6.1 Cost behaviour

Name: _____ Class: _____ Date: _____ **Total: 16 marks**

KEY WORDS variable cost • fixed cost • relevant range

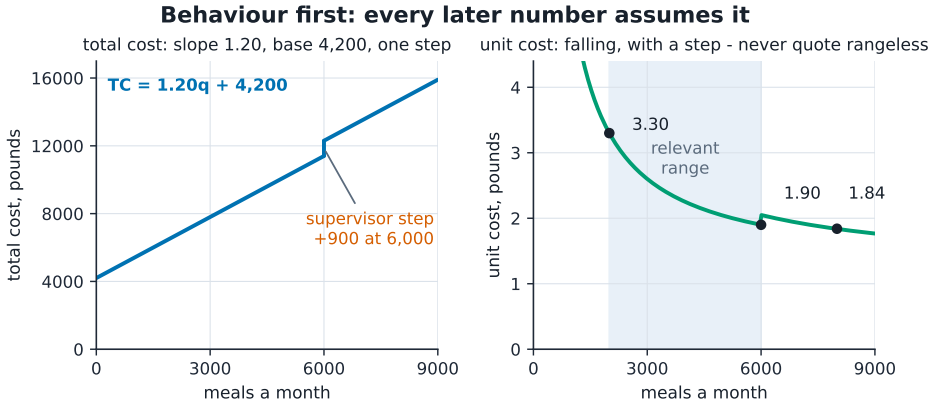
Objective

Classify costs by behaviour and traceability; estimate cost functions with high-low honestly; respect the relevant range and its steps.

1 Key knowledge and worked examples

■ Behaviour, range, steps

$TC = vq + F$ within the **relevant range** ; unit cost $= v + F/q$; marginal cost is v. Step costs break the function at thresholds – date every behaviour claim.



Never quote a unit cost without its range

■ Worked example. Nimbus Kitchen

v = 1.20, F = 4,200 (to 6,000 meals) then 5,100: at 2,000 £6,600 ✓; at 6,400 £12,780 ✓. High-low on (2,400, 7,080)–(5,200, 10,440) recovers 1.20 and 4,200 ✓; across the step it launders 0.15 into v.

2 Practice

A bakery workshop: rent £3,600 a month; flour £0.50 a loaf; a head baker £2,200 a month up to 10,000 loaves, then a second baker adds £2,000.

2.1 Write total cost at 8,000 loaves and at 12,000 loaves. [3]

2.2 Compute unit cost at 8,000 and 12,000, and the marginal cost of one more loaf at 12,000. [3]

2.3 High-low on (4,000, £6,800) and (9,000, £9,300): recover v and F, and state the assumption you checked. [3]

2.4 The manager high-lows across the step using 12,000 loaves. What does the estimate wrongly say, and by how much per loaf? [3]

2.5 For each – rent; flour; the second baker; the oven's electricity meter (a standing charge plus per-use) – name the behaviour. [4]

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Solutions

2.1

- $0.50 \times 8{,}000 + 3{,}600 + 2{,}200 = £9{,}800$.
- $0.50 \times 12{,}000 + 3{,}600 + 2{,}200 + 2{,}000 = £13{,}800$.

2.2

- At 8,000: $9{,}800/8{,}000 = £1.225$.
- At 12,000: $13{,}800/12{,}000 = £1.15$.
- Marginal: £0.50 – the variable rate, never the unit cost.

2.3

- $v = (9{,}300 - 6{,}800)/(9{,}000 - 4{,}000) = £0.50$.
- $F = 6{,}800 - 0.50 \times 4{,}000 = £4{,}800$.
- Assumption: both points in ONE relevant range (no step between 4,000 and 9,000 ✓) and roughly linear between.

2.4

- Slope $= (13{,}800 - 6{,}800)/(12{,}000 - 4{,}000) = £0.875$/loaf.
- It launders the £2,000 step into £0.375 of "variable cost" per loaf.
- Overstates marginal cost by £0.375 and misprices every decision that uses v.

2.5

- Rent: fixed (in range).
- Flour: variable.
- Second baker: step at 10,000.
- Electricity: mixed (standing = fixed, per-use = variable).

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