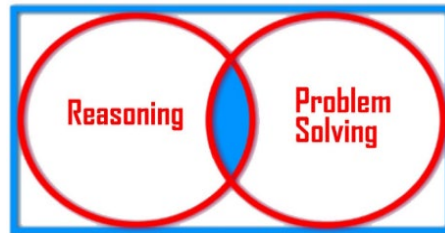


## GCSE Mathematics (Grade 9-1)

### Problem Solving – Sample 1

# H



fluidmaths.co.uk

{Aimed at students working towards a Grade 9 or 8}

**The Grades and Marks shown are for guidance purposes only**

You may NOT use a Calculator for these set of questions



### Strategies to help you in Mathematical Problem Solving

- Read the question carefully
- Make a diagram or sketch where applicable
- Take note of key information
- Write down any formulae you may need
- Tackle the problem in bite size rather than as a whole
- Concentrate on the parts of the problem that make sense to you and try to solve those first
- Collaborate with a partner and share ideas
- Use a dictionary to find the meaning of any confusing words
- Check that your answers make sense in the context of the question

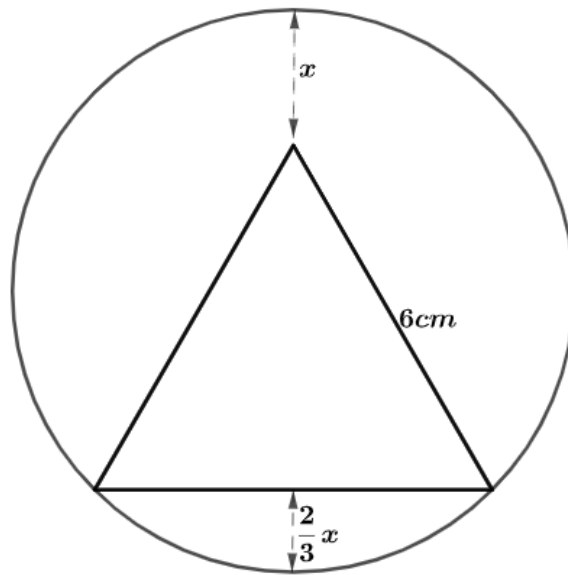
### Some Useful Formulae

$$\text{Quadratic Formula: } x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$\text{Compound Interest Formula: Final Amount} = \text{Initial Amount} \times \left(1 + \frac{r}{100}\right)^n$$

$$\text{Area of a Triangle} = \frac{1}{2}ab \times \sin C$$

- 1 An equilateral triangle of side  $6\text{cm}$  is drawn inside a circle of area  $108\pi$ . The height of the triangle lies on the diameter of the circle as shown.



Calculate the value of  $x$  exactly

**[5Marks]**



3 If  $(\sqrt{p} + \sqrt{5p})^2 = 10 + q\sqrt{5}$ ,  
Show that  $q = 3\frac{1}{3}$

**[4marks]**



5 Given that  $10x^2 - 9xy + 2y^2 = 0$ ,  
 Find the possible values of  $\frac{x}{y}$

**[4Marks]**