

Expressions, Functions and Formulae

ANSWERS

No calculator | 30 minutes | Total marks: 26

Name Class

1 Here is a function machine.

Input $\rightarrow$ $\boxed{\times 3}$ $\rightarrow$ $\boxed{+ 2}$ $\rightarrow$ Output

(a) Work out the output when the input is 4

Answer 14 (1) [1 mark]

(b) Work out the input when the output is 20

$$20 - 2 = 18, 18 \div 3 \text{ (1)}$$

Answer 6 (1) [2 marks]

2 Write each of these using algebra.

(a) $a \times b$

Answer ab (1) [1 mark]

(b) $4 \times n$

Answer 4n (1) [1 mark]

(c) $n \div 2$

Answer $\frac{n}{2}$ (1) [1 mark]

3

Simplify

(a) $a + a + a + a$

Answer 4a (1) [1 mark]

(b) $5x + 3x$

Answer 8x (1) [1 mark]

(c) $6y - 2y + y$

Answer 5y (1) [1 mark]

(d) $3a + 2b + 4a$

7a (1)

Answer 7a + 2b (1) [2 marks]

4

(a) Expand $2(x + 4)$

Answer 2x + 8 (1) [1 mark]

(b) Expand $5(y - 3)$

Answer 5y - 15 (1) [1 mark]

(c) Expand and simplify $2(x + 3) + 4(x + 1)$

2x + 6 (1)

+ 4x + 4 (1)

Answer 6x + 10 (1) [3 marks]

5

Write one word from the box next to each of these.

expression

equation

formula

$2x + 1 = 9$ equation

$P = 4l$ formula

$6a - 5$ expression

All three correct scores 2 marks. One correct scores 1 mark.

[2 marks]

6

$$a = 3 \quad b = 5$$

Work out the value of

(a) $a + b$

Answer 8 (1) [1 mark]

(b) $4a$

Answer 12 (1) [1 mark]

(c) $2a + 3b$

$$6 + 15 (1)$$

Answer 21 (1) [2 marks]

7

Solve

(a) $x + 5 = 12$

$x = 7$ (1) [1 mark]

(b) $3x = 18$

$x = 6$ (1) [1 mark]

(c) $\frac{x}{4} = 5$

$x = 20$ (1) [1 mark]

(d) $x - 9 = 4$

$x = 13$ (1) [1 mark]

Question	Topic	RAG
1	I can use a function machine and its inverse	
2	I can write expressions using algebra	
3	I can collect like terms	
4	I can expand brackets	
5	I know the difference between an expression, an equation and a formula	
6	I can substitute numbers into expressions	
7	I can solve one step equations	