

Mathematics Assessment

**Bands 4-6 Problem Solving – Test 1**

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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.

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

|  |  |  |
| --- | --- | --- |
| 1. | Fill in the gaps:   1. (x + 2)(x + ) = x² + x + 6 2. (x - )(x + 8) = x² + 5x - | / 8 |
| 2. | Enzo makes a table of values and plots the graph of y = x² + 2. Which points on the graph are incorrect? | / 6 |
| 3. | A population of ants increases at a rate of 30% per day. At the end of one week there are 3500 insects. How many insects were there at the beginning of the week?  \_\_\_\_\_\_\_\_\_\_\_ | / 5 |
| 4. | Work out the area of this isosceles triangle. Give your answer correct to 3 significant figures.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ cm² | / 3 |
| 5. | Find the angle of this sector. Give your answer correct to 1 decimal place.    \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ ° | / 5 |
| 6. | The pressure, P, of water on an object (in bars) is directly proportional to its depth, d (in metres). When the object is at a depth of 8 metres, the pressure on the object is 0.8 bars. A diver’s watch has been guaranteed to work at pressures up to 8.5 bars. The diver takes the watch down to 75 m. Will the watch still work? | / 6 |
| 7. | Find the coordinates of the point where these two lines meet if they are extended.    ( \_\_\_\_ , \_\_\_\_ ) | / 7 |
| 8. | The rule for a sequence of number pairs is:  **(first number, last number) 🡪**  **(first number + last number, first number – last number)**    Here is part of a sequence that follows this rule. Write in the missing number pairs.  (\_\_\_\_ , \_\_\_\_) (\_\_\_\_ , \_\_\_\_) (1, 2) (3, -1) (2, 4) (\_\_\_\_ , \_\_\_\_) | / 7 |