GCSE Foundation (5 – 1)
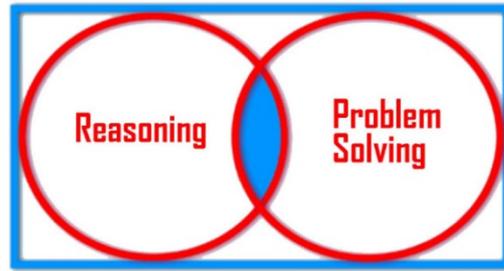

Mathematical Reasoning Questions

(The Averages and Range) – Set 1

The marks shown are for guidance purposes only
[Total marks: 20 Marks]

1	John is taller than his brother Emmanuel.
	Their sister Alice is 161cm tall.
	The mean height of the three siblings is 200cm.
	Choose which statement is most true
	   a) Both John and Emmanuel are shorter than Alice
	   b) Both John and Emmanuel are taller than Alice
	   c) Either John or Emmanuel must be taller than Alice
	   d) All the above could be true
	
	[1Mark]

2	What is the median of the numbers below?
	          5^3, 85, 8^2, 58^5, 85^8
	Choose one answer
	   a) 5^3
	   b) 8^2
	   c) 85^8
	   d) 58^5
	
	[2Marks]

3	The expressions below are arranged in order of size
	        $x,\ y,\ 2x,\ 4x,\ 8y$
	Which expression represents their range?
	Make your choice
	   a) $8x + y$
	   b) $9xy$
	   c) $\frac{8y+x}{2}$
	   d) $8y - x$
	
	[1Mark]

4 The mean of the numbers 15, 20, 18, 19, 18 is the same as the mean of the numbers 38, p, p.
What is the value of p? Choose one answer.
  a) 42
  b) 21
  c) 08
  d) 38

[3Marks]

5 The card labelled P has increased the mean of the numbers below by 2.

| 10 | 12 | 11 | 10 | P |

What is the number on the card labelled P?
Choose one answer
  a) 20
  b) $20\frac{3}{4}$
  c) 9
  d) $12\frac{3}{4}$

[1Mark]

6 Here is a frequency table

Expression	v	w	x	y	z
Frequency	5	6	10	9	1

Answer **True** or **False** to the following statements
   a) The mean will be an expression closer in value to x
   b) The median is x
   c) The range is $5 - 1 = 4$

[3Marks]

7 The six numbers below are arranged in ascending order
         6,   10, x,   12,   13,   20
The median of the six numbers is 11.5
What is the value of x?
   a) 11.5
   b) 11
   c) 12
   d) 12.5

[2Marks]

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8 Five positive whole numbers have the following features
   i) Their mean is 10
   ii) The smallest number is 4
   iii) The only number that occurs more than once is 6
   iv) The second largest of the numbers is 10
What is the range of the five numbers?
   a) 20
   b) 24
   c) 22
   d) 28

[2Marks]

9 If $a = -4$, $b = 3a$ and $c = -4b$
What is the mean of a, b and c?
Choose one answer
   a) -8
   b) 0
   c) -10.6
   d) 8

[4Marks]

10 Here is a table showing the test scores for 15 students

Score	Frequency
10	2
11	6
12	8
13	4

Isla wants to calculate the mean score.

<u>Here is Isla's Answer</u>

$$10 \times 2 = 20$$
$$11 \times 6 = 66$$
$$12 \times 8 = 96$$
$$13 \times 4 = 52$$
$$\text{Total} = 234$$
$$\text{Mean} = 234 \div 4 = 58.5$$

Is Isla correct? Explain your choice.
(Do not work out the mean)

[1Mark]