GCSE Mathematics (Grade 9-1)

Problem Solving – Sample 4

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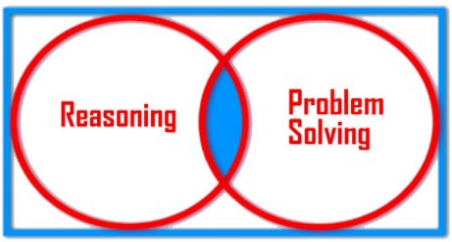

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{Aimed at students working towards grade 7 or 6}

The grades and marks shown are for guidance purposes only

Strategies to help you in Mathematical Problem Solving

- Read the question carefully
- Sketch a diagram 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

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

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

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

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1	A bag contains 6 red, 5 yellow and some white counters The probability of picking a red counter from the bag is $\frac{3}{10}$ Show that the probability of picking a white counter is $\frac{9}{20}$ **[5Marks]**

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2	Keira, Logan and Lewis share £900 in the ratio $x : 7 : x + 5$ Lewis received £400. Show that $x = 3$ **[4Marks]**

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3 Given that $A = 10x^{\frac{1}{2}} - 6\left(x^{\frac{1}{2}} + 3y^3\right)$.

Make x the subject of the formula **[4Marks]**

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4	Given that $x^2 + 8x - 8 = (x + 2p)^2 + 4pq$ Find the exact values of p and q **[4Marks]**

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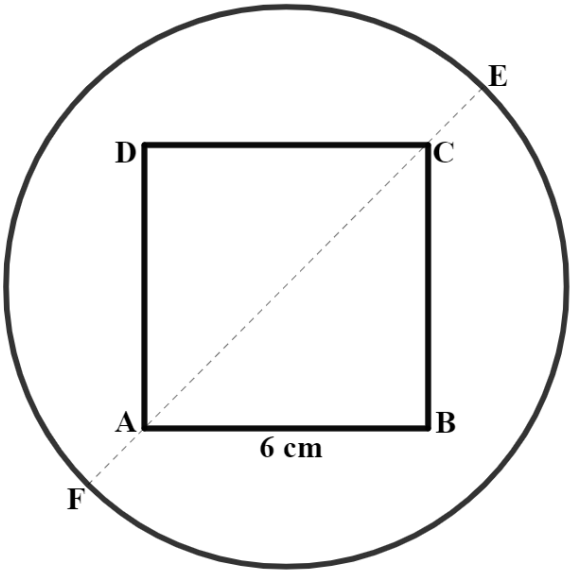
5 ABCD is a square of side 6 cm drawn inside a circle with diameter EF



The area of the circle is 72π cm^2

Calculate the distance CE. Give your answer as an exact value.

[5Marks]

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