

Lesson 3-4

Example 1 Solve Equations by Dividing

Solve $-3x = 27$. Check your solution and graph it on a number line.

$$-3x = 27 \quad \text{Write the equation.}$$

$$\frac{-3x}{-3} = \frac{27}{-3} \quad \text{Divide each side by } -3 \text{ to undo the multiplication in } -3 \cdot x.$$

$$1x = -9 \quad -3 \div -3 = 1; 27 \div -3 = -9$$

$$x = -9 \quad \text{Identity Property; } 1x = x$$

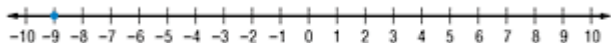
To check your solution, replace x with -9 in the original equation.

CHECK $-3x = 27$ Write the equation

$$-3(-9) \stackrel{?}{=} 27 \quad \text{Check to see whether this statement is true.}$$

$$27 = 27 \quad \checkmark \quad \text{The statement is true.}$$

The solution is -9 . To graph the solution, draw a dot at -9 on a number line.



Example 2 Use an Equation to a Solve Problem

MOVIES It costs \$7 per ticket to go to the movies. If the total cost for a group of friends to go to the movies is \$56, how many people are in the group?

Words \$7 times the number of tickets equals the total cost.

Variables Let x represent the number of tickets.

The cost per ticket times the number of people equals the total.

$$\$7 \cdot x = \$56$$

Equation Solve $7x = 56$.

Solve the equation.

$$7x = 56 \quad \text{Write the equation.}$$

$$\frac{7x}{7} = \frac{56}{7} \quad \text{Divide each side by 7.}$$

$$x = 8 \quad \text{Simplify.}$$

Therefore, there were 8 people who went to the movies as a group.

Example 3**Solve Equations by Multiplying**

Solve $\frac{a}{6} = -3$.

$$\frac{a}{6} = -3$$

Write the equation.

$$\left(\frac{a}{6}\right)6 = (-3)6$$

Multiply each side by 6 to undo the division operation.

$$a = -18$$

Simplify.

CHECK

$$\frac{a}{6} = -3$$

Write the equation.

$$\frac{-18}{6} = -3$$

Check to see whether this statement is true.

$$-3 = -3 \quad \checkmark$$

The statement is true.

The solution is -18 .