

IGCSE Mathematics 0580 Paper 4 (Extended) Mock Paper (10 questions, 100 marks)

IGCSE (Year 10-11) Chemistry | 時限：150 分鐘 | 總分：100 分 | 共 10 題

All questions (100 marks) — Questions 1 to 10

Answer ALL questions. Write your answers in the spaces provided and show all working; give units where appropriate. Use $\pi = 3.142$ unless told otherwise.

- (a) Write 0.000472 in standard form ($a \times 10^n$, $1 \leq a < 10$). [1] (b) Calculate $(3.6 \times 10^5) \times (2.5 \times 10^{-3})$, giving your answer in standard form. [2] (c) A car costs \$186,000. Its price is increased by 7.5% and then reduced by 4%. Find the final price. [2] (d) Express 45 minutes as a fraction of 2 hours in its simplest form. [1] (e) \$4,500 is invested at a simple interest rate of 3.2% per year for 2.5 years. Find the interest earned. [2]
- (a) Expand $(2x - 3)(x + 5)$. [2] (b) Factorise $6x^2 - 9x$. [2] (c) Solve $5(x - 3) = 2x + 6$. [2] (d) Given $V = (1/3)\pi r^2 h$, make r the subject. [2] (e) Solve $x^2 - 7x + 10 = 0$. [2]
- A biscuit recipe uses 250 g of flour, 100 g of sugar and 150 g of butter to make 24 biscuits. (a) Find the mass of flour, sugar and butter needed to make 60 biscuits. [4] (b) y is directly proportional to x^2 and $y = 48$ when $x = 4$. Find y when $x = 7$. [2] (c) 6 workers take 8 days to finish a job. How long would 4 workers take, working at the same rate? [2] (d) A map has a scale of 1 : 25,000 and a distance of 6.4 cm is measured on it. Find the real distance in km. [2]
- (a) The exterior angle of a regular polygon is 24° . Find the number of sides and the size of each interior angle. [2] (b) The angles of a triangle are $(2x + 10)^\circ$, $(3x - 10)^\circ$ and x° . Find x and the three angles. [2] (c) The angle at the centre AOB and the angle at the circumference ACB stand on the same arc. Given $\angle ACB = 68^\circ$, find $\angle AOB$. [2] (d) In a cyclic quadrilateral ABCD, $\angle A = 115^\circ$. Find $\angle C$. [1] (e) The bearing of B from A is 118° . Find the bearing of A from B. [3]
- (a) In a right-angled triangle the hypotenuse is 13 cm and the opposite side is 5 cm. Find the acute angle θ to 1 decimal place. [2] (b) A ladder 7.5 m long makes an angle of 68° with the ground. Find the height of the top of the ladder, to 3 significant figures. [2] (c) A ship sails 12 km east and then 9 km north. Find its distance from the start and the bearing of the ship from the start. [3] (d) Two sides of a triangle are 8 cm and 11 cm and the included angle is 60° . Find the third side to 3 significant figures. [3]
- The daily reading times, in minutes, of ten students are: 12, 15, 11, 18, 15, 20, 14, 15, 17, 13. (a) Find the mean. [2] (b) Find the median. [1] (c) Find the mode and the range. [2] (d) Another class of 15 students has a mean of 18 minutes. Find the mean of all 25 students. [3] (e) Which average, mean or median, better describes a typical reading time here? Give a reason. [2]

7. A bag contains 5 red, 3 blue and 2 green balls. One ball is taken at random. (a) Find the probability that it is red. [1] (b) Two balls are taken without replacement. Find the probability that both are red. [2] (c) Two balls are taken without replacement. Find the probability that at least one is red. [3] (d) A ball is taken, its colour noted, and it is replaced; then a second ball is taken. Find the probability of blue then green. [2] (e) The ball is drawn 200 times with replacement. How many red balls are expected? [2]
8. (a) Find the n -th term of the sequence 7, 12, 17, 22, ... [2] (b) Find the 10th term of this sequence. [1] (c) Is 103 a term of the sequence? Explain. [2] (d) The sequence 2, 7, 14, 23, 34, ... has a constant second difference. Find its n -th term. [3] (e) Find the sum of the first 20 terms of 7, 12, 17, ... [2]
9. Given that $f(x) = x^2 - 4x + 3$. (a) Write $f(x)$ in the form $(x - h)^2 + k$ and state the minimum point of the graph. [3] (b) Solve $f(x) = 0$. [2] (c) Find $f(-2)$. [1] (d) Solve $f(x) = 8$. [3] (e) State the line of symmetry and the y -intercept of the graph. [2]
10. Take $\pi = 3.142$. (a) A cylinder has radius 7 cm and height 10 cm. Find its volume in cm^3 to 3 significant figures. [2] (b) A cone has radius 7 cm and height 24 cm. Find its slant height, its volume and its curved surface area. [5] (c) A sphere has radius 6 cm. Find its surface area and volume to 3 significant figures. [2] (d) A solid hemisphere has radius 6 cm. Find its total surface area. [2]