



ACHIEVE ACADEMY

GCSE Maths — Foundation Tier

Solving Quadratic Equations · Practice Booklet

NAME: _____

CLASS: _____

DATE: _____

☐ Developing

☒ Secure

☐ Greater Depth

Answer every question in the working space provided. Method marks are available for correct working even if the final answer is wrong. Check the time allowed with your tutor before you start.

Solving Quadratic Equations

Total marks available: 86

● Solving Quadratic Equations

$$\checkmark x = \pm 8$$

Q1 · ● Developing · 3 marks

METHOD

$$x^2 = 56 + 8 = 64$$

$$x = \pm\sqrt{64} = \pm 8$$

$$\checkmark a = \pm 3$$

Q2 · ● Developing · 2 marks

METHOD

$$a = \pm\sqrt{9} = \pm 3$$

$$\checkmark y = \pm 11$$

Q3 · ● Developing · 2 marks

METHOD

$$y = \pm\sqrt{121} = \pm 11$$

$$\checkmark b = \pm 6$$

Q4 · ● Developing · 2 marks

METHOD

$$b = \pm\sqrt{36} = \pm 6$$

$$\checkmark n = \pm 5$$

Q5 · ● Developing · 3 marks

METHOD

$$n^2 = 27 - 2 = 25$$

$$n = \pm\sqrt{25} = \pm 5$$

$$\sqrt{b} = \pm 4$$

Q6 · ● Developing · 3 marks

METHOD

$$b^2 = 20 - 4 = 16$$

$$b = \pm\sqrt{16} = \pm 4$$

$$\sqrt{x} = \pm 10$$

Q7 · ● Developing · 2 marks

METHOD

$$x = \pm\sqrt{100} = \pm 10$$

$$\sqrt{b} = \pm 5$$

Q8 · ● Developing · 2 marks

METHOD

$$b = \pm\sqrt{25} = \pm 5$$

$$\sqrt{n} = \pm 5$$

Q9 · ● Developing · 3 marks

METHOD

$$n^2 = 32 - 7 = 25$$

$$n = \pm\sqrt{25} = \pm 5$$

$$\sqrt{b} = \pm 5$$

Q10 · ● Developing · 3 marks

METHOD

$$b^2 = 34 - 9 = 25$$

$$b = \pm\sqrt{25} = \pm 5$$

$$\checkmark y = 5 \text{ or } y = 6$$

Q11 · ● Secure · 3 marks

METHOD

Find two numbers that multiply to 30 and add to -11: -6 and -5

$$(y - 6)(y - 5) = 0$$

$$y = 5 \text{ or } y = 6$$

$$\checkmark b = 3 \text{ or } b = 8$$

Q12 · ● Secure · 3 marks

METHOD

Find two numbers that multiply to 24 and add to -11: -8 and -3

$$(b - 8)(b - 3) = 0$$

$$b = 3 \text{ or } b = 8$$

$$\checkmark a = 0 \text{ or } a = 4$$

Q13 · ● Secure · 3 marks

METHOD

$$a(a - 4) = 0$$

$$a = 0 \text{ or } a = 4$$

$$\checkmark x = -3 \text{ or } x = 0$$

Q14 · ● Secure · 2 marks

METHOD

The solutions are where the curve crosses the x-axis ($y = 0$)

$$x = -3 \text{ or } x = 0$$

$$\checkmark y = 3 \text{ or } y = 6$$

Q15 · ● Secure · 3 marks

METHOD

Find two numbers that multiply to 18 and add to -9: -3 and -6

$$(y - 3)(y - 6) = 0$$

$$y = 3 \text{ or } y = 6$$

✓ $b = 7$ or $b = 8$

Q16 · ● Secure · 3 marks

METHOD

Find two numbers that multiply to 56 and add to -15: -7 and -8

$$(b - 7)(b - 8) = 0$$

$$b = 7 \text{ or } b = 8$$

✓ $a = -3$ or $a = 0$

Q17 · ● Secure · 3 marks

METHOD

$$a(a + 3) = 0$$

$$a = -3 \text{ or } a = 0$$

✓ $x = -4$ or $x = -1$

Q18 · ● Secure · 2 marks

METHOD

The solutions are where the curve crosses the x-axis ($y = 0$)

$$x = -4 \text{ or } x = -1$$

✓ $x = -2$ or $x = 0$

Q19 · ● Secure · 2 marks

METHOD

The solutions are where the curve crosses the x-axis ($y = 0$)

$$x = -2 \text{ or } x = 0$$

✓ $y = -12$ or $y = 0$

Q20 · ● Secure · 3 marks

METHOD

$$y(y + 12) = 0$$

$$y = -12 \text{ or } y = 0$$

$$\checkmark x = -8 \text{ or } x = -2$$

Q21 · ● Greater Depth · 4 marks

METHOD

Find two numbers that multiply to 16 and add to 10: 2 and 8

$$(x + 2)(x + 8) = 0$$

$$x = -8 \text{ or } x = -2$$

$$\checkmark a = -5 \text{ or } a = -3$$

Q22 · ● Greater Depth · 4 marks

METHOD

Find two numbers that multiply to 15 and add to 8: 3 and 5

$$(a + 3)(a + 5) = 0$$

$$a = -5 \text{ or } a = -3$$

$$\checkmark n = -2 \text{ or } n = 5$$

Q23 · ● Greater Depth · 3 marks

METHOD

Find two numbers that multiply to -10 and add to -3: -5 and 2

$$(n - 5)(n + 2) = 0$$

$$n = -2 \text{ or } n = 5$$

$$\checkmark n = -8 \text{ or } n = 9$$

Q24 · ● Greater Depth · 3 marks

METHOD

Find two numbers that multiply to -72 and add to -1: -9 and 8

$$(n - 9)(n + 8) = 0$$

$$n = -8 \text{ or } n = 9$$

$$\checkmark n = -4 \text{ or } n = -3$$

Q25 · ● Greater Depth · 4 marks

METHOD

Find two numbers that multiply to 12 and add to 7: 3 and 4

$$(n + 3)(n + 4) = 0$$

$$n = -4 \text{ or } n = -3$$

$$\checkmark a = -5 \text{ or } a = 7$$

Q26 · ● Greater Depth · 3 marks

METHOD

Find two numbers that multiply to -35 and add to -2: -7 and 5

$$(a - 7)(a + 5) = 0$$

$$a = -5 \text{ or } a = 7$$

$$\checkmark n = -8 \text{ or } n = 3$$

Q27 · ● Greater Depth · 3 marks

METHOD

Find two numbers that multiply to -24 and add to 5: -3 and 8

$$(n - 3)(n + 8) = 0$$

$$n = -8 \text{ or } n = 3$$

$$\checkmark a = -7 \text{ or } a = -2$$

Q28 · ● Greater Depth · 4 marks

METHOD

Find two numbers that multiply to 14 and add to 9: 7 and 2

$$(a + 7)(a + 2) = 0$$

$$a = -7 \text{ or } a = -2$$

$$\checkmark a = -9 \text{ or } a = 6$$

Q29 · ● Greater Depth · 3 marks

METHOD

Find two numbers that multiply to -54 and add to 3: -6 and 9

$$(a - 6)(a + 9) = 0$$

$$a = -9 \text{ or } a = 6$$

$$\checkmark n = -5 \text{ or } n = 1$$

Q30 · ● Greater Depth · 3 marks

METHOD

Find two numbers that multiply to -5 and add to 4: -1 and 5

$$(n - 1)(n + 5) = 0$$

$$n = -5 \text{ or } n = 1$$