



GCSE Foundation 12

Algebra



95 minutes



95 marks

Equations

Q1. (a) Solve $\frac{y}{3} = 8$

.....

Answer $y =$

(1)

(b) Simplify fully $3c + 5d + 4c - 2d$

.....

Answer

(2)

(c) Given that $P = 3e + 5f$

work out the value of P when $e = 4$ and $f = -2$

.....

.....

.....

Answer

(2)

(Total 5 marks)

Q2. (a) Solve $\frac{x}{5} = 10$

.....

Answer $x =$

(1)

(b) Solve $2y - 3 = 8$

.....

.....

Answer $y =$

(2)

(c) Simplify fully $4m + 3p + m - 10p$

.....

Answer

(2)
 (Total 5 marks)

Q3. A, B, C and D represent different numbers.
 The total for each row is shown.

				Total
A	A	A	A	24
A	A	B	B	22
A	B	B	C	26
A	B	C	D	28

Work out the values of A, B, C and D.

.....

Answer A =

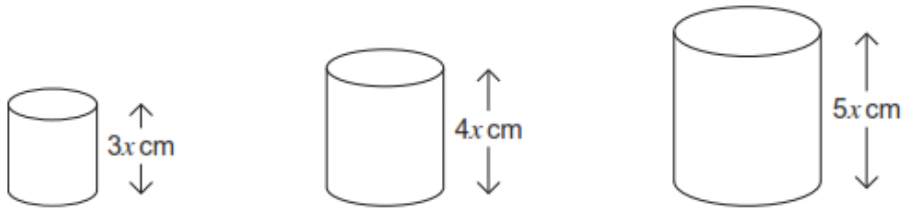
Answer B =

Answer C =

Answer D =

(Total 4 marks)

Q4. Three cylinders are shown.



The sum of the three heights is 48 cm.

Work out the height of the tallest cylinder.

.....

.....

.....

Answer cm

(Total 4 marks)

Q5. (a) Solve $x + 3 = 7$

.....

Answer $x =$

(1)

(b) Solve $2x + 5 = 1$

.....

.....

Answer $x =$

(2)

(Total 3 marks)

Q6. (a) Find the value of $3x + 2y$ when $x = 4$ and $y = -5$

.....

.....

.....

Answer

(2)

(b) Solve $\frac{c}{4} = 3$

.....

Answer $c =$

(1)

(c) Solve $2(3w - 4) = 7$

.....

.....

.....

Answer $w =$

(3)

(d) Expand $a(a^2 + 4)$

.....

.....

Answer

(2)

(Total 8 marks)

Q7. (a) Solve $3a = 12$

.....

Answer $a =$

(1)

(b) Solve $\frac{x}{5} = -6$

.....

Answer $x =$

(1)

(c) Solve $5c + 4 = 19$

.....

.....

Answer $c =$

(2)

(d) Factorise fully $4t - 20$

.....

Answer

(1)
(Total 5 marks)

Q8. (a) Solve $a - 2 = 9$

.....

Answer $a =$

(1)

(b) Solve $\frac{b}{3} = 5$

.....

Answer $b =$

(1)

(c) Solve $2c - 3 = 11$

.....

.....

.....

Answer $c =$

(2)
(Total 4 marks)

Q9. In the magic square, the rows, columns and diagonals add to the same number.

10	w	x
5	y	9
6	11	4

Work out the values of w , x and y .

.....

.....

.....

Answer $w = \dots\dots\dots$ $x = \dots\dots\dots$ $y = \dots\dots\dots$

(Total 3 marks)

Q10. (a) If $x \diamond y$ means $2x + y$ find the value of $2 \diamond 8$

.....

Answer

(1)

(b) If $m \blacktriangledown n$ means $\frac{m+n}{2}$ find the value of $4 \blacktriangledown 10$

.....

Answer

(2)

(c) Simplify $6a + 7b - 2a + b$

.....

.....

Answer

(2)

- (d) Solve the equation $5w + 6 = 9 - w$

.....

.....

.....

.....

Answer $w =$

(3)
(Total 8 marks)

- Q11.** (a) Solve the equation $\frac{w}{9} = 7$

.....

Answer $w =$

(1)

- (b) Solve the equation $7x - 3 = 60$

.....

Answer $x =$

(2)

- (c) Write down **one** integer which satisfies the inequality $7y > 63$

Answer

(1)
(Total 4 marks)

- Q12.** (a) You are given that $6x = 48$

Work out the value of $5x$

.....

.....

Answer

(2)

- (b) Solve the equation $2(4y - 1) = 18$

.....
.....
.....

Answer $y =$

(3)
(Total 5 marks)

- Q13.** (a) Solve the equation $x + 5 = 20$

.....

Answer $x =$

(1)

- (b) Solve the equation $2y + 3y = 20$

.....
.....
.....

Answer $y =$

(2)
(Total 3 marks)

- Q14.** (a) Simplify $a + a + a$

Answer

(1)

- (b) Simplify $8b + 3 - 2b + 7$

.....
.....

Answer

(2)

(c) Solve the equation $\frac{x}{2} = 6$

.....

Answer $x =$

(1)
(Total 4 marks)

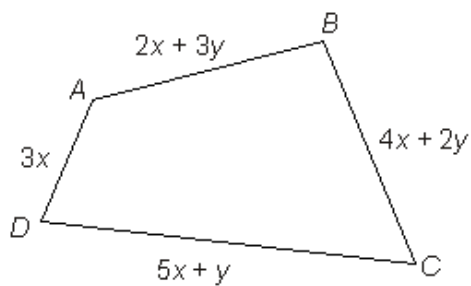
Q15. Complete this table.

Expression	Value
$2x$	8
$5x$	
$2x + 3y$	5
y	
$3x - y$	

.....

(Total 5 marks)

Q16. $ABCD$ is a quadrilateral.



Not drawn accurately

- (a) Write down an expression for the perimeter of the quadrilateral in terms of x and y .
Simplify your answer.

.....
.....

Answer

(2)

- (b) When $x = 4$ cm, the perimeter of the quadrilateral is 68 cm.

Find the value of y .

.....
.....
.....
.....

Answercm

(3)

(Total 5 marks)

Q17. Solve these equations

- (a) $4x - 7 = 5$

.....
.....

Answer $x =$

(2)

- (b) $2(y + 5) = 28$

.....
.....
.....

Answer $y =$

(3)

(c) $7z + 2 = 9 - 3z$

.....

.....

.....

Answer $z =$

(3)
(Total 8 marks)

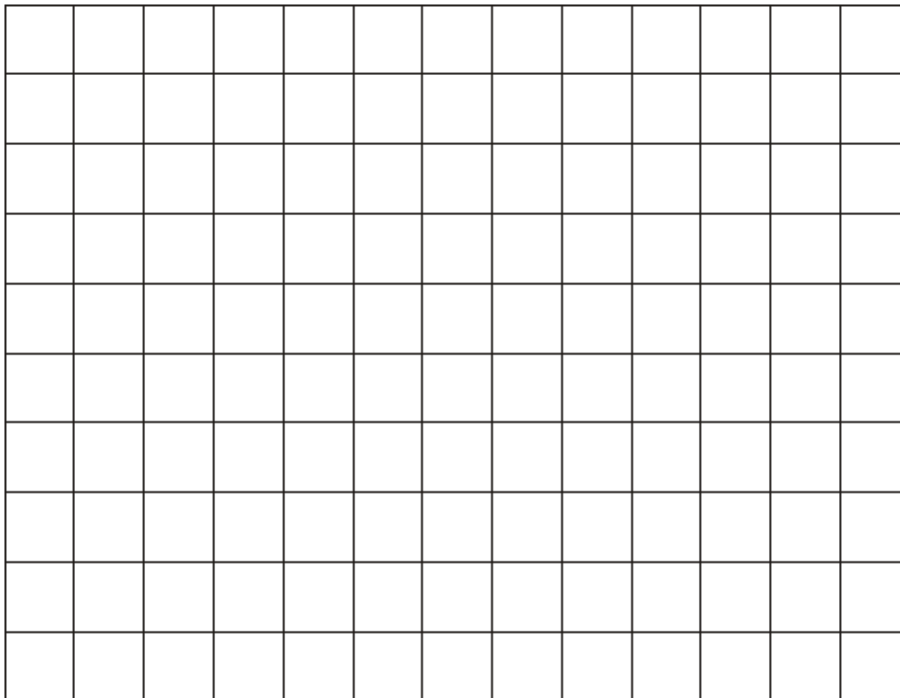
- Q18.** A rectangle has an area of 40 cm^2 and a perimeter of 26 cm.
Find the length and width of the rectangle.
You may use the grid to help you.

.....

.....

.....

.....



Answer Length cm

Width cm

(Total 2 marks)

Q19. Solve the equations

(a) $3x = 12$

.....

Answer $x =$

(1)

(b) $y + 7 = 13$

.....

Answer $y =$

(1)

(c) $8z - 5 = 11$

.....

.....

Answer $z =$

(2)

(d) $3(w - 2) = 9$

.....

.....

.....

.....

Answer $w =$

(3)

(Total 7 marks)

Q20. The sum of two numbers is 15.
The difference of the same two numbers is 3.

What is the product of the two numbers?
You **must** show your working.

.....

.....

.....

.....

.....

.....

Answer

(Total 3 marks)

