

GCSE QUESTIONS

Q1. NON-CALCULATOR

(a) Simplify $4x - 2y + 3x - 6y$

.....
(2)

(b) Expand $2x(3 - x)$

.....
(1)

(Total for question = 3 marks)

Q2. NON-CALCULATOR

Expand $2a(a + 7)$

.....
(Total for question = 1 mark)

Q3. NON-CALCULATOR

Expand $5(2m - 3)$

.....
(Total for question = 1 mark)

Q4. NON-CALCULATOR

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

.....
(1)

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

.....
(2)

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

.....
(1)

(Total for question = 4 marks)

Q5. NON-CALCULATOR

Expand and simplify $5(p + 3) - 2(1 - 2p)$

.....
(Total for question = 2 marks)

Q6. NON-CALCULATOR

$$P = 4x + 3y$$

$$x = 5$$

$$y = -2$$

(a) Work out the value of P .

.....
(2)

(b) Expand $4e(e + 2)$

.....
(2)

(Total for question = 4 marks)

Q7. NON-CALCULATOR

Expand and simplify $3(y - 2) + 5(2y + 1)$

.....
(Total for question = 2 marks)

Q8. NON-CALCULATOR

Expand and simplify $(m + 7)(m + 3)$

.....
(Total for question = 2 marks)

Q9. NON-CALCULATOR

Expand and simplify $(x + 3)(x - 1)$

.....
(Total for question is 2 marks)

Q10. NON-CALCULATOR

Expand and simplify $(5x + 2)(2x - 3)$

.....
(Total for question = 2 marks)

Q11. NON-CALCULATOR

(a) Factorise $x^2 - 169$

.....
(1)

(b) Expand and simplify $(3x + 2)(2x - 1)$

.....
(2)

(Total for question = 3 marks)

Q12. NON-CALCULATOR

Expand and simplify $(2x + 1)(3x - 2)$

.....
(Total for question = 2 marks)

Q13. NON-CALCULATOR

Prove that the square of an odd number is always 1 more than a multiple of 4

(Total for question = 4 marks)

Q14. NON-CALCULATOR

Amzol thinks that $(x + 5)^2 = x^2 + 25$ for all values of x .

Is Amzol right?

You must show how you get your answer.

(Total for question = 2 marks)

Q15. NON-CALCULATOR

Maryam is trying to expand and simplify $(n - 2)^2$
Here is her working.

$$\begin{aligned}(n - 2)^2 &= (n - 2)(n - 2) \\ &= n^2 - 2n - 2n - 4 \\ &= n^2 - 4n - 4\end{aligned}$$

Maryam's answer is wrong.

Find Maryam's mistake.

.....
.....

(Total for question = 1 mark)

Q16. NON-CALCULATOR

Show that $(x + 1)(x + 2)(x + 3)$ can be written in the form $ax^3 + bx^2 + cx + d$ where a, b, c and d are positive integers.

(Total for question = 3 marks)

Q17. NON-CALCULATOR

Show that

$$(3x - 1)(x + 5)(4x - 3) = 12x^3 + 47x^2 - 62x + 15$$

for all values of x .

(Total for question is 3 marks)

Q18. NON-CALCULATOR

Show that $(2x + 1)(x + 3)(3x + 7)$ can be written in the form $ax^3 + bx^2 + cx + d$ where a , b , c and d are integers.

.....
(Total for question = 3 marks)

Q19. NON-CALCULATOR

Expand and simplify $(x + 2)(x + 8)(x - 4)$

.....
(Total for question = 3 marks)

Q20. NON-CALCULATOR

(a) Expand and simplify $(x - 2)(2x + 3)(x + 1)$

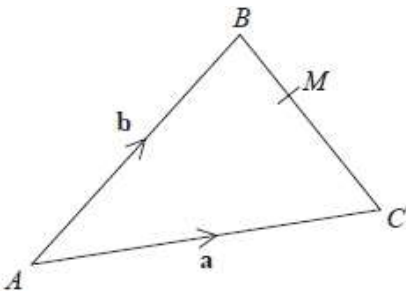
.....
(Total for question = 3 marks)

Q21. NON-CALCULATOR

(a) Expand and simplify $(x + 2)(2x - 3)(3x + 1)$

.....
(Total for question = 3 marks)

Q22. NON-CALCULATOR



M is the point such that $BM : MC$ is $1 : 2$

Here is Charlie's method to find \vec{BM} in terms of \mathbf{a} and \mathbf{b} .

$$\begin{aligned} \vec{BC} &= \vec{BA} + \vec{AC} \\ &= -\mathbf{b} + \mathbf{a} \\ &= \mathbf{a} - \mathbf{b} \\ \vec{BM} &= \frac{1}{2} \vec{BC} \\ &= \frac{1}{2} (\mathbf{a} - \mathbf{b}) \end{aligned}$$

(a) Evaluate Charlie's method.

.....

(1)

Martin expands $(2x + 1)(2x - 3)(3x + 2)$

He gets $12x^3 - 4x^2 - 17x + 6$

(b) Explain why Martin's solution cannot be correct.

.....

(1)

(Total for question = 2 marks)