Solving Quadratics by Factorising

GCSE Maths · Higher tier · 21 questions · 65 marks

Name _____ Date _____ Score _____ / 65

Start at Level 1 and climb. Stuck? The worked answers show every step.

Level 1 · Warm-up **Level 2 · Build** **Level 3 · Exam-style** **Level 4 · Challenge**

Level 1 · Warm-up

12 marks

Equations that are already $= 0$ and ready to factorise.

1 Solve $(x - 3)(x + 5) = 0$. [2 marks]

Answer _____

2 Solve $x^2 + 7x + 12 = 0$. [3 marks]

Answer _____

3 Solve $x^2 - 6x + 8 = 0$. [3 marks]

Answer _____

4 Solve $x^2 - 5x = 0$. [2 marks]

Answer _____

5 Solve $x^2 - 36 = 0$. [2 marks]

Answer _____

Level 2 · Build 16 marks
Harder signs, repeated roots, and a first look at $ax^2 + bx + c = 0$ and rearranging.

6 Solve $x^2 + 2x - 24 = 0$. [3 marks]

Answer _____

7 Solve $x^2 - 10x + 25 = 0$. [2 marks]

Answer _____

8 Solve $x^2 + 9x = 0$. [2 marks]

Answer _____

9 Solve $x^2 - 3x - 40 = 0$. [3 marks]

Answer _____

10 Solve $2x^2 + 5x - 3 = 0$. [3 marks]

Answer _____

11 Solve $x^2 = 4x + 21$. [3 marks]

Answer _____

Level 3 · Exam-style 21 marks
Show that, hence and graph questions in real GCSE style.

12 (a) Factorise $x^2 - 2x - 15$. [2 marks]

Answer _____

(b) Hence solve $x^2 - 2x - 15 = 0$. [1 mark]

Answer _____

13 (a) A rectangle is x cm wide and $(x + 5)$ cm long. Its area is 36 cm^2. Show that $x^2 + 5x - 36 = 0$. [2 marks]

Answer _____

(b) Solve $x^2 + 5x - 36 = 0$. [3 marks]

Answer _____

(c) Write down the width of the rectangle. [1 mark]

Answer _____

14 Ella solves $x^2 - 7x + 10 = 0$. She writes $(x - 2)(x - 5) = 0$, so $x = -2$ or $x = -5$. Explain Ella's mistake, and write down the correct solutions. [2 marks]

Answer _____

15 The graph of $y = x^2 - x - 12$ crosses the x-axis at two points. Use algebra to find the coordinates of these points. [3 marks]

Answer _____

16 Solve $3x^2 - 11x - 4 = 0$. [3 marks]

Answer _____

17 Solve $(x + 2)(x - 1) = 4x + 2$. [4 marks]

Answer _____

Level 4 · Challenge 16 marks
Grade 8–9: fractions, unknown coefficients and contexts with conditions.

18 Solve $\frac{5}{x+2}+\frac{3}{x}=2$. [4 marks]

Answer _____

19 The equation $x^2+bx+c=0$ has solutions $x=4$ and $x=-7$. Find the value of b and the value of c. [3 marks]

Answer _____

20 (a) A triangle has base $(x+1)$ cm and perpendicular height $(2x-3)$ cm. Its area is 9 cm^2. Show that $2x^2-x-21=0$. [3 marks]

Answer _____

(b) Work out the length of the base of the triangle. [3 marks]

Answer _____

21 Solve $(x-3)^2 = 2(x-3)$. [3 marks]

Answer _____