Solving Linear Equations

GCSE Maths · Higher tier · 21 questions · 60 marks

Name _____ Date _____ Score _____ / 60

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

11 marks

Two-step equations, brackets and unknowns on both sides.

1 Solve $3x + 5 = 20$. [2 marks]

Answer _____

2 Solve $\frac{x}{4} - 3 = 2$. [2 marks]

Answer _____

3 Solve $5(x - 2) = 35$. [2 marks]

Answer _____

4 Solve $7x - 4 = 3x + 16$. [3 marks]

Answer _____

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

Answer _____

Level 2 · Build 17 marks
Negative answers, fractions, and equations with two fractions.

6 Solve $4(x + 3) = 2(x - 5)$. [3 marks]

Answer _____

7 Solve $\frac{x + 5}{3} = x - 3$. [3 marks]

Answer _____

8 Solve $12 - 3x = 2x - 8$. [3 marks]

Answer _____

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

Answer _____

10 Solve $\frac{x + 2}{4} + \frac{x - 1}{5} = 3$. [3 marks]

Answer _____

11 Solve $\frac{3x - 1}{2} - \frac{x + 4}{3} = 4$. [3 marks]

Answer _____

Level 3 · Exam-style 20 marks
Forming equations from angles, perimeters and ages, and spotting mistakes.

12 The angles of a triangle are $x°$, $(2x + 10)°$ and $(3x - 40)°$. Work out the size of the largest angle. [4 marks]

Answer _____

13 (a) A rectangle has length $(2x + 3)$ cm and width $(x - 1)$ cm. Its perimeter is 34 cm. Form an equation and solve it to find x. [3 marks]

Answer _____

(b) Work out the area of the rectangle. [2 marks]

Answer _____

14 Ali is 3 times as old as Ben. In 5 years' time, Ali will be twice as old as Ben. How old is Ben now? [3 marks]

Answer _____

15 Leah solves $4x - 7 = 2x + 9$. Her working is: $4x - 2x = 9 - 7$, so $2x = 2$, so $x = 1$. Explain Leah's mistake, and solve the equation correctly. [2 marks]

Answer _____

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

Answer _____

17 Solve $(x+1)^2 = (x-3)^2 + 16$. [3 marks]

Answer _____

Level 4 · Challenge 12 marks
Grade 8–9: unknown constants, no solutions, and fractions with x on the bottom.

18 Show that the equation $2(3x+1) - 3(2x-1) = 4$ has no solution. [2 marks]

Answer _____

19 Solve $\frac{x+3}{x-2} = \frac{x+1}{x-1}$. [4 marks]

Answer _____

20 The equation $\frac{2x+k}{3} = x-k$ has solution $x = 7$. Find the value of the constant k. [3 marks]

Answer _____

21 Jo cycles to work at 15 km/h and walks home along the same route at 5 km/h. The two journeys take 2 hours altogether. How far is it from Jo's home to work? [3 marks]

Answer _____