

Maths Entry Assessment

Name Date Score

Time: about 60 minutes. Hampstead Tuition Centre - Year 9 Maths Entry Assessment. You have 60 minutes. Answer every question in the space provided. Show all your working - you can earn method marks even if your final answer is wrong. Calculators are NOT allowed. Write 'root 50' style surds and use ^ for powers if needed. Read each question carefully; the later questions are deliberately harder. Show your working where you can. Marks for each question are shown in brackets, like [2]. Total marks: **44**.

- 1 Work out $\frac{3}{4} + \frac{2}{5}$, giving your answer as a single fraction in its simplest form. [2]

WORKING

Answer

FRACTIONS

- 2 A jacket costs £80. In a sale its price is reduced by 15%. Work out the sale price. [2]

WORKING

Answer

PERCENTAGES

- 3 Expand and simplify $3(2x - 4) - 2(x - 5)$. [2]

WORKING

Answer

ALGEBRA - EXPANDING

- 4 Solve $5(x - 2) = 3x + 4$. [3]

WORKING

Answer

LINEAR EQUATIONS

- 5 The ratio of boys to girls in a club is 3 : 5. There are 24 boys. How many children are in the club altogether? [3]

WORKING

Answer _____

RATIO

- 6 Write 84 and 120 each as a product of prime factors, then find the highest common factor (HCF) of 84 and 120. [3]

WORKING

Answer _____

PRIME FACTORS / HCF

- 7 Solve the inequality $4x - 3 > 2x + 9$ and represent the solution on a number line (describe in words what you would draw). [3]

WORKING

Answer _____

INEQUALITIES

- 8 A straight line passes through the points (1, 4) and (3, 10). Find the equation of the line in the form $y = mx + c$. [4]

WORKING

Answer _____

STRAIGHT-LINE GRAPHS

- 9 The interior angles of a regular polygon are each 150 degrees. Work out the number of sides. Show your reasoning. [3]

WORKING

Answer _____

ANGLES IN POLYGONS

- 10 A car travels 150 km in 1 hour 52 minutes 30 seconds. Calculate its average speed in km/h. [3]

WORKING

Answer _____

SPEED / COMPOUND MEASURES

- 11 A bag contains red, blue and green counters. The probability of red is 0.35 and the probability of blue is 0.25. There are 8 green counters. Work out the total number of counters in the bag. [3]

WORKING

Answer _____

PROBABILITY

- 12 Show that $(n + 4)^2 - (n + 1)^2$ is always a multiple of 3 for any whole number n . [3]

WORKING

Answer _____

ALGEBRAIC PROOF

- 13 A rectangle has length $(2x + 3)$ cm and width $(x - 1)$ cm. Its perimeter is 40 cm. Form an equation, solve it, and hence find the area of the rectangle. [4]

WORKING

Answer _____

ALGEBRA IN CONTEXT

- 14 It takes 6 identical pumps 4 hours to empty a tank. How long, in hours and minutes, would it take 5 of the same pumps to empty an identical tank? [3]

WORKING

Answer _____

INVERSE PROPORTION (REASONING)

- 15 A is the number you get by increasing a quantity by 20%. B is the number you get by then decreasing A by 20%. Explain, with a clear calculation, why B is not equal to the original quantity, and state by what percentage B differs from the original. [3]

WORKING

Answer _____

PERCENTAGE REASONING (STRETCH)

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