

Solving Linear Equations

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

$$x + 7 = 12$$

Step 1 · Subtract 7 from both sides

$$x = 12 - 7$$

Step 2 · Calculate

$$x = 5$$

Answer: $x = 5$

Check: $5 + 7 = 12$ ✓

2. Now try one with the steps

$$2x + 3 = 11$$

Step 1 · Subtract 3 from both sides

Step 2 · Divide both sides by 2

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. $x + 4 = 9$ [1]

2. $x - 6 = 3$ [1]

3. $4x = 20$ [1]

4. $2x + 3 = 15$ [2]

5. $5x - 7 = 23$ [2]

6. $4x + 1 = 2x + 9$ [3]

7. $x/3 = 7$ [1]

8. $3x - 4 = 11$ [2]

9. $10 - x = 4$ [2]

10. $3(x + 2) = 21$ [2]

11. $x/4 + 5 = 8$ [2]

12. $7x + 3 = 2x + 23$ [3]

13. $2x + 9 = 3$ [2]

14. $5 - 2x = 11$ [2]

15. $(x + 5)/3 = 4$

[2]

16. $6x + 1 = 4$

[2]

17. $4(2x - 1) = 3(x + 7)$

[3]

4. Before you hand it in

$2x + 3 = 11 \rightarrow 2x = 8$

Use the inverse operation. To remove +3, subtract 3 from both sides: $2x = 11 - 3 = 8$.

$2x = 8 \rightarrow x = 4$

$2x$ means ' $2 \times x$ '. The inverse of multiplication is division: $x = 8 \div 2 = 4$.

$5x - 2 = 3x + 6 \rightarrow 2x = 8 \rightarrow x = 4$ (adding $3x$ to the left)

To remove $3x$ from the right-hand side, SUBTRACT $3x$ from both sides: $2x - 2 = 6$. Then $2x = 8$, so $x = 4$.

Skip the check step under exam pressure

Always substitute back in. $x = 4 \rightarrow 2(4) + 3 = 11$ ✓. Ten seconds, free marks.