Hampstead Tuition Centre
Small-group Maths, English & Science in Hampstead

Maths Entry Assessment

Question paper

Year 7
placement screener

Name ..... Date ..... Score .....

Time: about 45 minutes. Answer every question and show full working, as method marks are available. You may not use a calculator unless a question says otherwise. Some questions need several steps, so plan before you write. 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 -8 + 5, then -8 minus (-3), then -6 × 4. [2]

WORKING

Answer _____

NEGATIVE NUMBERS

2 Write 0.72 as a fraction in its simplest form, and write 3/8 as a decimal. [2]

WORKING

Answer _____

FRACTIONS, DECIMALS

3 Find the value of 2^5, and write 540 as a product of its prime factors using index form. [3]

WORKING

Answer _____

POWERS / PRIME FACTORS

4 Simplify 5a + 3b - 2a + 7b. Then expand 4(2x - 5). [2]

WORKING

Answer _____

ALGEBRA: SIMPLIFY / EXPAND

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5 Solve the equation 3x + 7 = 25. Then solve 5(x - 2) = 35. [3]

WORKING

Answer _____

SOLVING EQUATIONS

6 Increase 240 by 35%, then decrease the result by 20%. Show each stage. [3]

WORKING

Answer _____

PERCENTAGE CHANGE

7 A map has a scale of 1 : 50 000. Two towns are 6 cm apart on the map. Work out the real distance between the towns in kilometres. [3]

WORKING

Answer _____

SCALE / UNITS

8 The nth term of a sequence is 4n - 3. Write down the first three terms, and work out which term in the sequence equals 97. [3]

WORKING

Answer _____

SEQUENCES / NTH TERM

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9 On a straight line, angles of x, 2x and 3x + 30 meet at a point on the line. Work out the value of x. [3]

WORKING

Answer _____

ANGLES / FORMING EQUATIONS

10 A bag has red, blue and green counters in the ratio 4 : 3 : 2. There are 27 counters in total. How many of each colour are there? [3]

WORKING

Answer _____

RATIO SHARING

11 Show that the area of a triangle with base 9 cm and height 6 cm is equal to the area of a rectangle measuring 3 cm by 9 cm. [2]

WORKING

Answer _____

AREA / 'SHOW THAT'

12 A car travels 150 km in 2 hours 30 minutes. Work out its average speed in km/h. [2]

WORKING

Answer _____

SPEED / RATES

13 A pupil claims: 'The square of a number is always larger than the number itself.' Is this claim true? Explain your answer using at least one counter-example. [2]

WORKING

Answer _____

REASONING / COUNTER-EXAMPLE

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14 An isosceles triangle has an angle of 50 degrees. Explain why there are two possible values for the largest angle in the triangle, and state both values. [3]

WORKING

Answer _____

ANGLES / REASONING (STRETCH)

15 Solve the equation 7x - 4 = 2x + 21. [3]

WORKING

Answer _____

EQUATIONS: UNKNOWN BOTH SIDES (STRETCH)

16 A rectangle has length (x + 5) cm and width × cm. Its perimeter is 38 cm. Form an equation, solve it, and hence find the area of the rectangle. [4]

WORKING

Answer _____

ALGEBRA IN GEOMETRY (STRETCH)

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

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