



BUS.FI9 Break-Even: The Effect of Changes in Price, Costs and Output

AQA 8132 · Calculators not allowed · about 40 minutes

Total Marks

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Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show your working for every calculation. Short answers may be a sentence or two; extended answers should be written in full sentences.

- 1** Which one of the following best describes contribution per unit, as used in break-even analysis for a UK small business?

- ☐ A) Fixed costs divided by selling price
- ☐ B) Selling price per unit minus variable cost per unit
- ☐ C) Total revenue minus fixed costs
- ☐ D) Variable cost per unit minus fixed cost per unit

(Total for Question 1 is 1 mark)

- 2** Which one of the following formulas gives the break-even output for a business?

- ☐ A) Fixed costs divided by contribution per unit
- ☐ B) Contribution per unit divided by fixed costs
- ☐ C) Fixed costs minus contribution per unit
- ☐ D) Variable cost per unit divided by selling price per unit

(Total for Question 2 is 1 mark)

- 3** State one piece of information a business must know to calculate a new break-even point after the selling price changes, naming the business context in your answer.

(Total for Question 3 is 1 mark)

- 4** Oakford Bakeries sells one loaf for 4 pounds. Variable cost per loaf is 2 pounds. Fixed costs are 1,200 pounds per month. The manager raises the selling price to 6 pounds per loaf. Calculate the new break-even output for Oakford Bakeries after the price rise. Show your working.

(Total for Question 4 is 2 marks)

- 5** Luna Lamps makes a bedside lamp. Selling price is 20 pounds, variable cost 12 pounds, fixed costs 4,000 pounds. Monthly sales are 500 lamps. Calculate Luna Lamps' margin of safety in lamps. Show your working.

(Total for Question 5 is 2 marks)

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- 6** Bright Brew Coffee, a local cafe, has selling price 5 pounds per cup, variable cost 2 pounds per cup and fixed costs 3,000 pounds per month. The owner plans to reduce the variable cost to 1 pound per cup by sourcing cheaper packaging.
- (a) Calculate the new break-even output after the variable cost falls.
- (b) Explain one likely effect on Bright Brew Coffee of this change in variable cost.
- (a)** Calculate the new break-even output after the variable cost falls to 1 pound per cup, using the fixed costs and selling price given for Bright Brew Coffee. (2)

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- (b)** Explain one likely effect on Bright Brew Coffee of reducing its variable cost per cup from 2 pounds to 1 pound. (2)

(Total for Question 6 is 4 marks)

- 7 Maple Tech makes a phone accessory sold at 15 pounds, with variable cost 9 pounds and fixed costs 6,000 pounds. The firm decides to invest in advertising, raising fixed costs to 7,200 pounds while price and variable cost remain unchanged.
- (a) Calculate the new break-even output after the fixed costs increase.
- (b) Explain one likely effect on Maple Tech of this change in fixed costs.
- (a) Calculate the new break-even output with fixed costs 7,200 pounds, selling price 15 pounds and variable cost 9 pounds. (2)

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- (b) Explain one likely effect on Maple Tech of the increase in fixed costs from 6,000 to 7,200 pounds. (2)

(Total for Question 7 is 4 marks)

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- 8 Willow Widgets currently sells 800 widgets a month. Selling price is 10 pounds and variable cost is 6 pounds, fixed costs are 2,400 pounds. The owner is considering reducing the selling price to 8 pounds to try to increase sales.
- Analyse the likely effect of this price reduction on Willow Widgets, using the figures given above. Your answer should consider break-even output, margin of safety and risk to profit. You should give a balanced analysis applied to this business.

(Total for Question 8 is 6 marks)

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- 9 Which one of the following is the most likely immediate effect on break-even output if a business's contribution per unit increases?
- ☐ A) Break-even output increases
- ☐ B) Break-even output decreases
- ☐ C) Break-even output stays the same
- ☐ D) Break-even output becomes zero

(Total for Question 9 is 1 mark)

Mark scheme · BUS.FI9 Break-Even: The Effect of Changes in Price, Costs and Output

Question 1

- **B1** B cao
- **Answer: B**

Question 2

- **B1** A cao
- **Answer: A**

Question 3

- **B1** the variable cost per unit (e.g. for the bakery, the cost of flour and labour per loaf)
- **Answer: For example, the variable cost per unit (e.g. the cost of ingredients and direct labour per product).**

Question 4

- **M1** formula and substitution seen: break-even = fixed costs / (selling price - variable cost) with numbers $1,200 / (6 - 2)$
- **A1** 300 units cao
- **Answer: 300 loaves.**

Question 5

- **M1** calculate break-even: fixed costs / contribution = $4,000 / (20 - 12) = 4,000 / 8$
- **A1** margin of safety = $500 - 500 = 0$ lamps cao
- **Answer: 0 lamps.**

Question 6

- (a) **M1** formula and substitution seen: break-even = fixed costs / (selling price - variable cost) with numbers $3,000 / (5 - 1)$
- (a) **A1** 750 cups cao
- (a) **Answer: 750 cups.**
- (b) **B1** identifies an effect, e.g. break-even falls because contribution per cup rises
- (b) **B1** develops the effect, e.g. the cafe needs to sell fewer cups to cover fixed costs or profit could rise at the same sales level
- (b) **Answer: The contribution per cup rises from 3 to 4 pounds so break-even output falls, meaning the cafe needs to sell fewer cups to cover fixed costs and will make more profit at the same sales level.**

Question 7

- (a) **M1** formula and substitution seen: break-even = fixed costs / (selling price - variable cost) with numbers $7,200 / (15 - 9)$
- (a) **A1** 1,200 units cao
- (a) **Answer: 1,200 units.**
- (b) **B1** identifies an effect, e.g. break-even output rises
- (b) **B1** develops the point, e.g. the firm must sell more units before making a profit, increasing short-term risk if demand does not rise
- (b) **Answer: The break-even output increases from 1,000 to 1,200 units, so Maple Tech must sell more units before making a profit, which raises short-term risk if demand does not increase to match the higher fixed costs.**

Question 8

- **Level 1** (1-3): Identifies one or two relevant effects of the price reduction with limited development or limited use of the pack figures, showing basic understanding.
- **Level 2** (4-6): Gives a developed analysis that uses the pack figures to show how break-even output and margin of safety are affected, and evaluates the risk to profit for Willow Widgets with a clear chain of reasoning.
- **Indicative content:**
 - Original contribution = $10 - 6 = 4$ pounds. Original break-even = $2,400 / 4 = 600$ widgets. Original margin of safety = $800 - 600 = 200$ widgets.
 - New contribution after price cut = $8 - 6 = 2$ pounds. New break-even = $2,400 / 2 = 1,200$ widgets.
 - New margin of safety = $800 - 1,200 = -400$ widgets, which shows the business would be 400 widgets below break-even at the unchanged sales level, indicating a loss unless sales increase substantially.
 - Analyse implications: a price reduction halves contribution so break-even doubles, greatly increasing risk; the owner must be confident sales will at least rise to 1,200 widgets to avoid losses, which may not be realistic and could reduce total revenue if demand response is weak.
 - Balanced points: if the price cut stimulates sales above 1,200 widgets, profit could rise because higher volume times smaller contribution can exceed previous profit, but this requires strong price elasticity and marketing; otherwise the firm faces immediate losses and cash-flow pressure.

Question 9

- **B1** B cao
- **Answer: B**