

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.

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| Formulae Sheet |
| Perimeter, area, surface area and volume formulae |
| Sphere | Cone |
|  |  |
| Volume = $\frac{4}{3}$πr3Surface Area = 4πr2 | Volume = $\frac{1}{3}$ πr2hCurved Surface Area = πrl |

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| 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  |