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2-2 Study Guide and Intervention

Solving One-Step Equations

Solve Equations Using Addition and Subtraction If the same number is added to each side of an equation, the resulting equation is equivalent to the original one. In general if the original equation involves subtraction, this property will help you solve the equation. Similarly, if the same number is subtracted from each side of an equation, the resulting equation is equivalent to the original one. This property will help you solve equations involving addition.

Addition Property of Equality	For any numbers a, b, and c, if $a = b$, then $a + c = b + c$.
Subtraction Property of Equality	For any numbers a, b, and c, if $a = b$, then $a - c = b - c$.

Example 1 **Solve $m - 32 = 18$.**

$m - 32 = 18$	Original equation
$m - 32 + 32 = 18 + 32$	Add 32 to each side.
$m = 50$	Simplify.

The solution is 50.

Example 2 **Solve $22 + p = -12$.**

$22 + p = -12$	Original equation
$22 + p - 22 = -12 - 22$	Subtract 22 from each side.
$p = -34$	Simplify.

The solution is -34.

Lesson 2-2

Exercises

Solve each equation. Check your solution.

1. $h - 3 = -2$

2. $m - 8 = -12$

3. $p - 5 = 15$

4. $20 = y - 8$

5. $k - 0.5 = 2.3$

6. $w - \frac{1}{2} = \frac{5}{8}$

7. $h - 18 = -17$

8. $-12 = -24 + k$

9. $j - 0.2 = 1.8$

10. $b - 40 = -40$

11. $m - (-12) = 10$

12. $w - \frac{3}{2} = \frac{1}{4}$

13. $x + 12 = 6$

14. $w + 2 = -13$

15. $-17 = b + 4$

16. $k + (-9) = 7$

17. $-3.2 = \ell + (-0.2)$

18. $-\frac{3}{8} + x = \frac{5}{8}$

19. $19 + h = -4$

20. $-12 = k + 24$

21. $j + 1.2 = 2.8$

22. $b + 80 = -80$

23. $m + (-8) = 2$

24. $w + \frac{3}{2} = \frac{5}{8}$

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2-2 Study Guide and Intervention *(continued)*

Solving One-Step Equations

Solve Equations Using Multiplication and Division If each side of an equation is multiplied by the same number, the resulting equation is equivalent to the given one. You can use the property to solve equations involving multiplication and division. To solve equations with multiplication and division, you can also use the Division Property of Equality. If each side of an equation is divided by the same number, the resulting equation is true.

Multiplication Property of Equality	For any numbers a, b, and c, if $a = b$, then $ac = bc$.
Division Property of Equality	For any numbers a, b, and c, with $c \neq 0$, if $a = b$, then $\frac{a}{c} = \frac{b}{c}$.

Example 1 **Solve $3\frac{1}{2}p = 1\frac{1}{2}$.**

$3\frac{1}{2}p = 1\frac{1}{2}$	Original equation
$\frac{7}{2}p = \frac{3}{2}$	Rewrite each mixed number as an improper fraction.
$\frac{2}{7}\left(\frac{7}{2}p\right) = \frac{2}{7}\left(\frac{3}{2}\right)$	Multiply each side by $\frac{2}{7}$.
$p = \frac{3}{7}$	Simplify.

The solution is $\frac{3}{7}$.

Example 2 **Solve $-5n = 60$.**

$-5n = 60$	Original equation
$\frac{-5n}{-5} = \frac{60}{-5}$	Divide each side by -5.
$n = -12$	Simplify.

The solution is -12.

Exercises

Solve each equation. Check your solution.

1. $\frac{h}{3} = -2$

2. $\frac{1}{8}m = 6$

3. $\frac{1}{5}p = \frac{3}{5}$

4. $5 = \frac{y}{12}$

5. $-\frac{1}{4}k = -2.5$

6. $-\frac{m}{8} = \frac{5}{8}$

7. $-1\frac{1}{2}h = 4$

8. $-12 = -\frac{3}{2}k$

9. $\frac{j}{3} = \frac{2}{5}$

10. $-3\frac{1}{3}b = 5$

11. $\frac{7}{10}m = 10$

12. $\frac{p}{5} = -\frac{1}{4}$

13. $3h = -42$

14. $8m = 16$

15. $-3t = 51$

16. $-3r = -24$

17. $8k = -64$

18. $-2m = 16$

19. $12h = 4$

20. $-2.4p = 7.2$

21. $0.5j = 5$

22. $-25 = 5m$

23. $6m = 15$

24. $-1.5p = -75$