

Mathematics Assessment

**Band 4 – Test 1**

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**Calculators allowed on questions with this symbol:**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Teacher: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Remember:

* The test is 1 hour long.
* You **must not** use a calculator for any question in this test without a calculator symbol.
* You will need: compasses, pen, pencil, protractor, rubber and a ruler.
* Some formulae you might need are on the next page.
* Try to answer all questions.
* Write all your answers and working in the spaces provided in this test paper – do not use any rough paper. Marks may be awarded for working.
* Check your work carefully.
* Don’t spend too long on one question. Leave it and try the next one.

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| --- | --- |
| Formulae Sheet | |
| Perimeter, area, surface area and volume formulae | |
| Sphere | Cone |
|  |  |
| Volume = πr3  Surface Area = 4πr2 | Volume = πr2h  Curved Surface Area = πrl |

|  |  |  |
| --- | --- | --- |
| **A – Ratio and Proportion** | | |
| 1. | The average number of school dinners taken by children fell from 180 to 165. What is the percentage decrease in the number taking school dinners?  \_\_\_\_\_\_\_% | / 3 |
| 2. | Margaret goes on holiday to Switzerland. The exchange rate is £1 = 2.10 francs.She changes £450 into francs. How many francs should she get?    \_\_\_\_\_\_\_\_\_\_ francs | / 2 |
| **B – Number** | | |
| 3. | The length of a piece of string is 16 cm, correct to the nearest cm. What is the greatest possible length the piece of string could be? Circle the correct answer.  15.95 15.5 16.05 16.4 16.5 | / 1 |
| 4. | Work out an estimate for the value of  \_\_\_\_\_\_\_\_\_\_ | / 3 |
| 5. | Evaluate (a3)4  \_\_\_\_\_\_\_ | / 1 |
| 6. | Write 40 000 000 in standard form.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Write 3 x 10–5 as an ordinary number.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 2 |
| **C - Algebra** | | |
| 7. | Factorise fully 5xy + 10x²  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Expand and simplify (x + 4)(x – 3)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 4 |
| 8. | Solve 7*r* + 2 = 5(*r* – 4)  r = \_\_\_\_\_\_\_ | / 3 |
| 9. | Make *t* the subject of the formula *v = u +* 5*t*  t = \_\_\_\_\_\_ | / 2 |
| 10. | Solve the inequality 6*x* – 3 < 9  \_\_\_\_\_\_\_\_\_\_\_ | / 2 |
| **D – Shape, Space and Measure** | | |
| 11. | Work out the value of *x.*  Diagram **NOT** accurately drawn  x = \_\_\_\_\_\_\_\_º | / 3 |
| 12. | Here is a sketch of a triangle.  In the space below, use ruler and compasses to **construct** this triangle accurately. You must show all construction lines. | / 2 |
| 13. | Enlarge shape A by scale factor 3 from centre (4, 3). Label it B.  Reflect shape A in the x axis. Label it C. | / 5 |
| 14. | *ABCD* is a rectangle. *AC* = 17 cm. *AD* = 10 cm. Calculate the length of the side *CD*. Give your answer correct to one decimal place.  Diagram **NOT** accurately drawn  \_\_\_\_\_\_\_\_\_\_ cm | / 3 |
| 15. | Anil cycled from his home to the park. Anil waited in the park. Then he cycled back home. Here is a distance-time graph for Anil’s complete journey.    At what time did Anil leave home? \_\_\_\_\_\_\_\_\_\_  What is the distance from Anil’s home to the park? \_\_\_\_\_\_\_\_km  How many minutes did Anil wait in the park? \_\_\_\_\_\_\_mins | / 3 |
| 16. | Here is a triangular prism. Calculate the volume of the prism.  Diagram **NOT** accurately drawn  \_\_\_\_\_\_\_\_\_\_ cm³ | / 3 |
| **E – Data Handling** | | |
| 17. | Explain what is meant by a random sample.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Explain what is meant by a stratified sample.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 2 |
| 18. | The scatter graph shows the Science mark and the Maths mark for 15 students.    What type of correlation does this scatter graph show?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Draw a line of best fit on the scatter graph.  Sophie’s Science mark was 42. Use your line of best fit to estimate Sophie’s Maths mark.  \_\_\_\_\_\_\_\_\_\_\_\_\_ | / 3 |
| 19. | Phillip is going to carry out a survey of the football teams supported by each of his friends. In the space below, draw a suitable data collection sheet that Phillip could use. | / 3 |
| **F - Probability** | | |
| 20. | Amy has 10 CDs in a CD holder. Amy’s favourite group is Edex. She has 6 Edex CDs in the CD holder. Amy takes one of these CDs at random. She writes down whether or not it is an Edex CD. She puts the CD back in the holder. Amy again takes one of these CDs at random. Complete the probability tree diagram. | / 2 |