

3-5 Study Guide and Intervention

Solving Two-Step Equations

To solve two-step equations, you need to add or subtract first. Then divide to solve the equation.

Example 1 Solve $7v - 3 = 25$. Check your solution.

$$\begin{array}{l} 7v - 3 = 25 \quad \text{Write the equation.} \\ +3 = +3 \quad \text{Add 3 to each side.} \\ \hline 7v = 28 \quad \text{Simplify.} \\ \frac{7v}{7} = \frac{28}{7} \quad \text{Divide each side by 7.} \\ v = 4 \quad \text{Simplify.} \end{array}$$

Check

$7v - 3 = 25$	Write the original equation.
$7(4) - 3 \stackrel{?}{=} 25$	Replace v with 4.
$28 - 3 \stackrel{?}{=} 25$	Multiply.
$25 = 25 \checkmark$	The solution checks.

The solution is 4.

Example 2 Solve $-10 = 8 + 3x$. Check your solution.

$$\begin{array}{l} -10 = 8 + 3x \quad \text{Write the equation.} \\ -8 = -8 \quad \text{Subtract 8 from each side.} \\ \hline -18 = 3x \quad \text{Simplify.} \\ \frac{-18}{3} = \frac{3x}{3} \quad \text{Divide each side by 3.} \\ -6 = x \quad \text{Simplify.} \end{array}$$

Check

$-10 = 8 + 3x$	Write the original equation.
$-10 \stackrel{?}{=} 8 + 3(-6)$	Replace x with -6 .
$-10 \stackrel{?}{=} 8 + (-18)$	Multiply.
$-10 = -10 \checkmark$	The solution checks.

The solution is -6 .

Exercises

Solve each equation. Check your solution.

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|---------------------------------|----------------------------------|------------------------------------|-------------------------------------|
| 1. $4y + 1 = 13$
3 | 2. $6x + 2 = 26$
4 | 3. $-3 = 5k + 7$
-2 | 4. $6n + 4 = -26$
-5 |
| 5. $7 = -3c - 2$
-3 | 6. $-8p + 3 = -29$
4 | 7. $-5 = -5t - 5$
0 | 8. $-9r + 12 = -24$
4 |
| 9. $11 + 7n = 4$
-1 | 10. $35 = 7 + 4b$
7 | 11. $15 + 2p = 9$
-3 | 12. $49 = 16 + 3y$
11 |
| 13. $2 = 4t - 14$
4 | 14. $-9x - 10 = 62$
-8 | 15. $30 = 12z - 18$
4 | 16. $7 + 4g = 7$
0 |
| 17. $24 + 9x = -3$
-3 | 18. $50 = 16q + 2$
3 | 19. $3c - 2.5 = 4.1$
2.2 | 20. $9y + 4.8 = 17.4$
1.4 |