What is the Break-Even Point?

Worksheet

Break-even point in units equals fixed costs divided by the contribution margin per unit (selling price minus variable cost per unit); every unit sold beyond that point adds its contribution margin directly to profit.

$$Q_{bep} = \frac{FC}{P - VC}$$

Questions

1. The break-even point in units formula is:

A) Fixed Costs Contribution Margin
B) Fixed Costs / Contribution Margin per unit
C) Sales / Variable Cost
D) Fixed Costs + Variable Cost

2. Fixed costs are $40,000, price is $20, and variable cost is $12 per unit. Break-even units are:

A) 2,000
B) 5,000
C) 3,333
D) 4,000

3. At the break-even point, profit is:

A) At its maximum
B) Negative
C) Zero
D) Undefined

4. If variable cost per unit increases while price and fixed costs stay the same, the break-even point:

A) Decreases
B) Increases
C) Stays the same
D) Becomes negative

5. Fixed costs are $60,000, price is $40 per unit, and variable cost is $25 per unit. Find the break-even point in units.

6. Using the same numbers, find the break-even point in sales dollars.

7. If fixed costs rise to $75,000 while price and variable cost stay the same, find the new break-even point.

8. Define: What is the break-even point?

9. Define: What is the break-even formula?

10. Define: What happens above the break-even point?

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Answer Key

1. B) Fixed Costs / Contribution Margin per unit - BEP (units) = Fixed Costs / (Price Variable Cost per unit).
2. B) 5,000 - CM per unit = 20 12 = $8; BEP = 40,000 / 8 = 5,000 units.
3. C) Zero - By definition, total revenue equals total costs at break-even, so profit is exactly zero.
4. B) Increases - A smaller contribution margin per unit means more units are needed to cover fixed costs.
5. CM per unit = 40 25 = $15 BEP = Fixed Costs / CM per unit = 60,000 / 15 = 4,000 units
6. BEP ($) = BEP units Price per unit BEP ($) = 4,000 40 = $160,000
7. CM per unit = 40 25 = $15 (unchanged) BEP = 75,000 / 15 = 5,000 units
8. The sales level, in units or dollars, where total revenue equals total costs - zero profit, zero loss.
9. BEP (units) = Fixed Costs / (Price Variable Cost per unit), i.e., Fixed Costs / Contribution Margin per unit.
10. Every additional unit sold contributes its full contribution margin per unit directly to profit.

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