Simultaneous Equations

GCSE Maths · Higher tier · 21 questions · 83 marks

Name _____ Date _____ Score _____ / 83

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

15 marks

Adding or subtracting the equations straight away, and simple substitution.

1 Solve the simultaneous equations $x + y = 10$ and $x - y = 4$. [3 marks]

Answer _____

2 Solve the simultaneous equations $2x + y = 11$ and $x + y = 7$. [3 marks]

Answer _____

3 Solve the simultaneous equations $3x + 2y = 16$ and $x - 2y = 0$. [3 marks]

Answer _____

4 Solve the simultaneous equations $2x + 3y = 13$ and $2x + y = 7$. [3 marks]

Answer _____

5 Solve the simultaneous equations $y = 2x$ and $x + y = 15$. [3 marks]

Answer _____

Level 2 · Build 24 marks
Multiplying one or both equations first, and a first look at a linear and a quadratic.

6 Solve the simultaneous equations $3x + 2y = 19$ and $x + 4y = 13$. [3 marks]

Answer _____

7 Solve the simultaneous equations $5x - 2y = 11$ and $3x + 4y = 4$. [4 marks]

Answer _____

8 Solve the simultaneous equations $4x + 3y = 2$ and $3x + 2y = 1$. [4 marks]

Answer _____

9 Solve the simultaneous equations $y = 3x - 5$ and $y = x + 7$. [3 marks]

Answer _____

10 Solve the simultaneous equations $y = x^2$ and $y = x + 6$. [5 marks]

Answer _____

11 Solve the simultaneous equations $y = x^2 - 3x$ and $y = 2x - 4$. [5 marks]

Answer _____

Level 3 · Exam-style 24 marks
Forming equations from prices, numbers and animals, and spotting mistakes.

12 4 coffees and 3 cakes cost £14.50. 2 coffees and 5 cakes cost £12.50. Work out the cost of one coffee and the cost of one cake. [4 marks]

Answer _____

13 The sum of two numbers is 42 and their difference is 8. Work out the two numbers. [3 marks]

Answer _____

14 Mia solves $x + 2y = 11$ and $x + y = 7$. She subtracts the equations and writes $y = 18$. Explain Mia's mistake, and solve the equations correctly. [3 marks]

Answer _____

15 A farmer has some chickens and some sheep. Altogether there are 30 heads and 80 legs. How many chickens and how many sheep are there? [4 marks]

Answer _____

16 Solve the simultaneous equations $x^2 + y^2 = 25$ and $y = x + 1$. [5 marks]

Answer _____

17 Solve the simultaneous equations $y = 2x^2 - 5x + 1$ and $y = x - 3$. [5 marks]

Answer _____

Level 4 · Challenge 20 marks
Grade 8–9: circles, decimal answers, no solutions and a product of two unknowns.

18 Solve the simultaneous equations $x^2 + y^2 = 20$ and $y = 2x + 1$. Give your answers correct to 2 decimal places. [6 marks]

Answer _____

19 Show that the line $y = x + 3$ and the curve $y = x^2 + 5$ do not meet. [3 marks]

Answer _____

20 Solve the simultaneous equations $2x + 3y = 7$ and $xy = 2$. [6 marks]

Answer _____

21 A rectangle has a perimeter of 26 cm and an area of 40 cm^2. Work out its length and width. [5 marks]

Answer _____