

Mathematics Assessment

**Band 4 – Test 2**

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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.

|  |  |
| --- | --- |
| 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. | Last year there were 500 children in a school. This year there are 565. What is the percentage increase in the number of pupils?  \_\_\_\_\_\_\_% | / 3 |
| 2. | Fred went on holiday to France.He changed £475 to Euros. £1 = 1.57 Euros. Change £475 to Euros.    \_\_\_\_\_\_\_\_\_\_ Euros | / 2 |
| **B – Number** | | |
| 3. | Jomo takes 35 seconds, to the nearest second, to run a race. What is the least possible time this could be? Circle the correct answer.  35.5 secs 34.4 secs 34.5 secs 34 secs 34.9 secs | / 1 |
| 4. | Work out an estimate for  \_\_\_\_\_\_\_\_\_\_ | / 3 |
| 5. | Evaluate (f6)3  \_\_\_\_\_\_\_ | / 1 |
| 6. | Write the number 40 000 000 in standard form.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Write 1.4 × 10–5 as an ordinary number.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 2 |
| **C - Algebra** | | |
| 7. | Factorise fully 6mn – 9m²  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Expand and simplify (g + 7)(g – 3)  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 4 |
| 8. | Solve 5p + 7 = 3(4 – p)  p = \_\_\_\_\_\_\_ | / 3 |
| 9. | Make *n* the subject of the formula *m = 5n – 21*  n = \_\_\_\_\_\_\_\_\_\_\_\_ | / 2 |
| 10. | Solve the inequality 5*x* + 12 > 2  \_\_\_\_\_\_\_\_\_\_\_ | / 2 |
| **D – Shape, Space and Measure** | | |
| 11. | The diagram shows part of a **regular** 10-sided polygon. Work out the size of the angle marked *x*.  Diagram **NOT** accurately drawn  x = \_\_\_\_\_\_\_\_º | / 3 |
| 12. | Use ruler and compasses to construct the perpendicular bisector of the line *AB*. You must show all your construction lines. | / 2 |
| 13. | Enlarge shape A by scale factor 2 from centre (0, 0). Label it B.  Reflect shape A in x = 4. Label it C. | / 5 |
| 14. | *XYZ* is a right-angled triangle. *XY* = 3.2 cm. *XZ* = 1.7 cm.  Diagram **NOT** accurately drawn  Calculate the length of *YZ*. Give your answer correct to 3 significant figures.  \_\_\_\_\_\_\_\_\_\_ cm | / 3 |
| 15. | Margaret went on a cycle ride. The travel graph shows Margaret’s distance from home on this cycle ride.    How far had Margaret cycled after 30 minutes? \_\_\_\_\_\_\_\_km  After 60 minutes, Margaret stopped for a rest. For how many minutes did she rest? \_\_\_\_\_\_\_mins  How far did Margaret cycle in total on her ride? \_\_\_\_\_\_\_\_km | / 3 |
| 16. | Diagram **NOT** accurately drawn  The diagram shows a cylinder with a height of 10 cm and a radius of 4 cm. Calculate the volume of the cylinder. Give your answer correct to 3 significant figures.  \_\_\_\_\_\_\_\_\_\_ cm³ | / 3 |
| **E – Data Handling** | | |
| 17. | Hamid wants to find out what people in Melworth think about the sports facilities in the town. Hamid plans to stand outside the Melworth sports centre one Monday morning. He plans to ask people going into the sports centre to complete a questionnaire. Carol tells Hamid that his survey will be biased. Give **one** reason why the survey will be biased.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Describe **one** change Hamid could make to the way in which he is going to carry out his survey so that it will be less biased.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 2 |
| 18. | The scatter graph shows information about 12 countries. For each country, it shows the percentage of the population in farming jobs and the percentage of the population living in towns.    Describe the relationship between the percentage of the population in farming jobs and the percentage of the population living in towns.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Draw the line of best fit on the scatter graph.  In Mathsland, the percentage of the population in farming jobs is 35%. Use your line of best fit to estimate the percentage of Mathsland’s population living in towns.  \_\_\_\_\_\_\_\_\_\_\_ % | / 3 |
| 19. | Mr Brown owns a café in the town centre. He wants to find out what people think of the service in the cafe. He uses this question on his questionnaire.   |  | | --- | | What do you think of the service in the cafe?  Excellent Very good Good |   Write down **one** thing that is wrong with this question.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Mr Brown wants to find out how often people visit the town centre. Design a suitable question for his questionnaire to find out how often people visit the town centre. You must include some response boxes. | / 3 |
| **F - Probability** | | |
| 20. | Amy is going to play one game of snooker and one game of billiards. The probability that she will win the game of snooker is . The probability that she will win the game of billiards is . Complete the probability tree diagram. | / 2 |