

GCSE Maths: Number, ratio & proportion

Exam-style practice for AQA, Edexcel, OCR and Eduqas Foundation tier (grades 1–5). Questions are graded: ★ = straightforward, ★★ = one or two steps, ★★★ = multi-step problem-solving. A full answer key is on page 2.

England · Wales

Foundation tier

All boards

A4 · 2 pages

HOW TO USE THIS SHEET

Work through each question without looking at the answers. Show all your working: method marks are awarded even when the final answer is wrong. Check your answers on page 2. A formula sheet is provided in the exam for 2025–2027 sittings.

QUESTIONS: ATTEMPT BEFORE CHECKING ANSWERS

Q1 ★ · HCF and prime factors (3 marks)

(a) Write 84 as a product of its prime factors. (b) Find the HCF of 84 and 120.

Q2 ★★ · Reverse percentage (3 marks)

In a sale all prices are reduced by 20%. The sale price of a coat is £68. Work out the original price.

Q3 ★ · Probability (1 mark)

A fair spinner: 8 sections (3 red, 2 blue, 3 green). $P(\text{blue}) = ?$ A) 2 B) $\frac{1}{4}$ C) $\frac{2}{3}$ D) $\frac{1}{2}$

Circle: A B C D

Q4 ★★★ · Ratio in context (5 marks)

A recipe for 12 muffins needs 250 g flour, 150 g sugar, 2 eggs. Jay wants 30 muffins and has 600 g flour, 400 g sugar, 5 eggs. Does Jay have enough of every ingredient? Show working.

Q5 ★★ · Correlation (4 marks)

A scatter graph: age vs value (£000s) of 10 used cars. (a) Describe the correlation. (b) Estimate the value of a 6-year-old car using a line of best fit; explain why the estimate may be unreliable.

ANSWER KEY & MARK SCHEME · PAGE 2

MARK SCHEME CONVENTIONS

M = method mark (awarded for correct approach even with arithmetic slip). A = accuracy mark (answer correct). B = independent mark. ECF = error carried forward.

Q1 · HCF and prime factors

(a) $84 = 2 \times 2 \times 3 \times 7 = 2^2 \times 3 \times 7$ [M1 correct factor tree or division method, A1 fully correct]

(b) $120 = 2^3 \times 3 \times 5$. Common factors: $2^2 \times 3 = 12$ [B1, follow-through from (a)]

Q2 · Reverse percentage

£68 represents 80% of the original price ($100\% - 20\% = 80\%$).

Original = $68 \div 0.8 = \text{£}85$ [M1 for $68 \div 0.8$ or $68 \div 80 \times 100$; M1 method; A1 answer]

Common error: $68 \times 1.2 = \text{£}81.60$. This wrongly adds 20% to the sale price rather than dividing. Score 0 for the value.

Q3 · Probability

Answer: **B (1/4)**. $P(\text{blue}) = 2 \text{ out of } 8 = 2/8 = 1/4$ [1 mark]

Q4 · Muffins ratio problem

Scale factor: $30 \div 12 = 2.5$ [M1]

Flour needed: $250 \times 2.5 = 625 \text{ g}$ [M1]. Jay only has 600 g, **not enough** (short by 25 g) [A1]

Sugar needed: $150 \times 2.5 = 375 \text{ g}$. Jay has 400 g, enough [M1 further calculation]

Eggs needed: $2 \times 2.5 = 5$. Jay has exactly 5, enough [A1]

Conclusion: **No, Jay does not have enough flour.** [A1 AO3 conclusion]

Q5 · Scatter graph

(a) **Negative correlation**: as age increases, value decreases. [1 mark]

(b) Draw a sensible line of best fit, then read off the value at age 6 (expect approximately £4,000, follow-through from your line). [1 mark line of best fit; 1 mark reading off at age 6]

Reason estimate may be unreliable: e.g. "there are only 10 data points so the line is approximate" or "the data points are scattered so the line of best fit is not precise." [1 mark for a valid statistical reason]