

GCSE Maths Quadratic and Simultaneous Equations (Higher): check-up and exam-style questions: answers

GCSE Maths - Quadratic and Simultaneous Equations - Higher - Test yourself

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch14-quadratics-simultaneous/higher/check-up-and-exam-style-questions/

Exercise 14Z Check-up (non-calculator) Non-calculator

1 Factorise $x^2 + 9x + 20$.

Answer: $(x + 4)(x + 5)$

2 Factorise $x^2 - 81$.

Answer: $(x - 9)(x + 9)$

3 Solve $x^2 - 3x - 10 = 0$.

Answer: $x = -2$ or $x = 5$

4 Solve $x^2 + 4x = 21$.

Answer: $x = -7$ or $x = 3$

5 Solve the simultaneous equations

$$x + y = 11$$

$$x - y = 3$$

Answer: $x = 7, y = 4$

6 Solve the simultaneous equations

$$2x + 3y = 12$$

$$4x - y = 10$$

Answer: $x = 3, y = 2$

7 Solve by substitution

$$y = 2x - 1$$

$$x + y = 8$$

Answer: $x = 3, y = 5$

8 A rectangle has width x cm and length $(x + 4)$ cm. Its area is 45 cm^2 . Find the width and the length.

Answer: width 5 cm, length 9 cm

9 Solve $3x^2 + 10x + 8 = 0$.

Answer: $x = -2$ or $x = -\frac{4}{3}$

10 Write $x^2 + 6x + 1$ in the form $(x + p)^2 + q$.

Answer: $(x + 3)^2 - 8$

Exercise 14X Exam-style questions

Non-calculator

- 1** Factorise $x^2 + x - 20$. [2 marks]

Answer: $(x - 4)(x + 5)$

- 2** Factorise $4x^2 - 25$. [2 marks]

Answer: $(2x - 5)(2x + 5)$

- 3** Solve $x^2 - 5x - 14 = 0$. [3 marks]

Answer: $x = -2$ or $x = 7$

- 4** Solve $x^2 + 3x = 28$. [3 marks]

Answer: $x = -7$ or $x = 4$

- 5** Solve $x(x + 5) = 24$. [3 marks]

Answer: $x = -8$ or $x = 3$

- 6** Solve the simultaneous equations

$$3x + 2y = 13$$

$$5x - 2y = 11$$

[3 marks]

Answer: $x = 3, y = 2$

- 7** Solve the simultaneous equations

$$2x + 3y = 1$$

$$3x + 2y = 4$$

[4 marks]

Answer: $x = 2, y = -1$

- 8** A rectangle has width x cm and length $(x + 5)$ cm. Its area is 84 cm^2 . Find the width and the length.

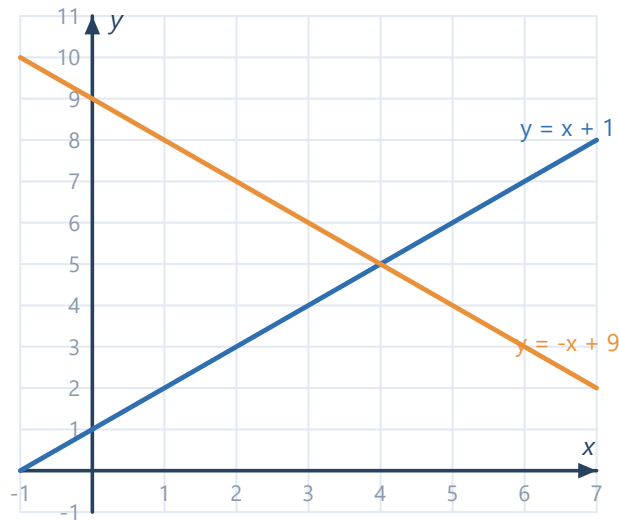
Answer: width 7 cm, length 12 cm

[5 marks]

- 9** 2 adult tickets and 3 child tickets cost £33. 1 adult ticket and 4 child tickets cost £29. Work out the cost of one adult ticket and the cost of one child ticket. [4 marks]

Answer: adult ticket £9, child ticket £5

- 10** The diagram shows the lines $y = x + 1$ and $y = 9 - x$. Use the diagram to solve the simultaneous equations $y = x + 1$ and $y = 9 - x$. [3 marks]



Answer: $x = 4, y = 5$

- 11** Solve $3x^2 - 5x - 2 = 0$. [3 marks]

Answer: $x = -\frac{1}{3}$ or $x = 2$

- 12** Solve $x^2 + 4x - 3 = 0$. Give your solutions correct to 2 decimal places. [3 marks]

Answer: $x = -4.65$ or $x = 0.65$

- 13** Write $x^2 - 10x + 7$ in the form $(x + p)^2 + q$ and write down the coordinates of the turning point of the graph of $y = x^2 - 10x + 7$. [4 marks]

Answer: $(x - 5)^2 - 18$; turning point $(5, -18)$

- 14** Solve the simultaneous equations $y = x^2 - 3x$ and $y = 2x - 6$. [5 marks]

Answer: $x = 2, y = -2$ and $x = 3, y = 0$

- 15** Solve $\frac{2}{x} + \frac{3}{x+1} = 2$. [5 marks]

Answer: $x = -\frac{1}{2}$ or $x = 2$