

Quadratics and Formulae

ANSWERS

Calculator | 30 minutes | Total marks: 28

Name Class

1

Expand and simplify

(a) $(x+4)(x+6)$

$$x^2 + 6x + 4x + 24 \text{ (1)}$$

Answer $x^2 + 10x + 24 \text{ (1)}$ [2 marks]

(b) $(x-3)(x+8)$

$$x^2 + 8x - 3x - 24 \text{ (1)}$$

Answer $x^2 + 5x - 24 \text{ (1)}$ [2 marks]

2

Factorise

(a) $x^2 + 7x + 12$

Answer $(x+3)(x+4) \text{ (1)(1)}$ [2 marks]

(b) $x^2 - 3x - 10$

Answer $(x-5)(x+2) \text{ (1)(1)}$ [2 marks]

(c) $x^2 - 16$

Answer $(x+4)(x-4) \text{ (1)}$ [1 mark]

3

Solve

(a) $x^2 + 5x + 6 = 0$

$$(x + 2)(x + 3) = 0 \text{ (1)(1)}$$

$$x = \underline{-2 \text{ or } -3 \text{ (1)}} \quad [3 \text{ marks}]$$

(b) $x^2 - 2x - 15 = 0$

$$(x - 5)(x + 3) = 0 \text{ (1)(1)}$$

$$x = \underline{5 \text{ or } -3 \text{ (1)}} \quad [3 \text{ marks}]$$

(c) $x^2 - 9x = 0$

$$x(x - 9) = 0 \text{ (1)}$$

$$x = \underline{0 \text{ or } 9 \text{ (1)}} \quad [2 \text{ marks}]$$

4

Write equation or identity next to each of these.

$2x + 1 = 9$

equation

$2(x + 1) = 2x + 2$

identity

$x + x + x = 3x$

identity

$3x = 12$

equation

All four correct scores 2 marks. Two or three correct scores 1 mark.

[2 marks]

5

Show that $(x + 2)(x + 3) - 6 \equiv x(x + 5)$

$$x^2 + 3x + 2x + 6 - 6 \text{ (1)}$$

$$= x^2 + 5x \text{ (1)}$$

$$= x(x + 5) \text{ (1)}$$

[3 marks]

6

(a) Make x the subject of $y = 5x - 3$

$$y + 3 = 5x \quad (1)$$

$$x = \frac{y + 3}{5} \quad (1) \quad [2 \text{ marks}]$$

(b) Make a the subject of $v = u + at$

$$v - u = at \quad (1)$$

$$a = \frac{v - u}{t} \quad (1) \quad [2 \text{ marks}]$$

(c) Make r the subject of $A = \pi r^2$

$$r^2 = \frac{A}{\pi} \quad (1)$$

$$r = \sqrt{\left(\frac{A}{\pi}\right)} \quad (1) \quad [2 \text{ marks}]$$

Question	Topic	RAG
1	I can expand and simplify double brackets	
2	I can factorise quadratics, including the difference of two squares	
3	I can solve quadratic equations by factorising	
4	I know the difference between an equation and an identity	
5	I can show that an identity is true	
6	I can change the subject of a formula	