



Answer Key – Break-Even Analysis Activity

What is break-even? Break-even is the point at which net profit is zero.

In order to establish a break-even point, you must distinguish between fixed and variable expenses.

What are fixed expenses? Fixed expenses remain fixed over a period of time, and the level of sales does not influence them.

Examples: Management salaries, utilities, rent. Fixed costs are critical to manage because they exist despite the amount of revenue that is made. Some people call this overhead—the costs that are fixed and do not vary.

What are variable expenses? Variable expenses tend to vary over a period of time, and they are correlated with sales.

Examples: Cost of goods, sales commissions, production labor. Variable costs change based on the level of revenue coming in. These costs are directly related to the sales function.

What are semi-variable expenses? Semi-variable expenses have a fixed portion and a variable portion to them.

Examples: Utilities, telephone. Telephone costs may have a base fee, but as sales in other states increase, so do long-distance charges. To calculate the break-even point, an estimate must be made to allocate these semi-variable costs between fixed and variable.



Answer Key – Calculate Break-Even – Scenario: Midwest Lab Services

Directions

Step 1 Read the Scenario: Midwest Lab Services below and fill in the information you know in the Income Statement that follows it.

Midwest Lab Services does comprehensive laboratory testing. They provide 24-hour courier service as well as on-site testing and collection. MLS has developed a personal, multiple-use cholesterol testing kit that could revolutionize the industry by its ease of use and potentially low cost. Based on bids from one manufacturer, it will cost \$30,000 per year for the annual manufacturing contract. In addition, it will cost \$5 to produce each testing kit. MLS believes it can sell 20,000 units the first year at \$7 each to distributors.

Step 2 Calculate missing values.

Income Statement	Total	Per Unit
Units	20,000	1
Sales	\$140,000	\$7
Cost of Sales (Variable Costs)	\$100,000	\$5
Gross Margin	\$ 40,000	\$2
Operating Costs (Fixed Costs)	\$ 30,000	\$1.50
Net Profit	\$ 10,000	\$0.50



of break-even analysis to evaluate pricing strategy at www.fasttrac.org/toolkits.

Step 3 Calculate break-even using formulas. How many units does Midwest Lab Services need to sell to break even?

Break-Even per Unit = Fixed Costs / Gross Margin per Unit

$$15,000 \text{ units} = \$30,000 / (\$7 - \$5 = \$2)$$

Break-Even Total Sales = Fixed Costs / Gross Margin %

$$\$105,000 = \$30,000 / (.2875) \text{ (}\$7 - \$5 = \$2 \text{) divided by } \$7$$

Step 4 Illustrate your findings by placing your calculations on the graph below.

Break-Even Graph

This step is to help entrepreneurs visualize break-even on a graph, as presented in Overhead OEA4, not a test in plotting a graph. Although each entrepreneur's graph will be different, completed graphs should resemble the graph on the right.

