

## 10.6 Breakeven Analysis

### LEARNING OBJECTIVE

1. Learn how to use breakeven analysis to estimate the number of sales units at which net income is zero.

Forecasting sales of shoes has started you thinking. Selling twelve thousand pair of shoes the first year you run the business sounds great, but you still need to find an answer to the all-important question: are there enough customers willing to buy my jogging shoes at a price that will allow me to make a profit? Is there some way to figure out the level of sales I would need to avoid *losing* money—to “break even”? Fortunately, an accountant friend of yours informs you that there is. Not surprisingly, it’s called **breakeven analysis**, and here’s how it works: to break even (have no profit or loss), *total sales revenue must exactly equal all your expenses (both variable and fixed)*. To determine the level of sales at which this will occur, you need to do the following:

1. Determine your total **fixed costs**, which are so called because the total cost doesn’t change as the quantity of goods sold changes:
  - Fixed costs = \$210,000 salaries + \$60,000 rent + \$10,000 advertising + \$8,000 insurance + 12,000 other fixed costs = \$300,000
2. Identify your **variable costs**. These are costs that vary, in total, as the quantity of goods sold changes but that stay constant on a per-unit basis. State variable costs on a per-unit basis:
  - Variable cost per unit = \$40 (cost of each pair of shoes) + \$5 sales commission = \$45
3. Determine your **contribution margin per unit**: selling price per unit less variable cost per unit:
  - Contribution margin per unit = \$80 selling price minus \$45 variable cost per unit = \$35
4. Calculate your **breakeven point in units**: fixed costs ÷ contribution margin per unit:
  - Breakeven in units = \$300,000 fixed costs ÷ \$35 contribution margin per unit = 8,571 units

Your calculation means that if you sell 8,571 pairs of shoes, you will end up with zero profit (or loss) and will exactly break even.

If your sales estimate is realistic (a big “if”), then you should be optimistic about starting the business. All your fixed costs will be covered once you sell 8,571 pairs of shoes. Any sales above that level will be pure profit. So, if you sell your expected level of twelve thousand pairs of shoes, you’ll make a profit of \$120,015 for the first year. Here’s how we calculated that profit:

- 12,000 expected sales level - 8,571 breakeven sales level = 3,429 units × \$35

contribution margin per unit = \$120,015 first-year profit

As you can see, breakeven analysis is pretty handy. It allows you to determine the level of sales that you must reach to avoid losing money and the profit you'll make if you reach a higher sales goal. Such information will help you plan for your business.

## KEY TAKEAWAYS

- Breakeven analysis is a method of determining the level of sales at which the company will break even (have no profit or loss).
- The following information is used in calculating the breakeven point: fixed costs, variable costs, and contribution margin per unit.
- Fixed costs are costs that don't change when the amount of goods sold changes. For example, rent is a fixed cost.
- Variable costs are costs that vary, in total, as the quantity of goods sold changes but stay constant on a per-unit basis. For example, sales commissions paid based on unit sales are a variable cost.
- Contribution margin per unit is the excess revenue per unit over the variable cost per unit.
- The breakeven point in units is calculated with this formula: fixed costs divided by contribution margin per unit (selling price per unit less variable cost per unit).

## EXERCISE

(AACSB) Analysis

For the past ten years, you've worked at a PETCO Salon as a dog groomer. You're thinking of starting your own dog grooming business. You found a place you could rent that's right next to a popular shopping center, and two of your friends (who are also dog groomers) have agreed to work for you. The problem is that you need to borrow money to start the business and your banker has asked for a breakeven analysis. You have prepared the following cost estimates for your first year of operations:

Fixed Costs	
Salaries	\$105,000
Rent and utilities	\$36,000
Advertising	\$2,000
Equipment	\$3,000

Variable Cost per Dog	
Shampoo	\$2.00
Coat conditioner	\$1.50
Pet cologne	\$0.75
Dog treats	\$1.25
Hair ribbons	\$0.50

You went online and researched grooming prices in your area. Based on your review, you have decided to charge \$32 for each grooming.

- Part 1:

- What's the breakeven point in units—how many dogs will you need to groom in the first year to break even?
- If you and your two employees groomed dogs five days a week, seven hours a day, fifty weeks a year, how many dogs would each of you need to groom each day? Is this realistic given that it takes one hour to groom a dog?
- Part 2:
  - If you raised your grooming fee to \$38, how many dogs would you need to groom to break even?
  - At this new price, how many dogs will each of you have to groom each day (assuming, again, that the three of you groom dogs fifty weeks a year, five days a week, seven hours a day)?
- Part 3:
  - Would you start this business?
  - What price would you charge to groom a dog?
  - How could you lower the breakeven point and make the business more profitable?