

Mathematics Assessment

**Band 6 – Test 3**

****

**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. | Prove that the recurring decimal | / 3 |
| **B – Number** | | |
| 2. | Dan does an experiment to find the value of π. He measures the circumference and the diameter of a circle. He measures the circumference, C, as 170 mm to the nearest millimetre. He measures the diameter, d, as 54 mm to the nearest millimetre. Dan uses π = C⁄d to find the value of π. Calculate the upper bound and the lower bound for Dan's value of π correct to 3 significant figures.  UB = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  LB = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 4 |
| 3. | Simplify √60.  \_\_\_\_\_\_\_\_\_\_\_ | / 2 |
| **C - Algebra** | | |
| 4. | A straight line, **L**, passes through the point with coordinates  (4, 7) and is perpendicular to the line with equation *y* = 2*x* + 3.  Find an equation of the straight line **L**.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 3 |
| 5. | Complete the table of values for y = 4x.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **x** | -2 | -1 | 0 | 1 | 2 | | **y** | 1/16 |  | 1 |  |  |   On the grid, draw the graph of y = 4x. | / 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 12x² - 5x - 3  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Solve the equation 12x² - 5x – 3 = 0  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 3 |
| 8. | Solve this quadratic equation.  *x*2 + *x* + 11 = 14  Give your answers correct to 3 significant figures.  x = \_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_ | / 3 |
| 9. | Show the inequality x > -2 on the grid below. | / 2 |
| **D – Shape, Space and Measure** | | |
| 10. | Enlarge triangle **T**, scale factor –2, centre *O*. | / 3 |
| 11. | Diagram **NOT** accurately drawn  Calculate the length of *AG*. Give your answer correct to 3 significant figures.  \_\_\_\_\_\_\_\_\_\_\_ cm | / 3 |
| 12. | Diagram **NOT** accurately drawn  Calculate the size of angle line AG makes with the plane ABCD. Give your answer correct to 3 significant figures.  \_\_\_\_\_\_\_\_\_\_\_º | / 4 |
| 13. | Diagram **NOT** accurately drawn  Calculate the area of the triangle ABC. Give your answer correct to 3 significant figures.  \_\_\_\_\_\_\_\_\_\_\_cm² | / 3 |
| 14. | Diagram **NOT** accurately drawn  Cylinder A and cylinder B are mathematically similar. The length of cylinder A is 4 cm and the length of cylinder B is 6 cm. The volume of cylinder A is 80 cm3. Calculate the volume of cylinder B.  \_\_\_\_\_\_\_\_\_\_\_cm³ | / 3 |
| **E – Data Handling** | | |
| 15. | Marcus collected some pebbles. He weighed each pebble. The grouped frequency table gives some information about weights. Work out an estimate for the mean weight of the pebbles.   |  |  |  |  | | --- | --- | --- | --- | | **Weight (*w* g.)** | **Frequency** |  |  | | 50 ≤ *w* < 60 | 5 |  |  | | 60 ≤ *w* < 70 | 9 |  |  | | 70 ≤ *w* < 80 | 22 |  |  | | 80 ≤ *w* < 90 | 27 |  |  | | 90 ≤ *w* < 100 | 17 |  |  |   \_\_\_\_\_\_\_\_grams | / 4 |
| 16. | A teacher asked 50 children how much pocket money they got each week. The table shows some information about their replies.   |  |  | | --- | --- | | **Pocket money (£*x*)** | **Frequency** | | 0 < *x* ≤ 2 | 1 | | 2 < *x* ≤ 4 | 10 | | 4 < *x* ≤ 6 | 23 | | 6 < *x* ≤ 8 | 14 | | 8 < *x* ≤ 10 | 2 |     Write down the modal class interval. \_\_\_\_\_\_\_\_\_\_\_  Find the class interval that contains the median. \_\_\_\_\_\_\_\_\_\_\_ | / 2 |
| **F – Probability** | | |