Write your name, centre number and candidate number in the boxes below.

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

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Quadratic equations

Time allowed: 1 hour

Subject code **0580**

Mathematics

Questions from Paper 2 and Paper 4

You must have: a ruler marked in centimetres and millimetres, a protractor, compasses, a pen, an HB pencil and an eraser.
You may use a calculator.

Total marks

/ 47

Instructions

- Answer every question in the space provided on this paper.
- Write in black or dark blue ink. Pencil may be used for diagrams and graphs.
- Fill in your name, centre number and candidate number above.
- Show your working: a correct method can earn marks even if the answer is wrong.
- Unless a question says otherwise, give answers that are not exact to 3 significant figures, and angles in degrees to 1 decimal place.

Information

- This paper has 10 questions worth 47 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

Advice

- Read every question through once before you write anything.
- Use the marks in brackets to judge how long to spend on each part.
- If you finish early, go back and check your working.

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Print at 100% (Actual size) so diagrams keep their real measurements.

1 Solve by factorising.

$$3x^2 - 7x - 20 = 0$$

$x =$ ..... or $x =$ ..... [3]

Solving quadratics by factorising Click for more variations

2 Find the values of x when $6x + y = 10$ and $y = x^2 - 3x + 10$.

$x =$ ..... or $x =$ ..... [3]

Simultaneous equations Click for more variations

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3 Solve the equation.

$$x^2 - 8x + 6 = 0$$

Show all your working and give your answers correct to 2 decimal places.

Answer $x =$ ..... or $x =$ ..... [4]

The quadratic formula Click for more variations

4 Solve the equation $2x^2 + 3x - 6 = 0$.
Show all your working and give your answers correct to 2 decimal places.

Answer $x =$ ..... or $x =$ ..... [4]

The quadratic formula Click for more variations

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5 **(a)** Write $x^2 - 18x - 27$ in the form $(x+k)^2 + h$.

..... [2]

(b) Use your answer to **part (a)** to solve the equation $x^2 - 18x - 27 = 0$.

$x =$ ..... or $x =$ ..... [2]

(a) Completing the square (b) Solving by completing the square Click for more variations

6 **(a)** Solve.

$$5x^2 = 12 - 17x$$

$x =$ ..... or $x =$ ..... [4]

(b) $ax^2 + a = b$ where a and b are integers.

One solution of this equation is $x = 6$.

Write down the other solution.

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$x =$ ..... [1]

(a) Solving quadratics by factorising (b) Solving quadratics by factorising Click for more variations

7 Solve the simultaneous equations.
You must show all your working.

$$4y + 3x = 13$$
$$y = x^2 - 18$$

$x =$ ..... $y =$ .....

or $x =$ ..... $y =$ ..... [5]

Simultaneous equations Click for more variations

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8 Solve.

$$\frac{1}{x+1}+\frac{9}{x+9}=1$$

$x =$ ..... or $x =$ ..... [5]

Solving equations with algebraic fractions Click for more variations

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9 Solve $\frac{4}{x+1} + \frac{2}{2x-5} = 3$.

You must show all your working.

$x =$ ..... or $x =$ ..... [7]

Solving equations with algebraic fractions Click for more variations

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10 Solve.

$$\frac{1}{x} - \frac{2}{x+1} = 3$$

Show all your working and give your answers correct to 2 decimal places.

$x =$ ..... or $x =$ ..... [7]

Solving equations with algebraic fractions Click for more variations

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