

Mathematics Assessment

**Band 6 – Test 2**

****

**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. | Convert the recurring decimal  to a fraction.  \_\_\_\_\_\_\_\_\_ | / 3 |
| **B – Number** | | |
| 2. | A solid sphere has a mass of 1180 g measured to the nearest gram and a radius of 6.2 cm measured to the nearest millimetre. Given that    find the upper bound for the density of the sphere. Give your answer to 3 significant figures.  \_\_\_\_\_\_\_\_\_\_\_\_ g/cm³ | / 4 |
| 3. | Simplify √96.  \_\_\_\_\_\_\_\_\_\_\_ | / 2 |
| **C - Algebra** | | |
| 4. | Find the equation of the straight line which passes through the point (0, 3) and is perpendicular to the straight line with equation *y* = 2*x*.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 3 |
| 5. | Complete the table of values for y = 3x.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **x** | -2 | -1 | 0 | 1 | 2 | | **y** | 1/9 |  | 1 |  |  |   On the grid, draw the graph of y = 3x. | / 4 |
| 6. | Show that the equation can be written in the form .  Use the iteration formula starting with to find to 3 decimal places. | / 4 |
| 7. | Factorise 5x² + 14x - 3  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Solve the equation 5x² + 14x – 3 = 0  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 3 |
| 8. | Solve this quadratic equation.  19*x*2 – 124*x* – 224 = 0  Give your answers correct to 3 significant figures.  x = \_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_ | / 3 |
| 9. | Show the inequality y ≥ 3 on the grid below. | / 2 |
| **D – Shape, Space and Measure** | | |
| 10. | Enlarge triangle **A** by scale factor –, centre (–1, –2). | / 3 |
| 11. | Diagram **NOT** accurately drawn  Work out the length of PQ.  \_\_\_\_\_\_\_\_\_\_\_ cm | / 3 |
| 12. | Diagram **NOT** accurately drawn  Calculate the size of the angle that the line *DE* makes with the plane *ABCD.* Give your answer correct to 1 decimal place.  \_\_\_\_\_\_\_\_\_\_\_º | / 4 |
| 13. | In triangle *PQR*, *PQ* = 10 cm. *QR* = 12 cm. Angle *PQR* = 45º. Calculate the area of triangle *PQR*. Give your answer correct to 3 significant figures.  \_\_\_\_\_\_\_\_\_\_\_cm² | / 3 |
| 14. | X and Y are two geometrically similar solid shapes.  The total surface area of shape X is 450 cm². The total surface area of shape Y is 800 cm².  The volume of shape X is 1350 cm³.  Calculate the volume of shape Y.  \_\_\_\_\_\_\_\_\_\_\_cm³ | / 3 |
| **E – Data Handling** | | |
| 15. | Sethina recorded the times, in minutes, taken to repair 80 car tyres. Information about these times is shown in the table. Calculate an estimate for the mean time taken to repair each car tyre.   |  |  |  |  | | --- | --- | --- | --- | | **Time (*t* minutes)** | **Frequency** |  |  | | 0 < *t* ≤6 | 15 |  |  | | 6 < *t* ≤ 12 | 25 |  |  | | 12 < *t* ≤ 18 | 20 |  |  | | 18 < *t* ≤ 24 | 12 |  |  | | 24 < *t* ≤ 30 | 8 |  |  |   \_\_\_\_\_\_\_\_\_\_\_\_ minutes | / 4 |
| 16. | The table gives information about the times, in minutes, that 106 shoppers spent in a supermarket.   |  |  | | --- | --- | | **Time (t minutes)** | **Frequency** | | 0 < t ≤ 10 | 20 | | 10 < t ≤ 20 | 17 | | 20 < t ≤ 30 | 12 | | 30 < t ≤ 40 | 32 | | 40 < t ≤ 50 | 25 |   Write down the modal class interval. \_\_\_\_\_\_\_\_\_\_\_  Find the class interval that contains the median. \_\_\_\_\_\_\_\_\_\_\_ | / 2 |
| **F – Probability** | | |