

Mathematics Assessment

**Bands 4-6 Problem Solving – Test 2**

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

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

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

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

Remember:

* The test is 1 hour long.
* You will need: pen, pencil, rubber and a ruler.
* 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 |

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| 1. | This chocolate box is in the shape of a tetrahedron. Each face is an equilateral triangle with side length 24 cm. Construct an accurate net for the box. Use a scale of 1 cm to 8 cm. | / 6 |
| 2. | ABC is a triangle. DE and BC are parallel. Calculate the perimeter of trapezium DBCE.  \_\_\_\_\_\_\_\_\_\_\_\_ cm | / 6 |
| 3. | Work out the area of card needed to make this disposable cup. Give your answer correct to 1 decimal place.  \_\_\_\_\_\_\_\_\_\_\_\_\_ cm² | / 5 |
| 4. | There are 5 boxes of cornflakes and 7 boxes of puffed wheat. Mike and Reece both choose a box at random. Work out the probability that they do not choose the same type of cereal.  \_\_\_\_\_\_\_\_\_\_\_\_\_ | / 5 |
| 5. | The distance between Manchester airport and Luton airport is 215 km. The bearing of Luton airport from Manchester airport is 135°. Make an accurate scale map of their locations using a scale of 1 cm to 40 km. | / 3 |
| 6. | A telephone company charges £ x per month for a basic line rental and then £ y per 100 minutes. Justin pays £18 for 200 minutes. Teresa pays £21 for 300 minutes. Work out the cost of the monthly rental.  £ \_\_\_\_\_\_\_\_\_\_\_\_ | / 5 |
| 7. | Find a quadratic equation that has solutions x = 0 and x = 5  Give your answer without brackets.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Find a quadratic equation that has two solutions x = 7  Give your answer without brackets.  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 4 |
| 8. | A naturalist captures 30 bats in a cave and tags them. There are approximately 600 bats in the cave. The naturalist returns a month later and captures 40 bats. How many bats would he expect to be tagged?  \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | / 3 |
| 9. | One sheet of paper is 9 x 10-3 cm thick. Mark wants to put 500 sheets of paper in the paper tray of his printer. The paper tray is 4 cm deep. Is the paper tray deep enough for 500 sheets of paper? | / 4 |
| 10. | The diagram shows two right-angled triangles ABC and DEB. Find the length of the line AC.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm | / 6 |