

## 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

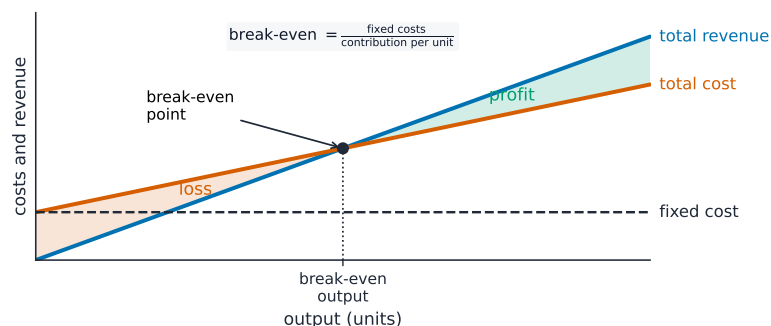
Build the skills to answer exam questions on **costs, scale of production and break-even analysis** 成本、生产规模与盈亏平衡 — **fixed and variable costs** 固定与可变成本, **revenue and profit** 收入与利润, and **break-even** 盈亏平衡.

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

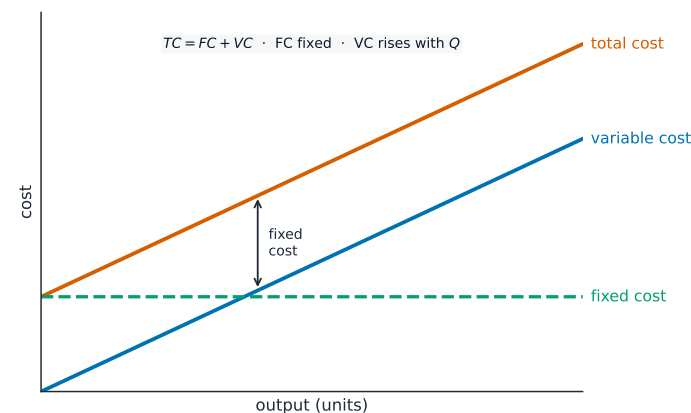


Left of break-even is loss; right of it is profit

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]

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### 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]

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

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

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

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

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