

## Chapter 32: Exam practice question

### Windcheater car roofracks

1 Define the following terms:

a batch production (2)

This is production of a limited number of identical products. Each item in the batch passes through one stage of production before passing on to the next stage. Every item in the batch must go through an individual production stage, before the batch as a whole moves on to the next stage.

b fixed cost. (2)

This is a cost that remains fixed no matter what the level of production, e.g. rent.

Apply **Resources table 3a** mark band descriptors.

2 Draw a break-even chart for options 1 and 2 and show the break-even points for each option. (8)

Calculations of break-even are not required but are included here for teaching purposes.

|                         |   |  |
|-------------------------|---|--|
| Break-even quantity     | = | fixed costs ÷ variable cost per unit               |
| Break-even for option 1 | = | $(\$54,000 + \$27,000) \div (\$40 - \$22)$         |
|                         | = | $\$81,000 \div \$18$                               |
|                         | = | 4500 roofracks                                     |
| Breakeven for option 2  | = | $(\$54,000 + \$60,000) \div (\$40 - (\$22 - \$2))$ |
|                         | = | $\$114,000 \div \$20$                              |
|                         | = | 5700 roofracks                                     |

Calculations of maximum profit are not required but are included here for teaching purposes.

$$\text{Maximum profit} = (\text{sales price} \times \text{max. number}) - (\text{variable cost} \times \text{max. number}) - \text{fixed cost}$$

|                         |   |  |
|-------------------------|---|--|
| Maximum profit option 1 | = | $(\$40 \times 10,000) - (22 \times 10,000) - \$81,000$ |
|                         | = | \$99,000   |

|                         |   |  |
|-------------------------|---|--|
| Maximum profit option 2 | = | $(\$40 \times 7500) - (\$20 \times 7500) - \$60,000$ |
|                         | = | \$90,000   |

Graphs should gain 1 mark for each of the factors below:

- clear title
- $x$  axis (number of roof racks) labelled with clear and correctly plotted scales up to maximum production
- $y$  axis (\$) labelled with clearly plotted scales
- fixed cost line correctly plotted and clearly labelled
- total costs line correctly plotted and clearly labelled
- sales revenue line correctly plotted and clearly labelled
- break-even point correct and clearly labelled
- areas of PROFIT and LOSS clearly labelled.

- 3 **(HL)** On the basis of your breakeven charts, explain which option Windcheater should choose. (4)

Option 1 should be chosen because:

- the break-even number of racks is lower and is below the current sales figure of 5000 – as there is no guarantee that Windcheater can sell more than 5000 roof racks, option 1 is less risky
- the maximum profit that could be made if all capacity is used is higher for option 1.

**1 mark** for correctly identifying option 1.

**1 mark** for recognising that option 1 produces potentially more profit.

**2 marks** for stating and explaining the break-even number argument.

- 4 **(HL)** Evaluate the usefulness of break-even analysis to businesses like Windcheater. (9)

Arguments for break-even analysis:

- easy to construct and interpret
- provides useful information to management on break-even points, safety margins, profit/loss levels at different outputs
- a precise break-even calculation can be done
- can be used to provide information for important decisions, e.g. sales price, location, purchasing different machinery

Arguments against break-even analysis:

- assumption that cost and revenue are always represented by straight lines is unrealistic
- not all costs can be conveniently classified into fixed and variable costs
- presumes that all items produced are sold and not put into stock
- unlikely that fixed costs will remain unchanged up to maximum output

**HL:** apply **Resources table 2** mark band descriptors.

A justified conclusion is required.