

Expressions, Functions and Formulae

ANSWERS

No calculator | 30 minutes | Total marks: 30

Name Class

1 Here is a function machine.

Input $\rightarrow$ $\boxed{-4}$ $\rightarrow$ $\boxed{\times 5}$ $\rightarrow$ Output

(a) Work out the output when the input is 10

Answer 30 (1) [1 mark]

(b) Work out the input when the output is 45

$$45 \div 5 = 9, 9 + 4 \text{ (1)}$$

Answer 13 (1) [2 marks]

2 Simplify

(a) $7a - 3b + 2a + 5b$

$$9a \text{ (1)}$$

Answer $9a + 2b$ (1) [2 marks]

(b) $3x \times 4y$

Answer $12xy$ (1) [1 mark]

(c) $x^2 + 3x + 2x^2 - x$

$$3x^2 \text{ (1)}$$

Answer $3x^2 + 2x$ (1) [2 marks]

3

Expand and simplify

(a) $3(2x + 5) - 2(x - 4)$

$6x + 15$ (1)

$- 2x + 8$ (1)

Answer $4x + 23$ (1)

[3 marks]

(b) $(x + 3)(x + 6)$

$x^2 + 6x + 3x + 18$ (1)

Answer $x^2 + 9x + 18$ (1)

[2 marks]

4

$x = -3$ $y = 4$

Work out the value of

(a) $x^2 + y$

$9 + 4$ (1)

Answer 13 (1)

[2 marks]

(b) $3y - 2x^2$

$12 - 18$ (1)

Answer -6 (1)

[2 marks]

5

A formula used in science is $V = IR$

(a) Work out the value of V when $I = 4$ and $R = 6$

$V = 24$ (1)

[1 mark]

(b) Work out the value of I when $V = 30$ and $R = 5$

$30 = I \times 5$ (1)

$I = 6$ (1)

[2 marks]

6

A taxi charges £4 plus £2 for each mile.

(a) Write a formula for the cost, £C, of a journey of m miles.

$$2m \text{ seen (1)}$$

Answer $C = 4 + 2m$ (1) [2 marks]

(b) Work out the cost of a journey of 9 miles.

Answer £ 22 (1) [1 mark]

7

Solve

(a) $3x + 4 = 19$

$$3x = 15 \text{ (1)}$$

$x = 5$ (1) [2 marks]

(b) $\frac{x}{2} - 3 = 4$

$$\frac{x}{2} = 7 \text{ (1)}$$

$x = 14$ (1) [2 marks]

(c) $5x - 2 = 3x + 8$

$$2x - 2 = 8 \text{ (1)}$$

$$2x = 10 \text{ (1)}$$

$x = 5$ (1) [3 marks]

Question	Topic	RAG
1	I can use a function machine and its inverse	
2	I can simplify expressions	
3	I can expand and simplify brackets	
4	I can substitute negative numbers into expressions with powers	
5	I can use a formula from another subject	
6	I can write and use a formula	
7	I can solve two step equations and equations with unknowns on both sides	