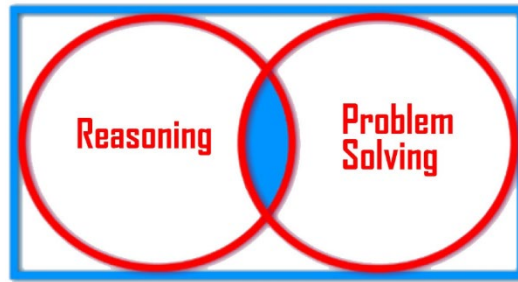


GCSE Foundation (5 – 1)



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Mathematical Reasoning Questions (Indices and Standard Form) – Set 1

**The marks shown are for guidance purposes only
[Total marks: 26 Marks]**

1	<p>Choose the numbers which are not in standard form and give a reason why</p> <p>a) 1.0×10^{-62}</p> <p>b) $1.0 \times 10^{\frac{1}{2}}$</p> <p>c) 1.0×10^0</p> <p>d) 0.1×10^3</p> <p style="text-align: right;">[2Marks]</p>
2	<p>Given that x and y are single digit numbers, which of the following represents the number $0.0x0y$ when it is written in standard form?</p> <p>a) $x.y \times 10^{-4}$</p> <p>b) $0.0x0y \times 10^0$</p> <p>c) $x.0y \times 10^{-2}$</p> <p>d) $x0.y \times 10^{-3}$</p> <p style="text-align: right;">[1Mark]</p>
3	<p>Given that, $a = 1 \times 10^5$ and $b = 2 \times 10^{10}$ without carrying out the actual calculations, which expression will have the least value?</p> <p>a) $a + b$</p> <p>b) $a - b$</p> <p>c) $\frac{b}{a}$</p> <p style="text-align: right;">[1Mark]</p>

4 Answer **True** or **False** to the following calculations

a) $2^{-5} \times 2^{-5} = 2^{25}$

b) $2^{-5} \times 2^{-5} = 4^{25}$

c) $2^{-5} \times 2^{-5} = 2^{25}$

[3Marks]

5 Complete the calculations below by filling in the box each question

a) $6^{-2} \times \square = 1$

[1Mark]

b) $6^6 \div \square = -1$

[1Mark]

c) $(p^{\square})^2 = \square^{6p}$

[2Marks]

d) $\left(\frac{\square}{\square}\right)^{\square} \times \left(\frac{1}{3}\right)^2 = \frac{4}{27}$

[3Marks]

6	<p>Answer True or False to the following statements</p> <p>a) $5^{-2} > 5^{-1}$ [1Mark]</p> <p>b) $2x^0 = 2x$ [1Mark]</p> <p>c) $p^{-5} = \frac{1}{p^5}$ [1Mark]</p>
7	<p>Workout $(5 \times 10^6) \times (4 \times 10^9)$ Given your answer in standard form <u>Olivia's Answer</u> $5 \times 4 = 20$ $10^6 \times 10^9 = 10^{54}$ Therefore, $(5 \times 10^6) \times (4 \times 10^9) = 20 \times 10^{54}$ Identify the two mistakes Olivia made and correct them</p> <p style="text-align: right;">[3Marks]</p>

8



Here is a list of 3 numbers arranged in ascending order

$$p, 1.2 \times 10^5, 3.5 \times 10^5$$

The range of the numbers is 1.8×10^4 find the value of p .

Give your answer in standard form

[2Marks]

9



Here is a calculation: $7^6 + 2^6 - 5^6$

Oscar's answer

$$7 + 2 - 5 = 4$$

$$6 + 6 - 6 = 6$$

Since the powers are the same, then $7^6 + 2^6 - 5^6 = 4^6$

Oscar is wrong.

State the mistake he made and completely calculation correctly.

[2Marks]

10



Solve the equation $2^n + 3^n = 275$

[2Marks]