NAME _____ DATE _____

Study Guide

Student Edition
Pages 144–149

Solving Equations with Addition and Subtraction

You can use the addition and subtraction properties of equality to solve equations. To check, substitute the solution for the variable in the original equation. If the resulting sentence is true, your solution is correct.

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 $r - 6 = -11$.

$$r - 6 = -11$$
$$r - 6 + 6 = -11 + 6$$
$$r = -5$$

Check:
$$r - 6 = -11$$
$$-5 - 6 = -11$$
$$-11 = -11 \checkmark$$

Example 2: Solve $k + 18 = -9$.

$$k + 18 = -9$$
$$k + 18 - 18 = -9 - 18$$
$$k = -27$$

Check:
$$k + 18 = -9$$
$$-27 + 18 = -9$$
$$-9 = -9 \checkmark$$

Sometimes an equation can be solved more easily if it is rewritten first. Recall that subtracting a number is the same as adding its inverse. For example, the equation $g - (-5) = 18$ may be rewritten as $g + 5 = 18$.

Solve each equation. Then check your solution.

1. $b - 17 = -40$

2. $x + 12 = 6$

3. $z + 2 = -13$

4. $-17 = b + 4$

5. $s + (-9) = 7$

6. $v - (-12) = 10$

7. $19 + h = -4$

8. $73 = 29 - q$

9. $-3.2 = l + (-0.2)$

10. $-25 - r = \frac{4}{36}$

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

12. $\frac{5}{9} = -y + \frac{2}{15}$