BREAK EVEN ANALYSIS

Problem 1:
A company that produces custom-designed T-shirts incurs fixed costs of $20,000. The variable cost per T-shirt is $5, and each T-shirt is sold for $12.

1. Determine the break-even point in terms of units.
2. Determine the break-even point in terms of revenue (dollars).

SOLUTION

Given Data:

- Fixed Costs = $20,000
- Variable Cost per Unit = $5
- Sales Price per Unit = $12

1. Break-Even Point (Units)

Using the formula:

$$\text{Break-Even Point (Units)} = \frac{\text{Fixed Costs}}{\text{Sales Price per Unit} - \text{Variable Cost per Unit}}$$

$$= \frac{20,000}{12 - 5}$$

$$= \frac{20,000}{7} = 2,857.14 \approx 2,858 \text{ units}$$

So, the company needs to sell **2,858 T-shirts** to break even.

2. Break-Even Point (Dollars)

Using the formula:

$$\text{Break-Even Point (Dollars)} = \frac{\text{Fixed Costs}}{1 - \frac{\text{Variable Cost per Unit}}{\text{Sales Price per Unit}}}$$

$$= \frac{20,000}{1 - \frac{5}{12}}$$

$$= \frac{20,000}{1 - 0.4167}$$

$$= \frac{20,000}{0.5833}$$

$$= 34,285.71 \approx 34,286 \text{ dollars}$$

So, the company needs to generate **$34,286** in revenue to break even. 🎯

Problem 2:

A bakery that specializes in custom cakes has fixed costs of **$25,000**. The variable cost per cake is **$8**, and each cake is sold for **$20**.

1. Determine the break-even point in terms of units.
2. Determine the break-even point in terms of revenue (dollars).

Solution:

1. Break-Even Point (Units)

Using the formula:

$$\text{Break-Even Point (Units)} = \frac{\text{Fixed Costs}}{\text{Sales Price per Unit} - \text{Variable Cost per Unit}}$$

$$= \frac{25,000}{20 - 8}$$

$$= \frac{25,000}{12} = 2,083.33 \approx 2,084 \text{ cakes}$$

So, the bakery must sell **2,084 cakes** to break even.

2. Break-Even Point (Dollars)

Using the formula:

$$\text{Break-Even Point (Dollars)} = \frac{\text{Fixed Costs}}{1 - \frac{\text{Variable Cost per Unit}}{\text{Sales Price per Unit}}}$$

$$= \frac{25,000}{1 - \frac{8}{20}}$$

$$= \frac{25,000}{1 - 0.4}$$

$$= \frac{25,000}{0.6}$$

$$= 41,666.67 \approx 41,667 \text{ dollars}$$

So, the bakery must generate **$41,667** in revenue to break even. 🎯