

10-2 Study Guide and Intervention

Solving Two-Step Equations

A two-step equation contains two operations. To solve a two-step equation, undo each operation in reverse order.

Example 1 Solve $-2a + 6 = 14$. Check your solution.

Method 1 Vertical Method

$$-2a + 6 = 14$$

$$\underline{-6 = -6}$$

$$-2a = 8$$

$$\frac{-2a}{-2} = \frac{8}{-2}$$

$$a = -4$$

Check $-2a + 6 = 14$

$$-2(-4) + 6 \stackrel{?}{=} 14$$

$$14 = 14 \checkmark$$

Write the equation.

Subtract 6 from each side.

Simplify.

Divide each side by -2 .

Simplify.

Write the equation.

Replace a with -4 to see if the sentence is true.

The sentence is true.

Method 2 Horizontal Method

$$-2a + 6 = 14$$

$$-2a + 6 - 6 = 14 - 6$$

$$-2a = 8$$

$$\frac{-2a}{-2} = \frac{8}{-2}$$

$$a = -4$$

The solution is -4 .

Sometimes it is necessary to combine like terms before solving an equation.

Example 2 Solve $5 = 8x - 2x - 7$. Check your solution.

$$5 = 8x - 2x - 7$$

$$5 = 6x - 7$$

$$5 + 7 = 6x - 7 + 7$$

$$12 = 6x$$

$$\frac{12}{6} = \frac{6x}{6}$$

$$2 = x$$

Write the equation.

Combine like terms.

Add 7 to each side.

Simplify.

Divide each side by 6.

Simplify.

The solution is 2.

Check this solution.

Exercises

Solve each equation. Check your solution.

1. $2d + 7 = 9$

2. $11 = 3z + 5$

3. $2s - 4 = 6$

4. $-12 = 5r + 8$

5. $-6p - 3 = 9$

6. $-14 = 3x + x - 2$

7. $5c + 2 - 3c = 10$

8. $3 + 7n + 2n = 21$

9. $21 = 6r + 5 - 7r$

10. $8 - 5b = -7$

11. $-10 = 6 - 4m$

12. $-3t + 4 = 19$

13. $2 + \frac{a}{6} = 5$

14. $-\frac{1}{3}q - 7 = -3$

15. $4 - \frac{v}{5} = 0$

10-2**Skills Practice*****Solving Two-Step Equations***

Solve each equation. Check your solution.

1. $3n + 4 = 7$

2. $9 = 2s + 1$

3. $4c - 6 = 2$

4. $-4 = 2t - 2$

5. $3f - 12 = -3$

6. $8 = 4v + 12$

7. $5d - 6 = 9$

8. $2k + 12 = -4$

9. $-5 = 3m - 14$

10. $0 = 8z + 8$

11. $9a - 2 = -2$

12. $-8 + 4s = -16$

13. $-1 = 4 - 5x$

14. $5 = 9 - 2x$

15. $-2x + 12 = 14$

16. $1 - x = 8$

17. $-2 = -x + 4$

18. $11 = 2 - 3x$

19. $12 - 3x = 6$

20. $-6x + 5 = 17$

21. $13 = 18 - 5x$

22. $4x + 2x + 2 = 26$

23. $-18 = 9y - 5y + 10$

24. $-24 = 6a - 15 - 5a$

25. $3z - 17 + 2z = 13$

26. $22 = 4 + 8e - 2e$

27. $-15 = 9r + 1 - 7r$

28. $8k - 8 + k = 10$

29. $-27 = 2c - 7 - 6c$

30. $11 = 18 + 3f + 4f$