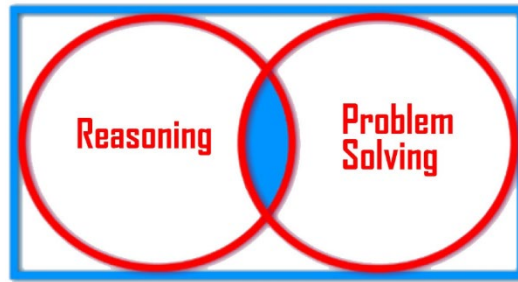


GCSE Foundation (5 – 1)



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Mathematical Reasoning Questions

(Rearranging Formula and Identities) – Set 1

**The marks shown are for guidance purposes only
[Total marks: 27 Marks]**

1 Johnny wants to make x the subject of the equation $y = 5x + 3$

Here is his Answer:

Divide both sides by (5): $\frac{y}{5} = x + 3$

Subtract 3 from both sides : $\frac{y}{5} - 3 = x$

Therefore $x = \frac{y}{5} - 3$

Johnny made a mistake. Identify this mistake and correct it

[3Marks]

2 Here is a formula: $z = yx + w$ Make x the subject of the formula

Natalie's Answer

$$z - w = yx$$

$$\frac{z - w}{y} = x$$

$$\text{Therefore, } x = \frac{z-w}{y}$$

Jacob's Answer

$$\frac{z}{y} = x + \frac{w}{y}$$

$$\frac{z}{y} - \frac{w}{y} = x$$

$$\text{Therefore, } x = \frac{z}{y} - \frac{w}{y}$$

Which of the statements below are/is correct?

- a) Only Natalie is correct
- b) Only Jacob is correct
- c) Both Answers are correct
- d) They are both wrong

[1Mark]

3	<p>Use one of the words below to describe each of the statements from a to d</p> <p>Expression, Equation, Formula, Identity</p> <p>a) $v = u + at$ b) $2(x + 5) - 6(10 - 7x) + 2$ c) $(2x + 1)(3x + 4) \equiv 6x^2 + 11x + 4$ d) $6x^2 = 42$</p> <p style="text-align: right;">[4Marks]</p>
4	<p>A formula connecting a, b and c is given as $3a = 6b + c$ When $a = 5$ and $c = -3$ the value of b will be equal to</p> <p>a) 6 b) -3 c) 3 d) -6</p> <p style="text-align: right;">[2Marks]</p>
5	<p>By expanding and simplifying the brackets in the identity below, $5(5 + 2x) + 3(6x - 7) \equiv Ax + B$ Show that the ratio of $A : B = 7 : 1$</p> <p style="text-align: right;">[3Marks]</p>

6 Circle all the correct answers if c is made the subject of the formula $a(b + c) = d$

a) $c = \frac{d-ab}{a}$

b) $c = \frac{d+ab}{a}$

c) $c = \frac{d}{c} - b$

d) $c = \frac{d}{c} + b$

[3Marks]

7 Make x the subject of the formula $2y^2 = x^2 + 5z$

[2Marks]

8 Here is an equation

$$7b = 6c + \frac{2}{a}$$

Give a step by step instruction on how to make **a** the subject of the equation

[3Marks]

9 Here is an identity, $6x(5x + 8) \equiv Px^2 + Qx$
Find the values of P and Q

[3Marks]

10 The equation of a straight line is given as $Ax + By = C$
By making y the subject, find an expression for the gradient of the line.

[3Marks]