Quadratics

GCSE Maths · Practice Questions

20 questions · 62 marks total

jtmaths.org · free maths resources

Section A · Foundation

Questions 1–3 are the most straightforward; they get harder as you go on. Question 10 is the most challenging.

1 **[1 mark]**

Expand $x(x + 4)$

2 **[2 marks]**

Expand and simplify $(x + 2)(x + 5)$

3 **[2 marks]**

Factorise $x^2 + 6x + 8$

4 **[2 marks]**

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

5 **[3 marks]**

Solve $x^2 + 5x + 6 = 0$

6 [3 marks]

Factorise

(a) $x^2 - 25$

(b) $x^2 - 3x - 10$

7 [3 marks]

Solve $x^2 - 7x + 12 = 0$

8 [3 marks]

Solve $x^2 = 9x$

9 [4 marks]

A rectangle has width x cm and length $(x + 5)$ cm.

The area of the rectangle is 36 cm^2.

(a) Show that $x^2 + 5x - 36 = 0$

(b) Work out the length and width of the rectangle.

10 [4 marks]

A curve has equation $y = x^2 - 2x - 8$

(a) Factorise $x^2 - 2x - 8$

(b) Write down the coordinates of the points where the curve crosses the x-axis.

(c) Write down the coordinates of the point where the curve crosses the y-axis.

Section B · Higher

Higher-tier style. Again, questions 1–3 are the gentlest and question 10 is the hardest.

1 **[2 marks]**

Solve $x^2 + 3x - 28 = 0$

.....

2 **[2 marks]**

Write $x^2 + 8x + 3$ in the form $(x + a)^2 + b$

.....

3 **[3 marks]**

Solve $2x^2 - 5x - 3 = 0$

.....

4 **[3 marks]**

Solve $x^2 + 4x - 6 = 0$

Give your answers correct to 2 decimal places.

.....

5 **[4 marks]**

Write $2x^2 - 12x + 5$ in the form $a(x + b)^2 + c$

.....

6 **[4 marks]**

The equation $x^2 + kx + 9 = 0$ has exactly one solution.

Work out the possible values of k.

.....

7 **[4 marks]**

Solve $x + \frac{6}{x} = 5$

8 **[4 marks]**

A curve has equation $y = x^2 - 6x + 11$

(a) Write the equation in the form $(x + a)^2 + b$

(b) Write down the coordinates of the turning point of the curve.

(c) Explain how you know the curve never crosses the x-axis.

9 **[4 marks]**

Solve the simultaneous equations

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

$y = 2x - 2$

10 **[5 marks]**

A rectangular lawn measures 12 m by 8 m.

A path of constant width x metres is laid all the way around the outside of the lawn.

The total area of the lawn and the path together is 192 m^2.

(a) Show that $x^2 + 10x - 24 = 0$

(b) Work out the width of the path.