

5.4 Costs

Name: _____ Class: _____ Date: _____

Total: 27 marks

KEY WORDS break-even 盈亏平衡 • fixed costs 固定成本 • contribution 贡献 • margin of safety 安全边际
• break-even point 盈亏平衡点

Objective

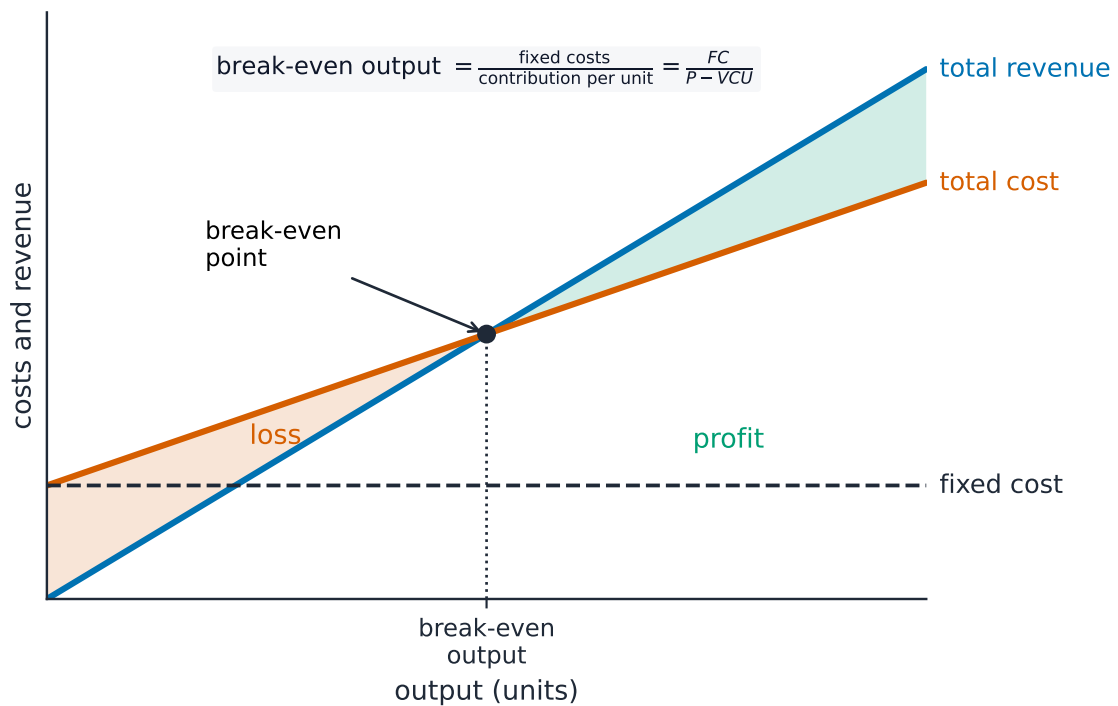
Build the skills to answer exam questions on **costs** 成本 — **fixed, variable, direct and indirect** 固定、可变、直接、间接 costs, **contribution** 贡献, **break-even** 盈亏平衡, and the **margin of safety** 安全边际.

You must be able to:

- classify costs and calculate contribution per unit
- calculate the **break-even output** and the **margin of safety**
- analyse the uses and limitations of break-even analysis

1 Worked examples

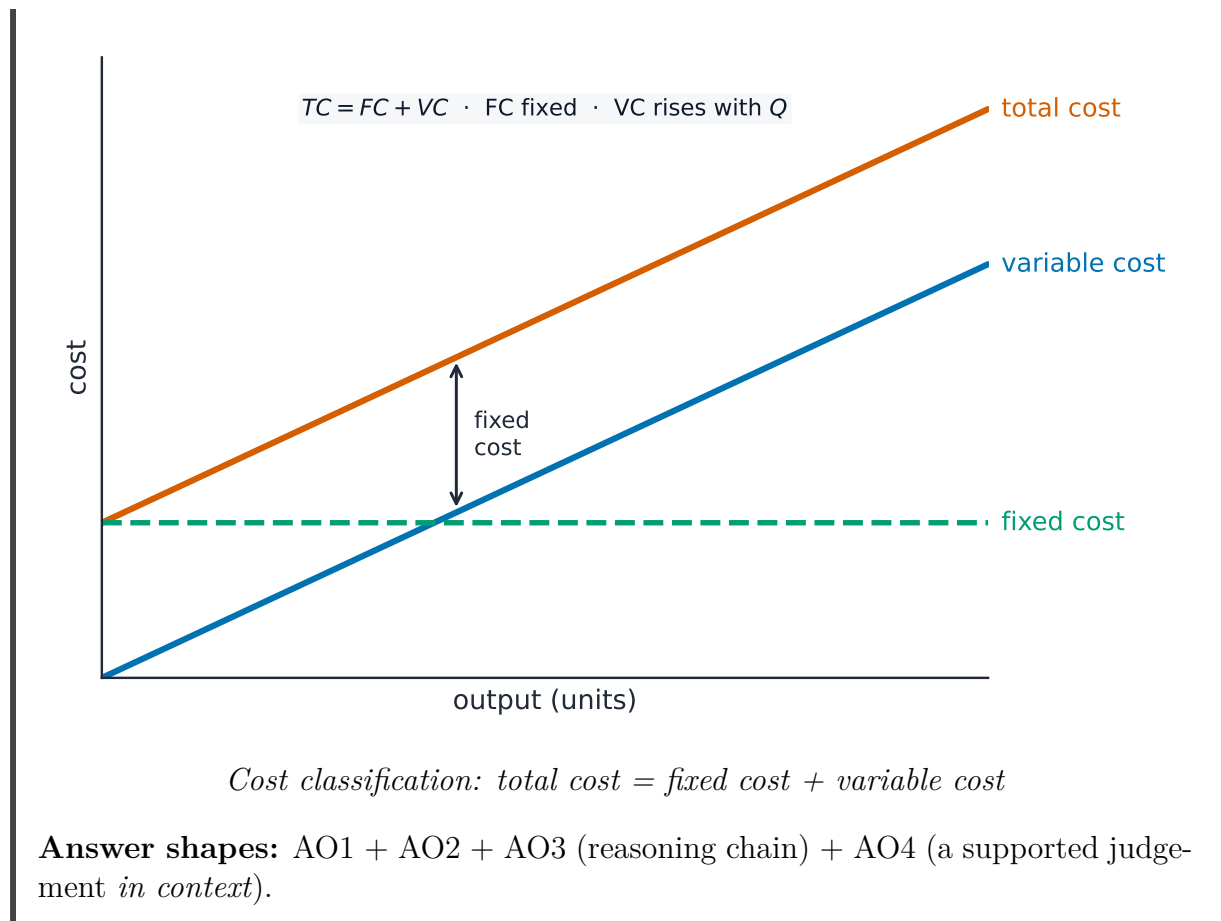
- Contribution and break-even



Break-even is where total revenue equals total cost

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

- **Worked:** sell at \$20, variable cost \$12 → contribution = \$8. Fixed costs \$40,000 → break-even = $\frac{40000}{8} = 5,000$ units.
- **Margin of safety** = actual output – break-even output. At 6,000 units → 6000 – 5000 = 1,000 units.
- **Fixed** costs don't change with output (rent); **variable** costs do (materials).



2 Practice

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

2.2 A product sells for \$18 and has a variable cost of \$11. Calculate the contribution per unit. [2]

2.3 State the difference between a *direct* and an *indirect* cost. [2]

3 Exam-style questions

3.1 Explain one limitation of break-even analysis. [3]

3.2 A firm sells a product for \$25. The variable cost is \$15 per unit and fixed costs are \$50,000.

(a) Calculate the contribution per unit. [2]

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

(c) The firm produces 7,000 units. Calculate the margin of safety. [2]

3.3 Evaluate the usefulness of break-even analysis to a small business. [12]

Solutions

Business answers are marked by **level of response** against the assessment objectives: award **AO1** knowledge, **AO2** application, **AO3** analysis and **AO4** evaluation.

2.1 a cost that does not change with the level of output, such as rent (2 for a clear definition; 1 for a partial idea).

2.2 $\$18 - \$11 = \$7$ per unit (2; award 1 for a correct method with the wrong figure).

2.3 a direct cost can be clearly linked to one product (its materials); an indirect cost (overhead) cannot, e.g. a manager's salary (2 for a clear difference; 1 for a partial idea).

3.1 [3] **AO1** 1 — state a limitation (assumes price and costs stay constant; assumes all output is sold; costs are not always neatly fixed/variable). **AO2** up to 2 — develop it, e.g. it assumes every unit made is sold → but unsold stock means real profit is lower than the chart shows → decisions can be misled (2 developed / 1 limited).

3.2 (a) $\$25 - \$15 = \$10$ contribution per unit (2). (b) break-even = $\frac{50000}{10} = 5,000$ units (2; allow follow-through from (a)). (c) margin of safety = $7000 - 5000 = 2,000$ units (2; allow follow-through from (b)).

3.3 [12] **AO1** 2 / **AO2** 2 / **AO3** 2 / **AO4** up to 6. **Useful:** quick and simple, shows the break-even point and margin of safety, helps set output and price targets, supports a loan application. **Limited:** assumes constant price and costs and that all output is sold; real markets change; it ignores quality and competition. Judgement: a useful planning tool for a small firm, especially at start-up, but its assumptions are unrealistic, so it should guide decisions, not make them alone — its value depends on how stable the firm's prices and costs are.