

GCSE QUESTIONS WITH CLUES

Q1. NON-CALCULATOR

(a) Solve $f + 2f + f = 20$ Collect like terms
 $4f = 20$

$f = \dots\dots\dots$
 (1)

(b) Solve $18 - m = 6$
 $-18 \quad -18$
 $-m = -12$

$m = \dots\dots\dots$
 (1)

(c) Simplify $d^2 \times d^3$
 $= d^{2+3}$

$\dots\dots\dots$
 (1)

(Total for question is 3 marks)

Q2. NON-CALCULATOR

Solve $\frac{4 \times y}{4} = 10.5 \times 4$

$y = \dots\dots\dots$
 (Total for question = 1 mark)

Q3. NON-CALCULATOR

(a) Solve $3x + 7 = 1$
 $-7 \quad -7$

$x = \dots\dots\dots$
 (2)

(b) $f = 6$ $g = 5$
 Work out the value of $3f - 2g$ BIDMAS
 $= 3 \times 6 - 2 \times 5$

$\dots\dots\dots$
 (2)

(Total for question = 4 marks)

Q4. NON-CALCULATOR

(a) Solve $4(x - 5) = 18$ Expand
 $4x - 20 = 18$
 $+20 \quad +20$

$x = \dots\dots\dots$
 (2)

$$-3 < t \leq 2$$

t is an integer.

whole number

(b) Write down all the possible values of t .

~~-3~~ -2 -1 0 1 2

.....

(2)

(Total for question = 4 marks)

Q5. NON-CALCULATOR

(a) Solve $2(x + 1) = 8$

$$2x + 2 = 8 \quad \downarrow \text{Expand}$$

$$\quad -2 \quad -2$$

$x =$

(2)

(b) Solve $3y + 7 = 19$

$$\quad -7 \quad -7$$

$y =$

(2)

(c) Factorise $6n - 4$

$$\begin{array}{c} \wedge \quad \wedge \\ 2 \quad 3n \quad 2 \quad -2 \end{array}$$

.....

(1)

(d) Simplify $3cd + 2cd - cd$

.....

(1)

(Total for question = 6 marks)

Q6. NON-CALCULATOR

(a) Solve $4c + 5 = 11$

$$\quad -5 \quad -5$$

$c =$

(2)

(b) Solve $5(e + 7) = 20$ } Expand
 $5e + 35 = 20$
 $-35 \quad -35$

e =
 (2)

(c) Simplify $(m^3)^2$
 $m^{3 \times 2}$

.....
 (1)
 (Total for question is 5 marks)

Q7. NON-CALCULATOR

Solve $x \times 5 = \frac{100}{x} \times x$

x =
 (Total for question = 1 mark)

Q8. NON-CALCULATOR

(a) Simplify $x + x + x + y + y$

.....
 (1)

(b) Simplify $3p + 7q - p - 4q$

.....
 (2)

(c) Expand $6(2m - 3)$

.....
 (1)

(d) Solve $7f + 6 = 27$
 $-6 \quad -6$

f =
 (2)
 (Total for question = 6 marks)

Q9. NON-CALCULATOR

(a) Expand $2a(a + 7)$

.....
(1)

(b) Factorise $14b - 7$

$$\begin{array}{c} \wedge \quad \wedge \\ 7 \quad 2b \quad 7 \quad -1 \end{array}$$

.....
(1)

(c) Solve $9(c - 6) = 63$

$$\begin{array}{l} 9c - 54 = 63 \quad \downarrow \text{expand} \\ +54 \quad +54 \end{array}$$

$c =$
(2)

(d) Simplify $3y^2 \times 4y^3$

$$= 3 \times 4 \times y^2 \times y^3$$

.....
(1)
(Total for question = 5 marks)

Q10. NON-CALCULATOR

Solve $4x + 3 = 7 - x$

$$\begin{array}{l} +x \quad +x \\ 5x + 3 = 7 \end{array}$$

$x =$
(Total for question = 2 marks)

Q11. NON-CALCULATOR

Solve $4x + 5 = x + 26$

$$\begin{array}{l} -x \quad -x \\ 3x + 5 = 26 \end{array}$$

$x =$
(Total for question = 2 marks)

Q12. NON-CALCULATOR

(a) Simplify $7x + 2y - 3x + 4y$

.....
(2)

(b) Factorise $10x - 15$

$$\begin{array}{c} \wedge \quad \wedge \\ 5 \ 2x \quad 5 \ -3 \end{array}$$

.....
(1)

(c) Solve $5p = 3p + 8$

$$\begin{array}{c} -3p \quad -3p \\ \hline \end{array}$$

$p =$
(2)
(Total for question = 5 marks)

Q13. NON-CALCULATOR

(a) Simplify $7 \times e \times f \times 8$

$$= 7 \times 8 \times e \times f$$

.....
(1)

(b) Solve $\frac{x}{5} = 2\frac{1}{2}$

$$5 \times \frac{x}{5} = 2.5 \times 5$$

$x =$
(1)
(Total for question = 2 marks)

Q14. NON-CALCULATOR

(a) Solve $3(2p - 5) = 21$

$$6p - 15 = 21 \quad \left. \begin{array}{l} \\ \end{array} \right\} \text{expand}$$

$p =$
(3)

(b) Solve $9x - 11 = 5x + 7$

$$\begin{array}{r} -5x \quad -5x \\ 4x - 11 = 7 \end{array}$$

$x = \dots\dots\dots$
(3)

(Total for Question is 6 marks)

Q15. NON-CALCULATOR

Solve $5x - 6 = 3(x - 1)$ \downarrow expand

$$\begin{array}{r} 5x - 6 = 3x - 3 \\ -3x \quad -3x \end{array}$$

$x = \dots\dots\dots$

(Total for question = 3 marks)

Q16. NON-CALCULATOR

Steve is asked to solve the equation $5(x + 2) = 47$. Here is his working:

$$\begin{array}{l} 5(x + 2) = 47 \\ 5x + 2 = 47 \leftarrow \text{incorrect.} \\ 5x = 45 \\ x = 9 \end{array}$$

Steve's answer is wrong.

(a) What mistake did he make?

.....
.....

(1)

Liz is asked to solve the equation $3x^2 + 8 = 83$. Here is her working.

$$\begin{array}{l} 3x^2 + 8 = 83 \\ 3x^2 = 75 \\ x^2 = 25 \\ x = 5 \leftarrow \text{incorrect} \end{array}$$

(b) Explain what is wrong with Liz's answer.

.....
.....

(1)

(Total for question = 2 marks)

Q17. NON-CALCULATOR

(a) Solve $\frac{3x^2}{3} = \frac{147}{3}$

$$x^2 = 49$$

$x = \dots\dots\dots$

(2)

(b) Solve $\frac{6x}{2} \frac{y-1}{3} + \frac{6x}{3} \frac{y+1}{3} = 15 \times 6$

$$\frac{6(y-1)}{2} + \frac{6(y+1)}{3} = 90 \quad \downarrow \text{ simplify}$$

$$3(y-1) + 2(y+1) = 90 \quad \downarrow \text{ expand}$$

$y = \dots\dots\dots$

(3)

(Total for question = 5 marks)