



GCSE Foundation 10

Algebra



75 minutes



74 marks

Simplifying expressions

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) (i) Simplify the expression $m \times 5$

Answer

(1)

(ii) Simplify fully $2a + 5b + 3a - 2b$

Answer

(2)

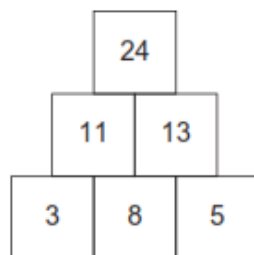
(b) n represents an even number.

Explain why $(n + 1)(n - 1)$ is always odd.

.....

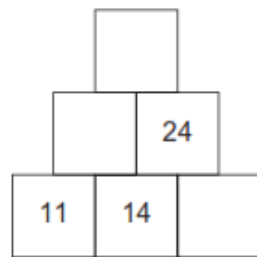
(2)
 (Total 5 marks)

Q4. Here is a number pyramid.



Each number is found by adding the two numbers directly below.
 For example $8 + 5 = 13$

(a) Complete this number pyramid.

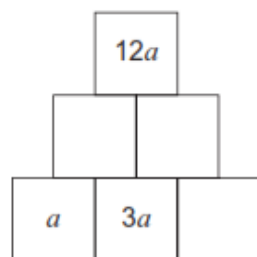


.....

.....

(2)

(b) Complete this algebra pyramid.



.....

.....

.....

(3)

(Total 5 marks)

Q5. w is an even number.

For each statement, tick the correct box.

	Always true	Sometimes true	Never true
$4w - 3$ is even.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
$4w - 3$ is prime.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
$4w - 3$ is a multiple of 9.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

.....

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.....

.....

.....

(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) Work out the value of $2a + 3b$ when $a = 5$ and $b = 8$

.....

.....

Answer

(2)

(b) Expand and simplify $3(2m - 4) + 5(m + 2)$

.....

.....

.....

Answer

(2)

(Total 4 marks)

Q8. (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)

- Q9.** (a) Simplify $5c + 3c - c$

.....

Answer

(1)

- (b) Simplify $7x + 2y - 3x - 5y$

.....

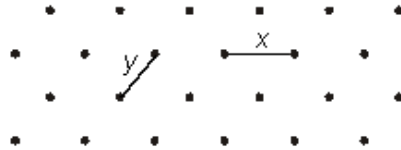
.....

Answer

(2)

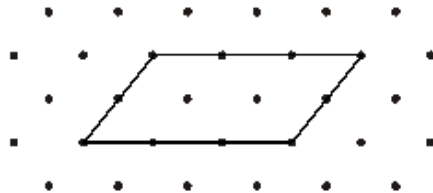
(Total 3 marks)

Q10. On the grid, the horizontal line is x units long and the sloping line is y units long.



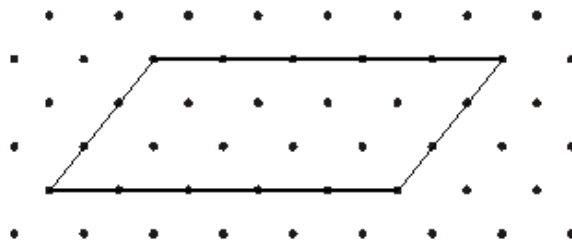
Shapes are drawn on the grid that have dots as their vertices.

The perimeter of this shape is $6x + 4y$



Work out the perimeter of the following shapes in terms of x and y

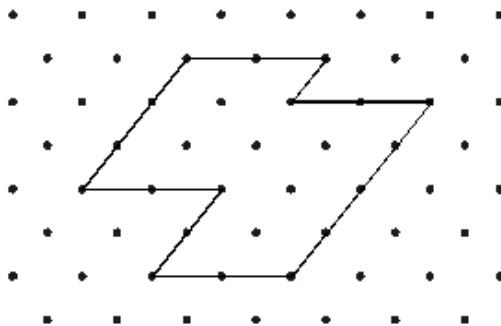
(a)



Answer

(2)

(b)



Answer

(2)

(Total 4 marks)

Q11. (a) Simplify $8a - b + 4a - 2b$

.....
.....

Answer

(2)

(b) Multiply out $x(x + 7)$

.....

Answer

(1)

(Total 3 marks)

Q12. (a) Simplify $a + a + a$

Answer

(1)

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

.....
.....

Answer

(2)

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

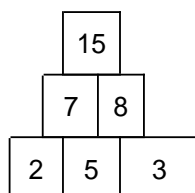
.....

Answer $x =$

(1)

(Total 4 marks)

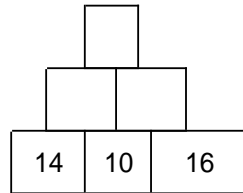
Q13. Here is a pyramid pattern.



Each number is found by adding the two numbers directly below.
For example, $7 = 2 + 5$

(a) Complete the following pyramid patterns.

(i)

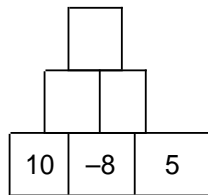


.....

.....

(2)

(ii)

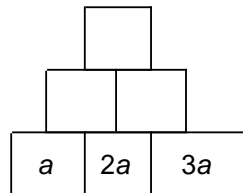


.....

.....

(3)

(b) Complete this algebraic pyramid pattern.



.....

.....

(3)

(Total 8 marks)

Q14. (a) Suki is playing a 'Think of a Number' game.



I think of a number.
I multiply it by 5 and
then subtract 3.
The answer is 27.

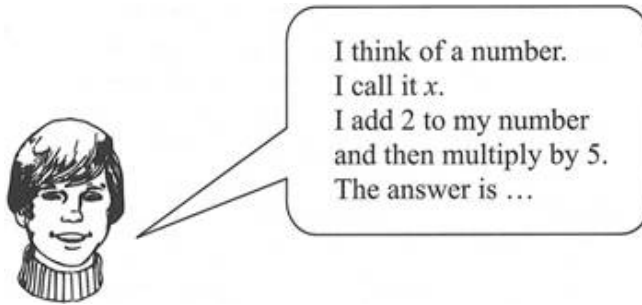
What number does Suki think of?

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

Answer

(2)

- (b) Tim is also playing a 'Think of a Number' game.



Write down an expression in terms of x for Tim's answer.

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

Answer

(2)

(Total 4 marks)

- Q15.** (a) Simplify $5x + 3y - 2x + 4y$

.....

Answer

(2)

- (b) Find the value of $5p + 2q$ when $p = 4$ and $q = -7$

.....
.....

Answer

(2)

(c) Find the value of $u^2 - v^2$ when $u = 5$ and $v = 3$

.....
.....

Answer

(2)
(Total 6 marks)

