

LESSON
6-4**Solving Two-Step Equations**

Here is a key to solving an equation.

Example: Solve $3x - 7 = 8$.

Step 1:

- Describe how to form the expression $3x - 7$ from the variable x :
- Multiply by 3. Then subtract 7.

Step 2:

- Write the parts of Step 1 in the reverse order and use inverse operations:
- Add 7. Then divide by 3.

Step 3:

- Apply Step 2 to *both sides* of the original equation.
- Start with the original equation. $3x - 7 = 8$
- Add 7 to both sides. $3x = 15$
- Divide both sides by 3. $x = 5$

Describe the steps to solve each equation. Then solve the equation.

1. $4x + 11 = 19$

2. $-3y + 10 = -14$

3. $\frac{r - 11}{3} = -7$

4. $5 - 2p = 11$

5. $\frac{2}{3}z + 1 = 13$

6. $\frac{w - 17}{9} = 2$

Success for English Learners

- Sample answer: Eighteen less three times a number equals three.
- $5x - 7 = -11$

LESSON 6-4**Practice and Problem Solving: A/B**

- $x = 3$
- $p = -3$
- $a = 4$
- $n = -2$
- $g = 2$
- $k = -18$
- $s = 18$
- $c = -8$
- $a = -6$
- $v = 9$
- $x = -2$
- $d = 24$
- $24s + 85 = 685$; $s = \$25$
- $x + x + 1 = 73$; 36 and 37

Practice and Problem Solving: C

- $2x - 17 = 3$; $x = 10$
- $\frac{5x-1}{3} = 4$; $x = 2.6$
- $\frac{3-4x}{5} = -7$, $x = 9.5$
- $8 + 5x = -12$ or $5x + 6 = -14$; $x = -4$
- $-4x + 7 = -9$ or $7 = 4x - 9$; $x = 4$
- $\frac{x+11}{3} = 6$; $x = 7$
- $s = \frac{u-t}{r}$; Subtract t from both sides, then divide both sides by r .
- $t = \frac{u}{r} - s$; Divide both sides by r , then subtract s from both sides.
- $n = pq - m$; Multiply both sides by p , then subtract m from both sides.
- $p = \frac{m+n}{q}$; Multiply both sides by p , then divide both sides by q .

Practice and Problem Solving: D

- Subtract 3 from both sides; $5x = 30$. Then divide both sides by 5; $x = 6$.
- Add 1 to both sides; $8y = 32$. Then divide both sides by 8; $y = 4$.
- Subtract 5 from both sides; $\frac{1}{2}z = 6$. Then multiply both sides by 2; $z = 12$.
- Subtract 15 from both sides; $-4t = -12$. Then divide both sides by -4 ; $t = 3$.
- Multiply both sides by 3; $q + 3 = 15$. Then subtract 3 from both sides; $q = 12$.
- $m = 1$
- $p = 8$
- $2n - 3 = 17$; $n = 10$
- $\frac{1}{2}x + 5 = 9$; $x = 8$
- $15 + 2y = 29$; $y = 7$

Reteach

- Subtract 11 from both sides. Then divide both sides by 4. $x = 2$
- Subtract 10 from both sides. Then divide both sides by -3 . $y = 8$
- Multiply both sides by 3. Then add 11 to each side. $r = -10$
- Subtract 5 from each side. Then divide both sides by -2 . $p = -3$
- Subtract 1 from each side. Then multiply both sides by $\frac{3}{2}$.
 $\left(\text{or divide both sides by } \frac{2}{3}\right)$. $z = 18$
- Multiply both sides by 9. Then add 17 to each side. $w = 35$

Reading Strategies

- Multiply by -2 , then subtract 3. Add 3 to each side, then divide each side by -2 .
 $x = 11$
- Add 1, then divide the result by 3. Multiply both sides by 3, then subtract 1 from each side.
 $x = -16$