

A34...Solving Quadratics by
Factorising.
No Co-efficients

OCR

(c) (i) Factorise.

$$x^2 - 2x - 15$$

(c)(i) [2]

(ii) Solve.

$$x^2 - 2x - 15 = 0$$

(ii) [1]

(c) (i) Factorise.

$$x^2 - 2x - 15$$

$\begin{array}{c} \text{+/-} \\ \downarrow \\ x^2 - 2x - 15 \end{array}$
 $\begin{array}{c} x \\ \downarrow \end{array}$

$$(x - 5)(x + 3)$$

$$\begin{array}{r}
 -15 \\
 -5 \quad +3 = -2 \checkmark \\
 +5 \quad -3 = +2 \\
 -15 \quad +1 \\
 +15 \quad -1
 \end{array}$$

(c)(i) $(x - 5)(x + 3)$ [2]

(ii) Solve.

$$x^2 - 2x - 15 = 0$$

$$(x - 5)(x + 3) = 0$$

$$\left. \begin{array}{l} x - 5 = 0 \\ x = 5 \end{array} \right\} \begin{array}{l} x + 3 = 0 \\ x = -3 \end{array}$$

(ii) 5 or -3 [1]

7 (a) Simplify.

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$$7t - 6u + 5t - 4u$$

(a) [2]

(b) Factorise.

$$5v + 20w$$

(b) [1]

(c) Solve by factorising.

$$x^2 + 10x + 21 = 0$$

(c) $x = \dots$ or $x = \dots$ [3]

7 (a) Simplify.

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$$7t - 6u + 5t - 4u$$

(a) $12t - 10u$ [2]

(b) Factorise.

$$5v + 20w$$

$$5(v + 4w)$$

(b) $5(v + 4w)$ [1]

(c) Solve by factorising.

$$\begin{array}{r} 21 \\ \swarrow \searrow \\ +7 \quad +3 \\ +21 \quad +1 \end{array}$$

$$x^2 + 10x + 21 = 0$$

$$(x + 7)(x + 3) = 0$$

	x	$+7$
x	x^2	$+7x$
$+3$	$+3x$	21

(c) $x = -7$ ✓ or $x = -3$ ✓ [3]

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(b) Solve by factorising.

$$x^2 + 11x + 30 = 0$$

(b) $x = \dots\dots\dots$ or $x = \dots\dots\dots$ [3]

(b) Solve by factorising.

A34 $x^2 + 11x + 30 = 0$

$$(x + 6)(x + 5) = 0$$

$$x = -6 \text{ or } x = -5$$

$$\begin{array}{cc} & +30 \\ +10 & +3 \\ +6 & +5 \\ +15 & +2 \end{array}$$

(b) $x = -6$ or $x = -5$ [3]

(c) Solve by factorising.

A34

$$x^2 - 7x + 10 = 0$$

(c) $x = \dots\dots\dots$ or $x = \dots\dots\dots$ [3]

(c) Solve by factorising.

$$x^2 - 7x + 10 = 0$$

A34

$$(x - 5)(x - 2) = 0$$

$$x - 5 = 0 \quad \text{or} \quad x - 2 = 0$$

$$x = 5$$

$$x = 2$$

$$(c) \quad x = \dots\dots\dots 5 \dots\dots\dots \text{or } x = \dots\dots\dots 2 \dots\dots\dots [3]$$

$$\begin{array}{cc} & 10 \\ -5 & -2 \end{array}$$

Edexcel

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24 Solve $x^2 + 5x - 24 = 0$

.....
(Total for Question 24 is 3 marks)

24 Solve $x^2 + 5x - 24 = 0$

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

$$? \times ? = 0$$

must be 0 must be 0

$$x = 3 \quad \text{and} \quad x = -8$$

x		
-24		
-3	+8	= +5 ✓
+3	-8	= -5
-12	+2	= -10
+12	-2	
-6	+4	
+6	-4	

$$x = 3, \quad x = -8$$

(Total for Question 24 is 3 marks)

AQA

31 Solve $x^2 - x - 12 = 0$

[3 marks]

A34

Answer _____

31 Solve $x^2 - x - 12 = 0$

[3 marks]

A34

$$(x + 3)(x - 4) = 0$$

 -12 -3

$+4 = 1x$

 $+3$

$-4 = -1x$

Answer $x = -3$ and $x = 4$

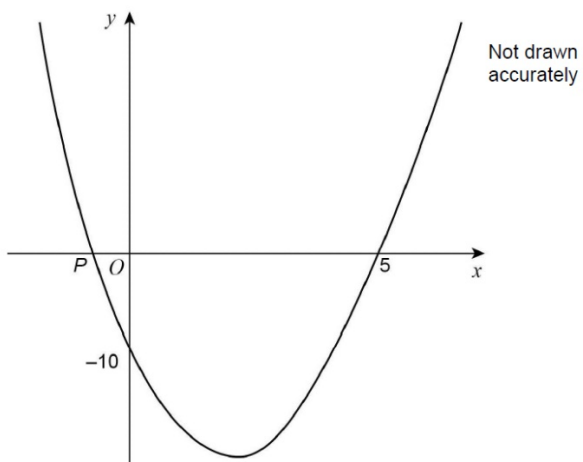
23 Here is a sketch of $y = x^2 + bx + c$

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A34 The curve intersects
the x -axis at $(5, 0)$ and point P
the y -axis at $(0, -10)$

Work out the x -coordinate of the turning point of the graph.

[4 marks]



Answer _____

23 Here is a sketch of $y = x^2 + bx + c$

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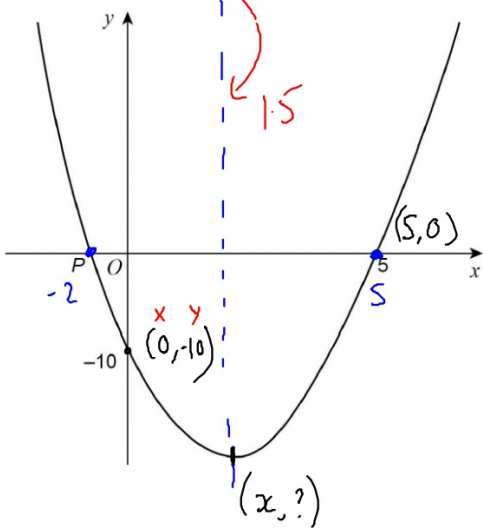
A34

The curve intersects

the x-axis at (5, 0) and point P

the y-axis at (0, -10)

~~1, 2, 3, 4, 5~~ 1, 2



Work out the x-coordinate of the turning point of the graph.

[4 marks]

$$\begin{aligned} \begin{matrix} x & y \\ (0, & -10) \end{matrix} & \quad y = x^2 + bx + c \\ -10 & = 0^2 + b(0) + c \\ -10 & = c \end{aligned}$$

Not drawn accurately

$$\begin{matrix} x & y \\ (5, & 0) \end{matrix}$$

$$y = x^2 + bx - 10$$

$$0 = 25 + 5b - 10$$

$$0 = 15 + 5b$$

$$-15 = 5b$$

$$\frac{-15}{5} = b \quad \dots \quad b = -3 \checkmark$$

$$x^2 - 3x - 10 = 0$$

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

$$x = 5 \quad x = -2$$

Answer _____

$$x = 1\frac{1}{2} \checkmark$$

18 Circle the **two** roots of $(2x + 3)(5x - 2) = 0$

[1 mark]

A34

$$-\frac{3}{2}$$

$$-\frac{2}{5}$$

$$\frac{2}{5}$$

$$\frac{3}{2}$$

18 Circle the **two** roots of $(2x + 3)(5x - 2) = 0$

[1 mark]

A34

$$\frac{-3}{2}$$

$$-\frac{2}{5}$$

$$\frac{2}{5}$$

$$\frac{3}{2}$$

$$2x + 3 = 0$$

$$2x = -3$$

$$x = \frac{-3}{2} \checkmark$$

$$5x - 2 = 0$$

$$5x = 2$$

$$x = \frac{2}{5}$$