

## Chapter 32: Worksheet mark scheme (14 marks, HL 14 + 15)

- 1** Showing all workings, calculate the break-even point (rounded up to whole numbers) for the product costings below: **(12)**

Product	Variable cost/item \$	Fixed cost \$	Selling price \$	Break-even number
A	5	800,000	10	16,000
B	27	2,100,000	54	77,778
C	20	3,888	74	72
D	63	440,900	90	1663
E	1.25	923	3.99	337

Calculations should be based on the following formula:

Break-even point = fixed cost ÷ selling price – variable cost

Award 2 marks for use of the correct formula, then 1 mark per product for putting the correct numbers in the formula and 1 mark per product for calculation of the correct answer, up to a maximum of 12 marks.

- 2** Define ‘margin of safety for a break-even analysis’. **(2)**

This is the difference between the number of items a business needs to sell in order to break even and the number of items the business expects to sell. It is therefore the number of items the business could sell below their expected sales and not make a loss.

Award 2 marks for an exact definition or 1 mark for a general definition.

- 3** **(HL)** List **three** limitations of break-even analysis. **(3)**

- Costs and revenues are not always represented by straight lines.
- Not all costs can be easily classified into fixed or variable, e.g. semi-variable.
- It is assumed that all units produced are sold and none goes into stock.
- It is unlikely that fixed costs will remain unchanged up to maximum capacity.

- 4** Using the information from question 1, identify the correct formula and then calculate the required output level for the target profit figures in the table below. **(12)**

Product	Target profit \$	Calculation of output level formula used	Output level
A	1,000,000	$\frac{800,000 + 1,000,000}{10 - 5}$	360,000
B	5,000,000	$\frac{2,100,000 + 5,000,000}{54 - 27}$	262,963
C	200,000	$\frac{3,888 + 200,000}{74 - 20}$	3778
D	800,000	$\frac{800,000 + 440,900}{90 - 63}$	45,960
E	20,000	$\frac{923 + 20,000}{3.99 - 1.25}$	7,637

Award 2 marks for correct identification of formula:

Target profit level of output = fixed costs + target profit ÷ sales price – variable cost

Award a further 1 mark per calculation for putting the correct figures into the formula and 1 mark for each correct answer calculated, up to a maximum of 12 marks.