

Maths Entry Assessment

Name Date Score

Time: about 45 minutes. Answer every question and show full working, because method marks are awarded. You may not use a calculator unless a question states otherwise. The later questions are deliberately challenging, so attempt every part and show your reasoning. You have about 45 minutes. Show your working where you can. Marks for each question are shown in brackets, like [2]. Total marks: **43**.

- 1 Work out $-5 - (-9)$, then $(-4)^2$, then -36 divided by -9 . [2]

WORKING

Answer

NEGATIVE NUMBERS / POWERS

- 2 Write 0.000 64 in standard form, and write 4.2×10^4 as an ordinary number. [2]

WORKING

Answer

STANDARD FORM

- 3 Simplify fully: $3x^2 y$ times $4xy^3$. Then expand and simplify $(x + 4)(x - 2)$. [3]

WORKING

Answer

ALGEBRA: INDICES / EXPANDING BRACKETS

- 4 Solve the equation $(2x + 1)/3 = 5$. Then make r the subject of the formula $C = 2(\pi)r$. [3]

WORKING

Answer

EQUATIONS / REARRANGING

- 5 A jacket is reduced by 20% in a sale to a price of 52 pounds. Work out the original price before the sale. [3]

WORKING

Answer _____

REVERSE PERCENTAGES

- 6 Work out $\frac{2}{3} + \frac{1}{4} \times \frac{8}{5}$. Give your answer as a fraction in its simplest form. [3]

WORKING

Answer _____

FRACTION OPERATIONS / ORDER

- 7 A recipe uses sugar and flour in the ratio 2 : 5. A baker uses 750 g of flour. How much sugar is needed, and what is the total mass of the mixture? [3]

WORKING

Answer _____

RATIO / PROPORTION

- 8 The interior angles of a regular polygon are each 150 degrees. Work out how many sides the polygon has. [3]

WORKING

Answer _____

ANGLES IN POLYGONS

- 9 A square has an area of 50 cm^2 . Write its side length as a surd in its simplest form, in the form ' $a\sqrt{b}$ ' cm. [3]

WORKING

Answer _____

SURDS (STRETCH)

- 10 A line passes through the points (0, 3) and (2, 11). Work out the gradient of the line and write down the equation of the line in the form $y = mx + c$. [3]

WORKING

Answer _____

STRAIGHT-LINE GRAPHS

- 11 Show that $(n + 3)^2 - (n - 3)^2$ is equal to $12n$ for all values of n . [3]

WORKING

Answer _____

ALGEBRAIC PROOF / 'SHOW THAT' (STRETCH)

- 12 A right-angled triangle has the two shorter sides measuring 6 cm and 8 cm. Work out the length of the hypotenuse, and explain how you know it is the longest side. [3]

WORKING

Answer _____

PYTHAGORAS (STRETCH)

- 13 In a class of 30 pupils, the probability of picking a pupil who wears glasses is $\frac{2}{5}$. Of those who wear glasses, half also walk to school. Work out how many pupils wear glasses and walk to school. [3]

WORKING

Answer _____

PROBABILITY / FRACTIONS OF AMOUNTS

- 14 Solve the simultaneous equations: $x + y = 12$ and $2x - y = 6$. Show your method. [3]

WORKING

Answer _____

SIMULTANEOUS EQUATIONS (STRETCH)

- 15 Simplify the algebraic fraction $(x^2 + 5x + 6)/(x + 2)$ fully, and state any value of x that must be excluded. [3]

WORKING

Answer _____

ALGEBRAIC FRACTIONS (STRETCH)

End of assessment. Hand your paper back when you are finished. Well done!