

# Solving Quadratics

## Question Paper

<b>Level</b>	OCR
<b>Subject</b>	Maths
<b>Exam Board</b>	GCSE (9-1)
<b>Topic</b>	Algebra
<b>Sub Topic</b>	Solving Quadratics
<b>Grade Level</b>	Grade 5
<b>Booklet</b>	Question Paper

**Time Allowed:** 56 minutes

**Score:** /46

**Percentage:** /100

- 1 One solution of the equation  $x^3 - 4x = 25$  lies between 3 and 4.

Use trial and improvement to find this solution correct to 1 decimal place.  
Show all your trials and their outcomes.

..... [4]

2 Use the quadratic formula to solve this equation.

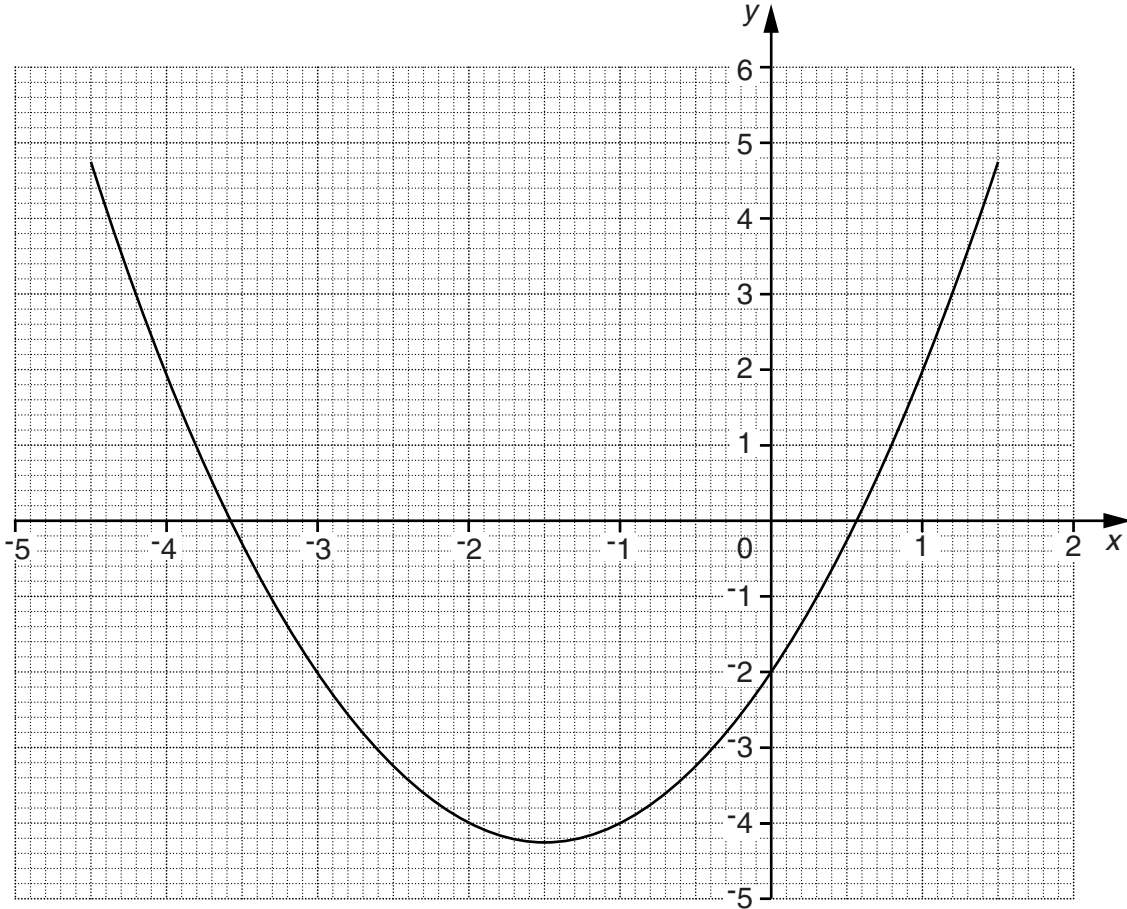
$$x^2 + 5x + 1 = 0$$

Give your answers correct to 2 significant figures.

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[3]

3 Here is the graph of  $y = x^2 + 3x - 2$ .



(a) Use the graph to solve this equation.

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

(a) \_\_\_\_\_ [2]

(b) By drawing a suitable straight line on the grid, solve this equation.

$$x^2 + 3x - 2 = x + 2$$

(b) \_\_\_\_\_ [3]

4 Solve.

$$x^2 + 4x + 1 = 0$$

Give your answers correct to 2 decimal places.

..... [3]

5 Show that a solution of  $x^3 - x = 20$  lies between 2 and 3.

**[3]**

6 (a) Factorise.

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

(a) ..... [2]

(b) Hence solve this equation.

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

(b) ..... [1]

(c) Simplify fully.

$$\frac{x^2 + 2x - 15}{x^2 - 9}$$

(c) ..... [2]

7 (a) Solve.

$$6x^2 = 150$$

(a) ..... [3]

(b) Rearrange this formula to make  $a$  the subject.

$$S = 4bc + 2a^2$$

(b) ..... [3]



8 (a) Solve.

$$5(2x - 3) = 1$$

(a) \_\_\_\_\_ [3]

(b) Factorise completely.

$$6a^2 - 10a$$

(b) \_\_\_\_\_ [2]

(c) One solution of the equation  $3x^2 = 108$  is  $x = 6$ .

Write down the other solution.

(c) \_\_\_\_\_ [1]

9 (a) Solve.

$$4x^2 = 36$$

(a) \_\_\_\_\_ [3]

(b) Rearrange this formula to make  $A$  the subject.

$$c = \sqrt{\frac{A}{6}}$$

(b) \_\_\_\_\_ [2]

10 (a) Write this expression in completed square form,  $(x + a)^2 - b$ .

$$x^2 + 6x + 1$$

(a) \_\_\_\_\_ [2]

(b) Use your answer to part (a) to solve this equation.

$$x^2 + 6x + 1 = 0$$

Give your answers correct to 2 decimal places.  
Show your working clearly.

(b) \_\_\_\_\_ [4]