# 4.2 Costs, scale of production and break-even analysis

Name: ____________ Class: ________ Date: __________ **Total: 23 marks**

**KEY WORDS** fixed costs 固定成本 • break-even 盈亏平衡 • average cost 平均成本 • total cost 总成本 • revenue 收入

## Objective

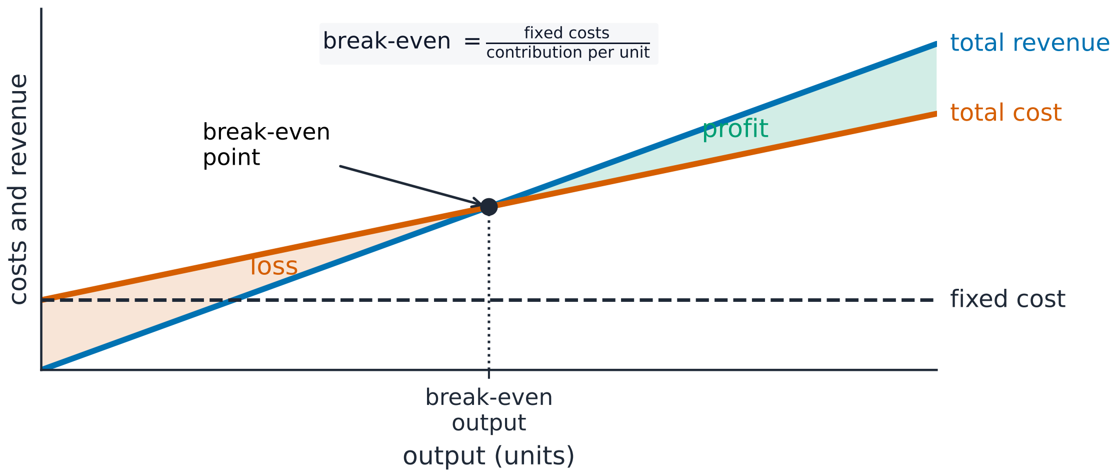
Build the skills to answer exam questions on **costs, scale of production and break-even analysis** 成本、生产规模与盈亏平衡 — **fixed and variable costs** 固定与可变成本, **revenue and profit** 收入与利润, and **break-even** 盈亏平衡.

**You must be able to:**

- calculate total cost, average cost, revenue and profit
- calculate the **break-even output** and the **margin of safety**
- explain the limits of break-even analysis

## 1 Worked examples

### ■ Costs, profit and break-even

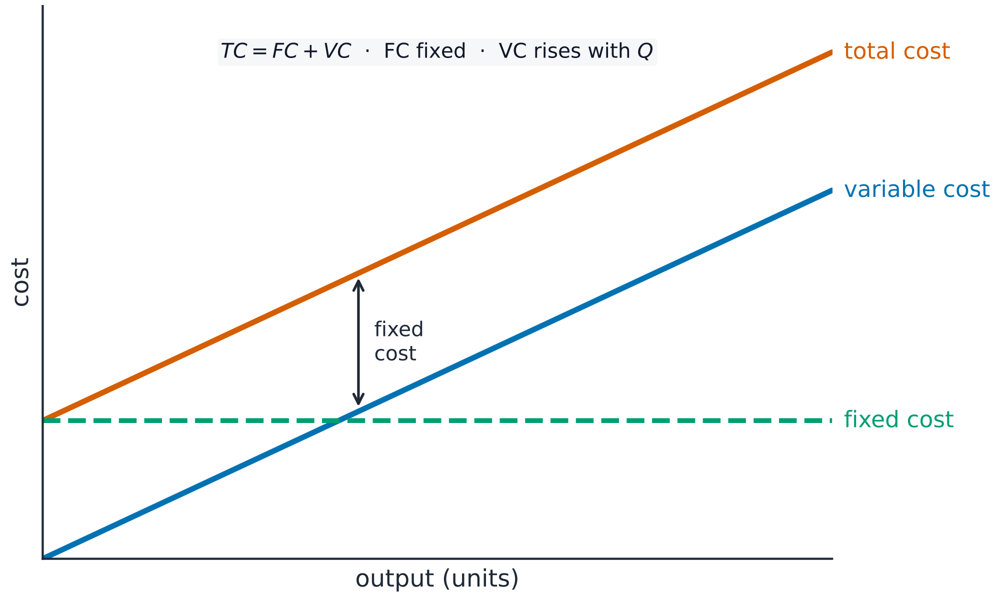



*Left of break-even is loss; right of it is profit*

total cost = fixed + variable   profit = total revenue − total cost

$$\text{break-even output} = \frac{\text{fixed costs}}{\text{price} - \text{variable cost per unit}}$$

- **Worked:** price \$15, variable cost \$5 → contribution \$10. Fixed costs \$8,000 → break-even $= \frac{8000}{10} = 800$ units.
- **Margin of safety** = actual output − break-even output (a big margin is safer).




*The fixed and variable costs behind the break-even calculation*

**Answer shapes:** K + App + An + Ev (a justified judgement, for "do you think" questions).

## 2 Practice

**2.1** Define the term *fixed cost*. [2]

**2.2** A firm has fixed costs of \$4,000 and variable costs of \$3 per unit, and makes 1,000 units. Calculate the total cost. [2]

**2.3** State what the *break-even* point means. [2]

## 3 Exam-style questions

**3.1** A product sells for $20 with a variable cost of $8 per unit. Fixed costs are $6,000.

(a) Calculate the contribution per unit. [1]

(b) Calculate the break-even output. [2]

(c) The firm makes 700 units. Calculate the margin of safety. [2]

**3.2** Explain one benefit and one limitation of break-even analysis. [6]

**3.3** Do you think break-even analysis is useful to a small business? Justify your answer.[6]