

Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Solving Quadratics

Calculator Not Allowed

INSTRUCTIONS TO CANDIDATES

- ✎ Write your name in the space provided.
- ✎ Write your answers in the spaces provided in this question paper.
- ✎ Answer ALL questions.
- ✎ Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.
- ✎ You should have a ruler, compass and protractor where required.

Total Marks :

1) (a) Factorise $x^2 + x - 6$

Answer _____ [2]

(b) Hence solve the equation $x^2 + x - 6 = 0$

Answer $x =$ _____ [1]

2) Factorise $x^2 + 12x - 45$, and hence solve the equation $x^2 + 12x - 45 = 0$.

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3) Solve the equation

$$x^2 - 5x - 6 = 0$$

A solution by trial and improvement will not be accepted.

Answer _____ [3]

4) Factorise the expression $x^2 + 11x + 24$, and hence solve the equation $x^2 + 11x + 24 = 0$. [3]

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5) Factorise $x^2 - 5x - 14$ and hence solve $x^2 - 5x - 14 = 0$. [3]

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6)

Aled has three concrete slabs.

Two of the slabs are square, with each side of length x metres.The third slab is rectangular and measures 1 metre by $(x + 1)$ metres.The three concrete slabs cover an area of 7 m^2 .

(a) Show that $2x^2 + x - 6 = 0$.

[1]

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(b) Solve the equation to find the length of each side of the square slabs.
You must justify any decisions that you make.

[4]

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7) Solve $x^2 - 12x - 13 = 0$

Answer _____ [3]

8) Factorise the expression $12x^2 - 16x - 3$, and hence solve the equation $12x^2 - 16x - 3 = 0$.

[3]

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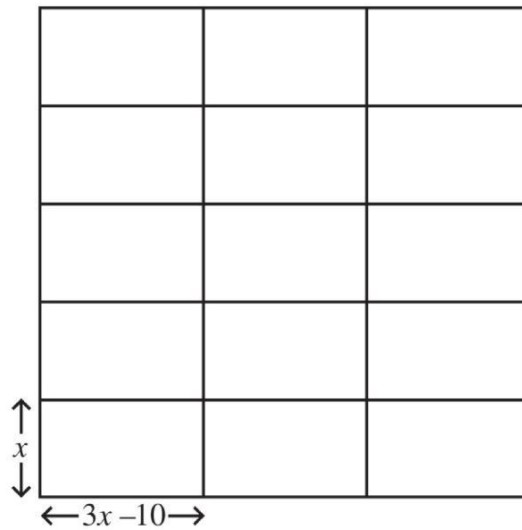
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9) Identical tiles are arranged as shown.



The 15 tiles form a **square** when fitted together as in the diagram.

(a) Write down an equation in x .

Answer _____ [2]

(b) Solve your equation to find x .
Show your working.

Answer $x =$ _____ [2]

- 10) One side of a rectangle is $(2x - 3)$ metres.
The perimeter of the rectangle is 50 metres.

(a) Show that the area, A , of the rectangle is given by

$$A = 62x - 84 - 4x^2$$

[2]

The area of the rectangle is 126 m^2

(b) (i) Show that $2x^2 - 31x + 105 = 0$

[1]

(ii) Hence solve the equation for x

Answer $x = \underline{\hspace{2cm}}, \underline{\hspace{2cm}}$ [3]

11) A right-angled triangle is shown below.

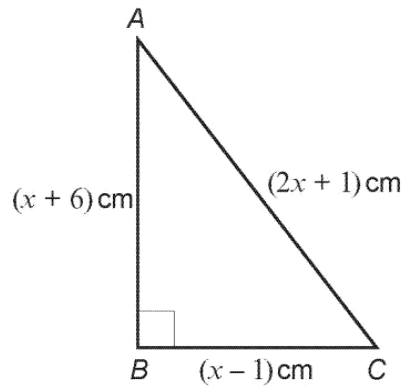


Diagram not drawn to scale

(a) Show that $x^2 - 3x - 18 = 0$. [4]

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(b) Factorise the expression $x^2 - 3x - 18$, and hence solve the equation $x^2 - 3x - 18 = 0$.
Write down the lengths of the sides of the right-angled triangle. [4]

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$AB =$ cm $AC =$ cm $BC =$ cm