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.

$$Q_{(bep)} = FC/(P - VC)$$

Q_(bep) = Break-even quantity (units)
FC = Fixed cost (currency)
P = Price per unit (currency)
VC = Variable cost per unit (currency)

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 is20, 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 is40 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?

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.