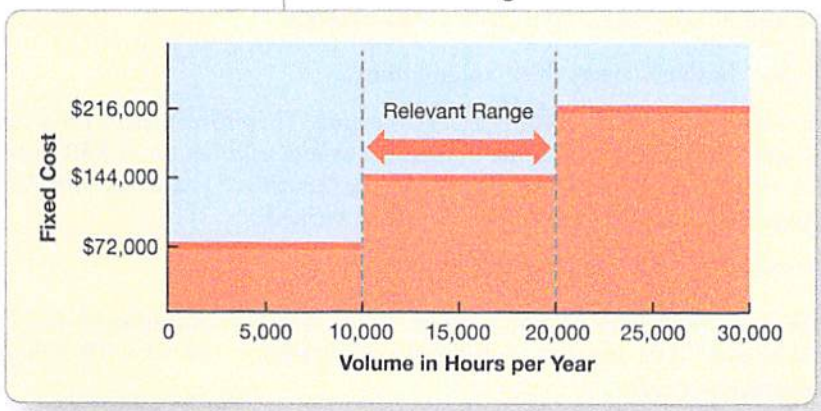
Relevant Range

The **relevant range** is the range of volume where total fixed costs remain constant and the variable cost *per unit* remains constant. The relevant range is the range of events (or other activity) where total fixed costs and variable cost per unit stays the same. To estimate costs, managers need to know the relevant range. Why? Because,

- total "fixed" costs can differ from one relevant range to another.
- the variable cost *per unit* can differ in various relevant ranges.

Exhibit 19-4 shows fixed cost for Greg's Tunes over three different relevant ranges. If the company expects to offer 15,000 event-playing hours next year, the relevant range is between 10,000 and 20,000 event-playing hours, and managers budget fixed cost of $144,000.

EXHIBIT 19-4 | Relevant Range



To offer 22,000 event-playing hours, Greg's will have to expand the company. This will increase total fixed costs for added rent and equipment costs. Exhibit 19-4 shows that total fixed cost increases to $216,000 as the relevant range shifts to this higher band of volume. Conversely, if Greg's expects to offer only 8,000 event-playing hours, the company will budget only $72,000 of fixed cost. Managers will have to lay off employees or take other actions to cut fixed costs.

Variable cost per unit can also change outside the relevant range. For example, Greg's Tunes may get a quantity discount for equipment maintenance if it can provide more than 20,000 event-playing hours.

Now, let's apply CVP analysis to answer some interesting management questions.

Key Takeaway

Variable costs are those costs that increase or decrease in total as the volume of activity increases or decreases. Fixed costs are costs that do not change over wide ranges of volume. Costs that have both variable and fixed components are called mixed costs. The high-low method is an easy way to separate mixed costs into variable and fixed components by requiring you to identify the highest and lowest levels of activity over a period of time. The relevant range is the range of activity where total fixed cost stays the same and variable cost per unit stays the same.

Basic CVP Analysis: What Must We Sell to Break Even?

2 Use CVP analysis to compute breakeven points

Greg's Tunes is considering expanding its events coverage to include weddings. Greg's first analyzes its existing costs, partially covered in the previous section. (For simplicity, we ignore the mixed costs.) Variable costs are $15 for equipment rental per event plus $65 in contracted labor per event. All the other monthly business expenses are fixed costs, $12,000. Average sales price per event is $200.

Selling price per event	$ 200
Variable cost per event	$ 80
Fixed costs	$12,000

Greg's Tunes faces several important questions:

- How many DJ services (hereinafter, events) must the company sell to break even?
- What will profits be if sales double?
- How will changes in selling price, variable costs, or fixed costs affect profits?

Before getting started, let's review the assumptions required for CVP analysis to be accurate.

Assumptions

CVP analysis assumes that

1. managers can classify each cost as either variable or fixed.
2. the only factor that affects total costs is change in volume, which increases variable and mixed costs. Fixed costs do not change.

Greg's Tunes' business meets these assumptions:

1. The $80 cost for each event is a variable cost. Therefore, Greg's *total variable cost* increases directly with the number of events sold (an extra $80 in cost for each event sold). The $12,000 represents monthly fixed costs and does not change regardless of the number of events worked.
2. Sales volume is the only factor that affects Greg's costs.

Most business conditions do not perfectly meet these assumptions (consider that most businesses have some mixed costs), so managers regard CVP analysis as approximate, not exact.

How Much Must Greg Sell to Break Even? Three Approaches

Virtually all businesses want to know their breakeven point. The **breakeven point** is the sales level at which operating income is zero: Total revenues equal total costs (expenses). Sales below the breakeven point result in a loss. Sales above break even provide a profit. Greg's Tunes needs to know how many DJ events must be held to break even.

There are several ways to figure the breakeven point, including the

- income statement approach and the
- contribution margin approach.

We start with the income statement approach because it is the easiest method to remember. You are already familiar with the income statement.

The Income Statement Approach

Let's start by expressing income in equation form and then breaking it down into its components:

$$\text{Sales revenue} - \overbrace{\text{Total costs}}^{\text{Variable costs} - \text{Fixed costs}} = \text{Operating income}$$

$$\text{Sales revenue} - \text{Variable costs} - \text{Fixed costs} = \text{Operating income}$$

Sales revenue equals the unit sale price ($200 per event in this case) multiplied by the number of units (events) sold. Variable costs equal variable cost per unit ($80 in this case) times the number of units (events) sold. Greg's fixed costs total $12,000. At the breakeven point, operating income is zero. We use this information to solve the income statement equation for the number of DJ events Greg's must sell to break even.

Sales revenue	–	Variable costs	– Fixed costs = Operating income
(Sale price per unit × Units sold)	–	(Variable cost per unit × Units sold)	– Fixed costs = Operating income
($200 × Units sold)	–	($80 × Units sold)	– $12,000 = $0
($200	–	$80) × Units sold	– $12,000 = $0
		$120 × Units sold	= $12,000
		Units sold	= $12,000 ÷ $120
		Breakeven sales in units	= 100 events

Greg's Tunes must sell 100 events to break even. The breakeven sales level in dollars is $20,000 (100 events × $200).

Be sure to check your calculations. "Prove" the breakeven point by substituting the breakeven number of units into the income statement. Then check to ensure that this level of sales results in zero profit.

Proof	Sales revenue	– Variable costs	– Fixed costs	= Operating income
	($200 × 100)	– ($80 × 100)	– $12,000	= $0
	$20,000	– $8,000	– $12,000	= $0

The Contribution Margin Approach: A Shortcut

This shortcut method of computing the breakeven point uses Greg's contribution margin. The **contribution margin** is sales revenue minus variable costs (expenses). It is called the *contribution margin* because the excess of sales revenue over variable costs contributes to covering fixed costs and then to providing operating income.

The **contribution margin income statement** shows costs by cost behavior—variable costs or fixed costs—and highlights the contribution margin. The format shows the following:

Sales revenue
– Variable costs
= Contribution margin
– Fixed costs
= Operating income

Now let's rearrange the income statement formula and use the contribution margin to develop a shortcut method for finding the number of DJ events Greg's must hold to break even.

Sales revenue	–	Variable costs	– Fixed costs = Operating income
(Sale price per unit × Units sold)	–	(Variable cost per unit × Units sold)	– Fixed costs = Operating income
(Sale price per unit – Variable cost per unit) × Units sold			= Fixed costs + Operating income
Contribution margin per unit × Units sold			= Fixed costs + Operating income

Dividing both sides of the equation by the contribution margin per unit yields the alternate equation:

$$\text{Units sold} = \frac{\text{Fixed costs} + \text{Operating income}}{\text{Contribution margin per unit}}$$

Greg's Tunes can use this contribution margin approach to find its breakeven point. Fixed costs total $12,000. Operating income is zero at break even. The

contribution margin per event is $120 ($200 sale price – $80 variable cost). Greg's breakeven computation is as follows:

$$\text{Breakeven sales in units} = \frac{\$12{,}000}{\$120} = 100 \text{ events}$$

Why does this shortcut method work? Each event Greg's Tunes sells provides $120 of contribution margin. To break even in one month, Greg's must generate enough contribution margin to cover $12,000 of monthly fixed costs. At the rate of $120 per event, Greg's must sell 100 events ($12,000/$120) to cover monthly fixed costs. You can see that the contribution margin approach just rearranges the income statement equation, so the breakeven point is the same under both methods.

To "prove" the breakeven point, you can also use the contribution margin income statement format:

GREG'S TUNES, INC.
Income Statement
For one month

Sales revenue ($200 × 100 events)	$20,000
Variable costs ($80 × 100 events)	8,000
Contribution margin ($120 × 100 events)	$12,000
Fixed costs	12,000
Operating income	$ 0

Using the Contribution Margin Ratio to Compute the Breakeven Point in Sales Dollars

Companies can use the contribution margin ratio to compute their breakeven point in terms of *sales dollars*. The **contribution margin ratio** is the ratio of contribution margin to sales revenue. For Greg's Tunes, we have the following:

$$\text{Contribution margin ratio} = \frac{\text{Contribution margin}}{\text{Sales revenue}} = \frac{\$120}{\$200} = 0.60 \text{ or } 60\%$$

The 60% contribution margin ratio means that each dollar of sales revenue contributes $0.60 toward fixed costs and profit.

The contribution margin *ratio* approach differs from the shortcut contribution margin approach we have just seen in only one way: Here we use the contribution margin *ratio* rather than the dollar amount of the contribution margin.

$$\text{Breakeven sales in dollars} = \frac{\text{Fixed costs}}{\text{Contribution margin ratio}}$$

Key Takeaway

The breakeven point is the sales level at which operating income is zero: Total revenues equal total costs. The breakeven point can be found by using the income statement approach, using zero for operating income. The breakeven point can also be found by dividing total fixed cost by the contribution margin per unit (sales price per unit – variable cost per unit).

Using this ratio formula, Greg's breakeven point in sales dollars is as follows:

$$\text{Breakeven sales in dollars} = \frac{\$12{,}000}{0.60} = \$20{,}000$$

This is the same $20,000 breakeven sales revenue we calculated in the contribution margin approach.

Why does the contribution margin ratio formula work? Each dollar of Greg's sales contributes $0.60 to fixed costs and profit. To break even, Greg's must generate enough contribution margin at the rate of 60% of sales to cover the $12,000 fixed costs ($12,000 ÷ 0.60 = $20,000).

Now, we have seen how companies use *contribution margin* to estimate breakeven points in CVP analysis. But managers use the contribution margin for other purposes too, such as motivating the sales force. Salespeople who know the contribution margin of each product can generate more profit by emphasizing high-margin products over low-margin products. This is why many companies base sales commissions on the contribution margins produced by sales rather than on sales revenue alone.

Using CVP to Plan Profits

3 Use CVP analysis for profit planning, and graph the CVP relations

For established products and services, managers are more interested in the sales level needed to earn a target profit than in the breakeven point. **Target profit** is the operating income that results when sales revenue minus variable costs and minus fixed cost equals management's profit goal. Managers of new business ventures are also interested in the profits they can expect to earn. For example, now that Greg's Tunes knows it must sell 100 events to break even, Natalie Blanding, the controller for Greg's, wants to know how many more events must be sold to earn a monthly operating profit of $6,000.

How Much Must Greg's Sell to Earn a Profit?

What is the only difference from our prior analysis? Here, Greg's wants to know how many events must be sold to earn a $6,000 profit. We can use the income statement approach or the shortcut contribution margin approach to find the answer. Let's start with the income statement approach.

	Sales revenue	–	Variable costs	–	Fixed costs	=	Operating income
	($200 × Units sold)	–	($80 × Units sold)	–	$12,000	=	$ 6,000
	[($200 – 80) × Units sold]			–	$12,000	=	$ 6,000
	$120 × Units sold					=	$18,000
					Units sold	=	$18,000 ÷ $120
					Units sold	=	150 events
Proof	($200 × 150)	–	($80 × 150)	–	$12,000	=	Operating income
	$30,000	–	$12,000	–	$12,000	=	$6,000

This analysis shows that Greg's must sell 150 events each month to earn an operating profit of $6,000. This is 150 – 100 = 50 more events than the breakeven sales level (100 events).

The proof shows that Greg's needs sales revenues of $30,000 to earn a profit of $6,000. Alternatively, we can compute the dollar sales necessary to earn a $6,000 profit directly, using the contribution margin ratio form of the CVP formula:

$$\text{Target sales in dollars} = \frac{\text{Fixed costs} + \text{Operating income}}{\text{Contribution margin ratio}}$$

$$= \frac{\$12{,}000 + \$6{,}000}{0.60}$$

$$= \frac{\$18{,}000}{0.60}$$

$$= \$30{,}000$$

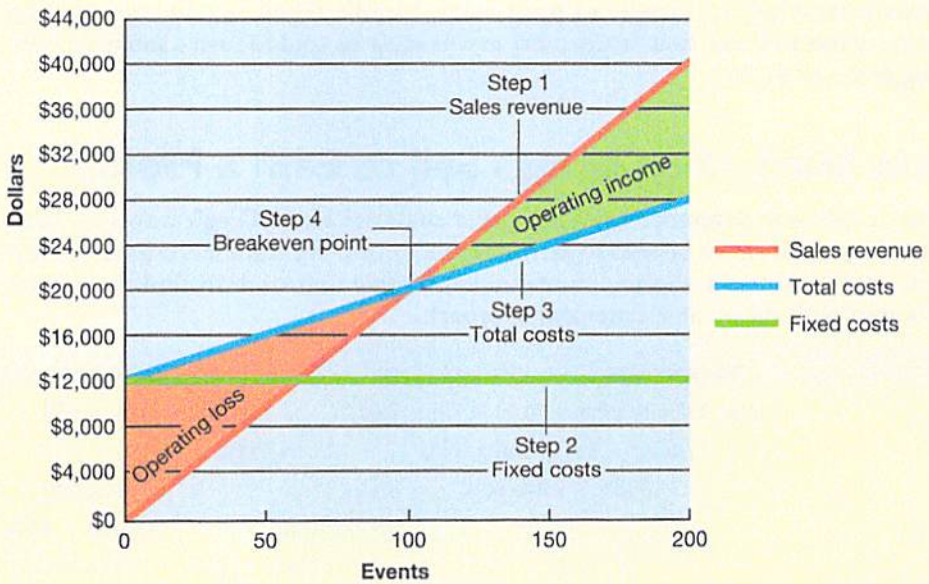
This shows that Greg's needs $30,000 in sales revenue to earn a $6,000 profit.

Graphing Cost-Volume-Profit Relations

Controller Natalie Blanding can graph the CVP relations for Greg's Tunes. A graph provides a picture that shows how changes in the levels of sales will affect profits. As in the variable-, fixed-, and mixed-cost graphs of Exhibits 19-1, 19-2, and 19-3, Blanding shows the volume of units (events) on the horizontal axis and dollars on the vertical axis. Then she follows four steps to graph the CVP relations for Greg's Tunes, as illustrated in Exhibit 19-5.

EXHIBIT 19-5 | **Cost-Volume-Profit Graph**

Events	Sales revenue	Total costs	Fixed costs	Income (Loss)
0	$0	$12,000	$12,000	$(12,000)
50	10,000	16,000	12,000	(6,000)
100	20,000	20,000	12,000	0
150	30,000	24,000	12,000	6,000
200	40,000	28,000	12,000	12,000



STEP 1: Choose a sales volume, such as 200 events. Plot the point for total sales revenue at that volume: 200 events × $200 per event = sales of $40,000. Draw the *sales revenue line* from the origin (0) through the $40,000 point. Why start at the origin? If Greg's sells no events, there is no revenue.

STEP 2: Draw the *fixed cost line*, a horizontal line that intersects the dollars axis at $12,000. The fixed cost line is flat because fixed costs are the same, $12,000, no matter how many events are sold.

STEP 3: Draw the *total cost line*. Total costs are the sum of variable costs plus fixed costs. Thus, total costs are *mixed*. So the total cost line follows the form of the mixed cost line in Exhibit 19-3. Begin by computing variable costs at the chosen sales volume: 200 events × $80 per event = variable costs of $16,000. Add variable costs to fixed costs: $16,000 + $12,000 = $28,000. Plot the total cost point of $28,000 for 200 events. Then draw a line through this point from the $12,000 fixed cost intercept on the dollars vertical axis. This is the *total cost line*. The total cost line starts at the fixed cost line because even if Greg's Tunes sells no events, the company still incurs the $12,000 of fixed costs.

STEP 4: Identify the *breakeven point* and the areas of operating income and loss. The breakeven point is where the sales revenue line intersects the total cost line. This is where revenue exactly equals total costs—at 100 events, or $20,000 in sales.

Mark the *operating loss* area on the graph. To the left of the breakeven point, total costs exceed sales revenue—leading to an operating loss, indicated by the orange zone.

Mark the *operating income* area on the graph. To the right of the breakeven point, the business earns a profit because sales revenue exceeds total cost, as shown by the green zone.

Why bother with a graph? Why not just use the income statement approach or the shortcut contribution margin approach? Graphs like Exhibit 19-5 help managers quickly estimate the profit or loss earned at different levels of sales. The income statement and contribution margin approaches indicate income or loss for only a single sales amount.

Key Takeaway

Breakeven analysis can be used to calculate the sales volume needed to earn a certain amount of profit, called target profit. Target profit is the operating income that results when sales revenue minus variable costs and minus fixed costs equals management's profit goal. Graphing various activity levels and costs gives a visual representation of operating levels that generate net income and operating levels that result in net loss.

Summary Problem 19-1

Happy Feet buys hiking socks for $6 a pair and sells them for $10. Management budgets monthly fixed costs of $10,000 for sales volumes between 0 and 12,000 pairs.

Requirements

1. Use both the income statement approach and the shortcut contribution margin approach to compute the company's monthly breakeven sales in units.
2. Use the contribution margin ratio approach to compute the breakeven point in sales dollars.
3. Compute the monthly sales level (in units) required to earn a target operating income of $6,000. Use either the income statement approach or the shortcut contribution margin approach.
4. Prepare a graph of Happy Feet's CVP relationships, similar to Exhibit 19-5. Draw the sales revenue line, the fixed cost line, and the total cost line. Label the axes, the breakeven point, the operating income area, and the operating loss area.

Solution

Requirement 1

Income statement approach:

Sales revenue	–	Variable costs	– Fixed costs	= Operating income
(Sale price per unit × Units sold)	–	(Variable cost per unit × Units sold)	– Fixed costs	= Operating income
($10 × Units sold)	–	($6 × Units sold)	– $10,000	= $0
($10	–	$6) × Units sold		= $10,000
		$4 × Units sold		= $10,000
		Units sold		= $10,000 ÷ $4
		Breakeven sales in units		= 2,500 units

Shortcut contribution margin approach:

$$\text{Units sold} = \frac{\text{Fixed costs} + \text{Operating income}}{\text{Contribution margin per unit}}$$

$$\text{Breakeven sales in units} = \frac{\$10{,}000 + \$0}{\$10 - \$6}$$

$$= \frac{\$10{,}000}{\$4}$$

$$= 2{,}500 \text{ units}$$

Requirement 2

$$\text{Breakeven sales in dollars} = \frac{\text{Fixed costs} + \text{Operating income}}{\text{Contribution margin ratio}}$$

$$= \frac{\$10{,}000 + \$0}{0.40^*}$$

$$= \$25{,}000$$

$$^*\text{Contribution margin ratio} = \frac{\text{Contribution margin per unit}}{\text{Sale price per unit}} = \frac{\$4}{\$10} = 0.40$$

Requirement 3

Income statement equation approach:

Sales revenue	–	Variable costs	– Fixed costs	= Operating income
$\left(\begin{matrix}\text{Sale price}\\ \text{per unit}\end{matrix} \times \text{Units sold}\right)$	–	$\left(\begin{matrix}\text{Variable cost}\\ \text{per unit}\end{matrix} \times \text{Units sold}\right)$	– Fixed costs	= Operating income
($10 × Units sold)	–	($6 × Units sold)	– $10,000	= $6,000
($10	–	$6) × Units sold		= $10,000 + $6,000
		$4 × Units sold		= $16,000
		Units sold		= $16,000 ÷ $4
		Units sold		= 4,000 units

Shortcut contribution margin approach:

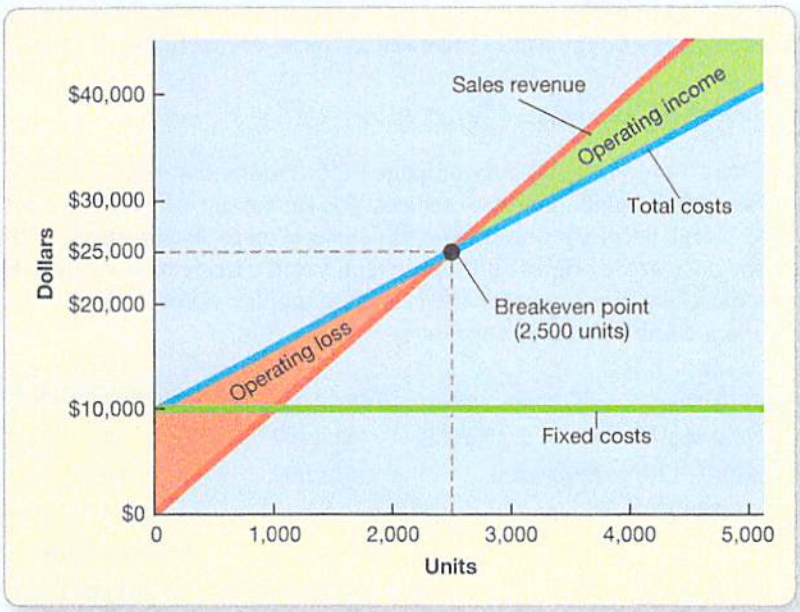
$$\text{Units sold} = \frac{\text{Fixed costs} + \text{Operating income}}{\text{Contribution margin per unit}}$$

$$= \frac{\$10{,}000 + \$6{,}000}{\$10 - \$6}$$

$$= \frac{\$16{,}000}{\$4}$$

$$= 4{,}000 \text{ units}$$

Requirement 4



Using CVP for Sensitivity Analysis

4 Use CVP methods to perform sensitivity analyses

Managers often want to predict how changes in sale price, costs, or volume affect their profits. Managers can use CVP relationships to conduct sensitivity analysis. **Sensitivity analysis** is a "what if" technique that asks what results are likely if selling price or costs change, or if an underlying assumption changes. So sensitivity analysis allows managers to see how various business strategies will affect how much profit the company will make and thus empowers managers with better information for decision making. Let's see how Greg's Tunes can use CVP analysis to estimate the effects of some changes in its business environment.

Changing the Selling Price

Competition in the DJ event services business is so fierce that Greg's Tunes believes it must cut the selling price to $180 per event to maintain market share. Suppose Greg's Tunes' variable costs remain $80 per event and fixed costs stay at $12,000. How will the lower sale price affect the breakeven point?

Using the income statement approach, the results are as follows:

Sales revenue	–	Variable costs	–	Fixed costs	=	Operating income
($180 × Units sold)	–	($80 × Units sold)	–	$12,000	=	$0
[($180 – $80) × Units sold]			–	$12,000	=	$0
$100 × Units sold					=	$12,000
				Units sold	=	$12,000 ÷ $100
				Units sold	=	120 events

Proof						
($180 × 120)	–	($80 × 120)	–	$12,000	=	Operating income
$21,600	–	$9,600	–	$12,000	=	$0

With the original $200 sale price, Greg's Tunes' breakeven point was 100 events. With the new lower sale price of $180 per event, the breakeven point increases to 120 events. The lower sale price means that each event contributes less toward fixed costs, so Greg's Tunes must sell 20 more events to break even.

Changing Variable Costs

Return to Greg's Tunes' original data on page 929. Assume that one of Greg's Tunes' suppliers raises prices, which increases the cost for each event to $120 (instead of the original $80). Greg's decides it cannot pass this increase on to its customers, so the company holds the price at the original $200 per event. Fixed costs remain at $12,000. How many events must Greg's sell to break even after the supplier raises prices?

Using the income statement approach,

Sales revenue	–	Variable costs	–	Fixed costs	=	Operating income
($200 × Units sold)	–	($120 × Units sold)	–	$12,000	=	$0
[($200 – 120) × Units sold]			–	$12,000	=	$0
$80 × Units sold					=	$12,000
				Units sold	=	$12,000 ÷ $80
				Units sold	=	150 events

Proof	($200 × 150)	–	($120 × 150)	–	$12,000	=	Operating income
	$30,000	–	$18,000	–	$12,000	=	$0

Connect To: Technology

Information technology allows managers to perform many sensitivity analyses before launching a new product or shutting down a plant. Excel spreadsheets are useful for sensitivity analyses. Spreadsheets can show how one change (or several changes simultaneously) affects operations. Managers can easily plot basic CVP data to show profit-planning graphs with a few keystrokes. Large companies use enterprise resource planning software—**SAP**, **Oracle**, and **Peoplesoft**—for their CVP analysis. For example, after **Sears** stores lock their doors at 9:00 PM, records for each individual transaction flow into a massive database. From a Diehard battery sold in California to a Trader Bay polo shirt sold in New Hampshire, the system compiles an average of 1,500,000 transactions a day. With the click of a mouse, managers can conduct breakeven or profit planning analysis on any product they choose.

Higher variable costs per event reduce Greg's Tunes' per-unit contribution margin from $120 per event to $80 per event. As a result, Greg's must sell more events to break even—150 rather than the original 100. This analysis shows why managers are particularly concerned with controlling costs during an economic downturn. Increases in cost raise the breakeven point, and a higher breakeven point can lead to problems if demand falls due to a recession.

Of course, a decrease in variable costs would have the opposite effect. Lower variable costs increase the contribution margin on each event and, therefore, lower the breakeven point.

Changing Fixed Costs

Return to Greg's original data on page 929. Controller Natalie Blanding is considering spending an additional $3,000 on Web site banner ads. This would increase fixed costs from $12,000 to $15,000. If the events are sold at the original price of $200 each and variable costs remain at $80 per event, what is the new breakeven point?

Using the income statement approach,

Sales revenue	–	Variable costs	–	Fixed costs	=	Operating income
($200 × Units sold)	–	($80 × Units sold)	–	$15,000	=	$0
[($200 – $80) × Units sold]			–	$15,000	=	$0
$120 × Units sold					=	$15,000
				Units sold	=	$15,000 ÷ $120
				Units sold	=	125 events

Proof	($200 × 125)	–	($80 × 125)	–	$15,000	=	Operating income
	$25,000	–	$10,000	–	$15,000	=	$0

Higher fixed costs increase the total contribution margin required to break even. In this case, increasing the fixed costs from $12,000 to $15,000 increases the breakeven point to 125 events (from the original 100 events).

Managers usually prefer a lower breakeven point to a higher one. But do not overemphasize this one aspect of CVP analysis. Even though investing in the Web banner ads increases Greg's Tunes' breakeven point, the company should pay the extra $3,000 if that would increase both sales and profits.

Exhibit 19-6 shows how all of these changes affect the contribution margin per unit and the breakeven point.

EXHIBIT 19-6 **How Changes in Selling Price, Variable Costs, and Fixed Costs Affect the Contribution Margin per Unit and the Breakeven Point**

Cause	Effect	Result
Change	Contribution Margin per Unit	Breakeven Point
Selling Price per Unit Increases	Increases	Decreases
Selling Price per Unit Decreases	Decreases	Increases
Variable Cost per Unit Increases	Decreases	Increases
Variable Cost per Unit Decreases	Increases	Decreases
Total Fixed Cost Increases	Is not affected	Increases
Total Fixed Cost Decreases	Is not affected	Decreases

Margin of Safety

The **margin of safety** is the excess of expected sales over breakeven sales. The margin of safety is therefore the "cushion" or drop in sales that the company can absorb without incuring an operating loss.

Managers use the margin of safety to evaluate the risk of both their current operations and their plans for the future. Let's apply the margin of safety to Greg's Tunes.

Greg's Tunes' original breakeven point was 100 events. Suppose the company expects to sell 170 events. The margin of safety is as follows:

Expected sales	–	Breakeven sales	=	Margin of safety in units
170 events	–	100 events	=	70 events

Margin of safety in units	×	Sales price	=	Margin of safety in dollars
70 events	×	$200	=	$14,000

Sales can drop by 70 events, or $14,000, before Greg's incurs a loss. This margin of safety (70 events) is 41.2% of total expected sales (170 events). That is a comfortable margin of safety.

Margin of safety focuses on the sales part of the equation—that is, how many sales dollars the company is generating above breakeven sales dollars. Conversely, target profit focuses on how much operating income is left over from sales revenue after covering all variable and fixed costs.

Stop & Think...

If you have done really well on all your assignments in a particular course for the semester and currently have an A, you have created a sort of "margin of safety" for your grade. That is, by performing above the minimum (C, or break even), you have a cushion to help you maintain a good grade even if you happen to perform poorly on a future assignment.

Key Takeaway

Sensitivity analysis is a "what if" technique that asks what results are likely if selling price or costs change or if an underlying assumption changes. The income statement approach to break even is just adjusted for the new proposed values. The margin of safety is the "cushion" or drop in sales that the company can absorb before incurring a loss.

Effect of Sales Mix on CVP Analysis

5 Calculate the breakeven point for multiple products or services

Most companies sell more than one product. Selling price and variable costs differ for each product, so each product makes a different contribution to profits. The same CVP formulas we used earlier apply to a company with multiple products.

To calculate break even for each product, we must compute the *weighted-average contribution margin* of all the company's products. The sales mix provides the weights that make up total product sales. The weights equal 100% of total product sales. **Sales mix** (or *product mix*) is the combination of products that make up total sales. For example, Cool Cat Furniture sold 6,000 cat beds and 4,000 scratching posts during the past year. The sales mix of 6,000 beds and 4,000 posts creates a ratio of 6,000/10,000 or 60% cat beds and 4,000/10,000 or 40% scratching posts. You could also convert this to the least common ratio, as 6/10 is the same as 3/5 cat beds and 4/10 is the same as 2/5 scratching posts. So, we say the sales mix or product mix is 3:2, or for every three cat beds, Cool Cat expects to sell two scratching posts.

Cool Cat's total fixed costs are $40,000. The cat bed's unit selling price is $44 and variable cost per bed are $24. The scratching post's unit selling price is $100 and variable cost per post is $30. To compute breakeven sales in units for both products Cool Cat completes the following three steps.

STEP 1: Calculate the weighted-average contribution margin per unit, as follows:

	Cat Beds	Scratching Posts	Total
Sale price per unit	$ 44	$100	
Variable cost per unit	24	30	
Contribution margin per unit	$ 20	$ 70	
Sales mix in units	× 3	× 2	5
Contribution margin	$ 60	$140	$200
Weighted-average contribution margin per unit ($200/5)			$ 40

STEP 2: Calculate the breakeven point in units for the "package" of products:

$$\text{Breakeven sales in total units} = \frac{\text{Fixed costs + Operating income}}{\text{Weighted-average contribution margin per unit}}$$

$$= \frac{\$40{,}000 + \$0}{\$40}$$

$$= 1{,}000 \text{ items}$$

STEP 3: Calculate the breakeven point in units for each product. Multiply the "package" breakeven point in units by each product's proportion of the sales mix.

Breakeven sales of cat beds (1,000 × 3/5)	600 cat beds
Breakeven sales of scratching posts (1,000 × 2/5)	400 scratching posts

In this example, the calculations yield round numbers. When the calculations do not yield round numbers, round your answer up to the next whole number.

The overall breakeven point in sales dollars is $66,400:

600 cat beds at $44 selling price each	$26,400
400 scratching posts at $100 selling price each	40,000
Total sales revenue	$66,400

We can prove this breakeven point by preparing a contribution margin income statement:

	Cat Beds	Scratching Posts	Total
Sales revenue:			
Cat beds (600 × $44)	$26,400		
Scratching posts (400 × $100)		$40,000	$ 66,400
Variable costs:			
Cat beds (600 × $24)	14,400		
Scratching posts (400 × $30)		12,000	26,400
Contribution margin	$12,000	$28,000	$ 40,000
Fixed costs			(40,000)
Operating income			$ 0

If the sales mix changes, then Cool Cat can repeat this analysis using new sales mix information to find the breakeven points for each product.

In addition to finding the breakeven point, Cool Cat can also estimate the sales needed to generate a certain level of operating profit. Suppose Cool Cat would like to earn operating income of $20,000. How many units of each product must Cool Cat now sell?

$$\text{Breakeven sales in total units} = \frac{\text{Fixed costs} + \text{Operating income}}{\text{Weighted-average contribution margin per unit}}$$

$$= \frac{\$40{,}000 + \$20{,}000}{\$40}$$

$$= 1{,}500 \text{ items}$$

Breakeven sales of cat beds (1,500 × 3/5) ..... 900 cat beds
Breakeven sales of scratching posts (1,500 × 2/5) ..... 600 scratching posts

We can prove this planned profit level by preparing a contribution margin income statement:

	Cat Beds	Scratching Posts	Total
Sales revenue:			
Cat beds (900 × $44)	$39,600		
Scratching posts (600 × $100)		$60,000	$99,600
Variable costs:			
Cat beds (900 × $24)	21,600		
Scratching posts (600 × $30)		18,000	39,600
Contribution margin	$18,000	$42,000	$60,000
Fixed costs			40,000
Operating income			$20,000

You have learned how to use CVP analysis as a managerial tool. Now you can review the CVP Analysis Decision Guidelines on the next page to make sure you understand these basic concepts.

Key Takeaway

Most companies sell more than one product. Selling price and variable costs differ for each product, so each product makes a different contribution to profits. To calculate break even for each product, we compute the weighted-average contribution margin of all the company's products. The combination of products that make up total sales, called the sales mix (or product mix), provides the weights that make up total product sales.

Decision Guidelines 19-1

COST-VOLUME-PROFIT ANALYSIS

As a manager, you will find CVP very useful. Here are some questions you will ask, and guidelines for answering them.

Decision	Guidelines
• How do changes in volume of activity affect	
• total costs?	Total *variable* costs → Change in proportion to changes in volume (number of products or services sold) Total *fixed* costs → No change
• cost per unit?	Variable cost per unit → No change
• fixed cost per unit?	Decreases when volume rises (fixed costs are spread over *more* units) Increases when volume drops (fixed costs are spread over *fewer* units)
• How do I calculate the sales needed to break even or earn a target operating income	
• in units?	*Income Statement Approach:*

$$\underbrace{\text{Sales revenue}}_{\left(\begin{array}{c}\text{Sale price}\\ \text{per unit}\end{array}\times\text{Units sold}\right)} - \underbrace{\text{Variable costs}}_{\left(\begin{array}{c}\text{Variable cost}\\ \text{per unit}\end{array}\times\text{Units sold}\right)} - \text{Fixed costs} = \text{Operating income}$$

Shortcut Contribution Margin Approach:

$$\underbrace{\left(\begin{array}{c}\text{Sale price}\\ \text{per unit}\end{array} - \begin{array}{c}\text{Variable cost}\\ \text{per unit}\end{array}\right)}_{\text{Contribution margin per unit}} \times \text{Units sold} = \text{Fixed costs} + \text{Operating income}$$

$$\text{Contribution margin per unit} \times \text{Units sold} = \text{Fixed costs} + \text{Operating income}$$

$$\text{Units sold} = \frac{\text{Fixed Costs} + \text{Operating income}}{\text{Contribution margin per unit}}$$

• in dollars?

Shortcut Contribution Margin Ratio Approach:

$$\frac{\text{Fixed costs} + \text{Operating income}}{\text{Contribution margin ratio}}$$

Decision	Guidelines
• How will changes in sale price, variable costs, or fixed costs affect the breakeven point?	See table below
• How do I use CVP analysis to measure risk?	Margin of safety in units = Expected sales – Breakeven sales
• How do I calculate my breakeven point when I sell more than one product or service?	STEP 1: Compute the weighted-average contribution margin per unit. STEP 2: Calculate the breakeven point in units for the "package" of products. STEP 3: Calculate the breakeven point in units for each product. Multiply the "package" breakeven point in units by each product's proportion of the sales mix.

Cause	Effect	Result
Change	Contribution Margin per Unit	Breakeven Point
Selling price per unit increases	Increases	Decreases
Selling price per unit decreases	Decreases	Increases
Variable cost per unit increases	Decreases	Increases
Variable cost per unit decreases	Increases	Decreases
Total fixed cost increases	Is not affected	Increases
Total fixed cost decreases	Is not affected	Decreases

Summary Problem 19-2

Happy Feet buys hiking socks for $6 a pair and sells them for $10. Management budgets monthly fixed costs of $12,000 for sales volumes between 0 and 12,000 pairs.

Requirements

Consider each of the following questions separately by using the foregoing information each time.

1. Calculate the breakeven point in units.
2. Happy Feet reduces its selling price from $10 a pair to $8 a pair. Calculate the new breakeven point in units.
3. Happy Feet finds a new supplier for the socks. Variable costs will decrease by $1 a pair. Calculate the new breakeven point in units.
4. Happy Feet plans to advertise in hiking magazines. The advertising campaign will increase total fixed costs by $2,000 per month. Calculate the new breakeven point in units.
5. In addition to selling hiking socks, Happy Feet would like to start selling sports socks. Happy Feet expects to sell one pair of hiking socks for every three pairs of sports socks. Happy Feet will buy the sports socks for $4 a pair and sell them for $8 a pair. Total fixed costs will stay at $12,000 per month. Calculate the breakeven point in units for both hiking socks and sports socks.

Solution

Requirement 1

$$\text{Units sold} = \frac{\text{Fixed costs}}{\text{Contribution margin per unit}}$$

$$\text{Breakeven sales in units} = \frac{\$12{,}000}{\$10 - \$6} = \frac{\$12{,}000}{\$4} = 3{,}000 \text{ units}$$

Requirement 2

$$\text{Units sold} = \frac{\text{Fixed costs}}{\text{Contribution margin per unit}}$$

$$\text{Breakeven sales in units} = \frac{\$12{,}000}{\$8 - \$6} = \frac{\$12{,}000}{\$2} = 6{,}000 \text{ units}$$

Requirement 3

$$\text{Units sold} = \frac{\text{Fixed costs}}{\text{Contribution margin per unit}}$$

$$\text{Breakeven sales in units} = \frac{\$12{,}000}{\$10 - \$5} = \frac{\$12{,}000}{\$5} = 2{,}400 \text{ units}$$

Requirement 4

$$\text{Units sold} = \frac{\text{Fixed costs}}{\text{Contribution margin per unit}}$$

$$\text{Breakeven sales in units} = \frac{\$14{,}000}{\$10 - \$6}$$

$$= \frac{\$14{,}000}{\$4}$$

$$= 3{,}500 \text{ units}$$

Requirement 5

STEP 1: Calculate the weighted-average contribution margin:

	Hiking	Sports	
Sale price per unit	$10.00	$ 8.00	
Variable cost per unit	6.00	4.00	
Contribution margin per unit	$ 4.00	$ 4.00	
Sales mix in units	× 1	× 3	4
Contribution margin	$ 4.00	$12.00	$16.00
Weighted-average CM ($16/4)			$ 4.00

STEP 2: Calculate breakeven point for "package" of products:

$$\text{Breakeven sales in units} = \frac{\text{Fixed costs}}{\text{Contribution margin per unit}}$$

$$= \frac{\$12{,}000}{\$4}$$

$$= 3{,}000 \text{ units}$$

STEP 3: Calculate breakeven point for each product:

Number of hiking socks (3,000 × (1/4))	750
Number of sport socks (3,000 × (3/4))	2,250

Review *Cost-Volume-Profit Analysis*

Accounting Vocabulary

Breakeven Point (p. 930)
The sales level at which operating income is zero: Total revenues equal total expenses (costs).

Contribution Margin (p. 931)
Sales revenue minus variable expenses (costs).

Contribution Margin Income Statement (p. 931)
Income statement that groups costs by cost behavior—variable costs or fixed costs—and highlights the contribution margin.

Contribution Margin Ratio (p. 932)
Ratio of contribution margin to sales revenue.

Cost-Volume-Profit (CVP) Analysis (p. 924)
Expresses the relationships among costs, volume, and profit or loss.

Fixed Costs (p. 926)
Costs that tend to remain the same in amount, regardless of variations in level of activity.

High-Low Method (p. 927)
A method used to separate mixed costs into variable and fixed components, using the highest and lowest activity levels.

Margin of Safety (p. 939)
Excess of expected sales over breakeven sales. A drop in sales that a company can absorb without incurring an operating loss.

Mixed Costs (p. 927)
Costs that have both variable and fixed components.

Relevant Range (p. 929)
The range of volume where total fixed costs remain constant and the variable cost per unit remains constant.

Sales Mix (p. 940)
Combination of products that make up total sales.

Sensitivity Analysis (p. 937)
A "what if" technique that asks what results are likely if selling price or costs change, or if an underlying assumption changes.

Target Profit (p. 933)
The operating income that results when sales revenue minus variable and minus fixed costs equals management's profit goal.

Total Fixed Costs (p. 926)
Costs that do not change over wide ranges in volume.

Total Variable Costs (p. 925)
Costs that change in total in direct proportion to changes in volume.

Variable Costs (p. 925)
Costs that increase or decrease in total in direct proportion to increases or decreases in the volume of activity.

Destination: Student Success

Student Success Tips

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

- Remember the difference between variable, fixed, and mixed costs.
- Keep in mind that breakeven means the company has neither net income NOR net loss.
- Recall that the income statement approach to breakeven is really just the income statement you learned in Chapter 1.
- Consider that the breakeven formula can be used to make different assumptions about sales price, variable costs, fixed costs, and target profits.
- Keep in mind when calculating breakeven values whether the calculation is asking for number of units or for a dollar amount.
- Recall that the high-low method is a way to separate mixed costs into fixed and variable portions.
- Remember the margin of safety is the amount of sales dollars above breakeven, so it's the safety net of extra profit the company has before profits go to zero or worse, a net loss.
- Remember that most companies make more than one product, so sales mix must be considered in finding a weighted-average contribution margin to determine breakeven for multiple products.

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 Decision Guidelines 19-1 in the chapter.
- Review Summary Problem 19-1 in the chapter to reinforce your understanding of breakeven and sensitivity analysis.
- Review Exhibit 19-6 for information about how CVP changes affect contribution margin per unit and breakeven point.
- Review Summary Problem 19-2 in the chapter to reinforce your understanding of breakeven point for multiple products.
- Practice additional exercises or problems at the end of Chapter 19 that cover the specific learning objective that is challenging you.
- Watch the white board videos for Chapter 19, located at myaccountinglab.com under the Chapter Resources button.
- Go to myaccountinglab.com and select the Study Plan button. Choose Chapter 19 and work the questions covering that specific learning objective until you've mastered it.
- Work the Chapter 19 pre/post tests in myaccountinglab.com.
- Consult the Check Figures for End of Chapter short exercises, exercises, and problems, located at myaccountinglab.com.
- Visit the learning resource center on your campus for tutoring.