

# Worksheet 4: Break-Even and Contribution Margin Analysis

Practice calculating break-even points, contribution margins, and target profits.

## Key Formulas

Formula	Description
Contribution Margin (CM) = Selling Price - Variable Cost per unit	Amount each unit contributes toward fixed costs then profit
CM Ratio = CM / Selling Price	Fraction of revenue that is contribution
Break-Even (units) = Fixed Costs / CM per unit	Units needed to cover all fixed costs
Break-Even (revenue) = Fixed Costs / CM Ratio	Revenue needed to cover all fixed costs
Target Profit Units = (Fixed Costs + Target Profit) / CM	Units needed to achieve a specific profit
Margin of Safety = Actual Sales - Break-Even Sales	How far sales can fall before a loss

## Problem 1 — Basic Break-Even

Given Information	Value
Selling price per unit	■800
Variable cost per unit	■480
Monthly fixed costs	■1,92,000

- What is the Contribution Margin per unit?
- What is the CM Ratio?
- How many units must be sold to break even?
- What revenue is needed to break even?

### Your Working Space


## Problem 2 — Target Profit

Given Information	Value
Selling price per unit	■1,200
Variable cost per unit	■700
Annual fixed costs	■15,00,000

- Calculate the CM per unit and CM Ratio.

- b) How many units are needed to earn a profit of ■10,00,000?  
 c) If actual sales are 50,000 units, what is the Margin of Safety in units and percentage?

Your Working Space	

### Problem 3 — Mixed Costs Analysis

Given Information	Value
Current revenue	■40,00,000
Current variable costs	■24,00,000
Current fixed costs	■8,00,000
Current units sold	20,000

- a) Calculate contribution margin per unit.  
 b) Find the break-even point in units and revenue.  
 c) What will profit be if sales increase by 2,000 units (with no price or cost changes)?

Your Working Space	

### Answer Key

<b>Problem 1</b>	CM = ■320   CM Ratio = 40%   BEP = 600 units   BEP Revenue = ■4,80,000
<b>Problem 2</b>	CM = ■500   CM Ratio = 41.7%   Target units = 50,000   MoS = 0 units (at BEP)
<b>Problem 3</b>	CM per unit = ■800   BEP = 10,000 units / ■20,00,000   Incremental profit = ■16,00,000