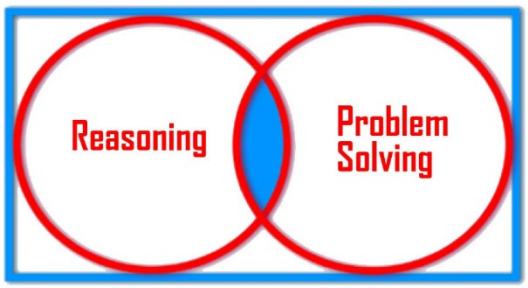
GCSE Foundation (5 – 1)



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Mathematical Reasoning Questions

(Powers and Roots) – Set 1

The marks shown are for guidance purposes only
[Total marks: 21 Marks]

1	Choose all the calculations which will give an answer of 10 a) $(2+3)^2$ b) 2^2+6 c) $10^2 \div 2$ d) $(-6+4^2)$ **[2Marks]**
2	Circle the value of the calculation $(2-6)^2+(5^2-7^2)$ a) -40 b) -8 c) 8 d) 40 **[2Marks]**
3	Here are two numbers 2^5 and $\sqrt{64}$ Tick the box(es) which are most appropriate about the two numbers ☐ $2^5=\sqrt{64}$ ☐ $2^5>\sqrt{64}$ ☐ $2^5<\sqrt{64}$ ☐ None of the Above **[1Mark]**

4	Here is a number pattern $1^3 = 1 = 1^2$ $1^3 + 2^3 = 9 = 3^2$ $1^3 + 2^3 + 3^3 = 36 = 6^2$ $1^3+2^3 + 3^3 + 4^3 = \square = \square$ a) Fill in the missing numbers into the boxes b) Use your answers above to complete the line $\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots = 784 = \ldots\ldots\ldots$ **[3Marks]**
5	Arrange the following numbers in ascending order $5, \quad 3^2, \quad (-4)^2, \quad \sqrt{64}, \quad -(4)^2$ **[2marks]**
6	Without carrying out the actual calculation, how many zeros will the number 10^{15} have when it is workout? **[1Mark]**
7	If x is an integer, which of the following statements is **true** about $(-x)^3 + 10$ ☐ Always less than 1 ☐ Always greater than 1 ☐ Sometimes less than 1 ☐ None of the Above **[1Mark]**

8 Given that x is a number,
use an example to show that each of the statements could be **true**

a) $x^2 + 1$ will always be positive

b) $x^2 - 1$ can be positive or negative

c) $10 - x^2$ is negative

[3Marks]

9 Oscar is solving the equation $2x^2 + 3^2 = 8^2 + 3^2$

Here is Oscars working out

$2x^2 + 9 = 64 + 9$

$2x^2 + 9 = 73$

$2x^2 = 64$

$2x = 8$

$x = 4$

a) Without carrying out the calculation, how could you check if Oscars answer is correct?

[1mark]

b) Find any mistakes Oscar made

[1Mark]

10	State which of the following calculations is **True** or **False** a) $\sqrt{5} + \sqrt{6} = \sqrt{5+6}$ **[1mark]** b) $2^2 + 3^2 = (2+3)^2$ **[1mark]** c) $60 - 5^2 < 6^2 - 1^2$ **[1mark]** d) $3 \times 2 = \sqrt{9} \times \sqrt{4}$ **[1mark]**