

Lesson 2 - Multiplication and Division Equations

Use the Division Property of Equality to solve multiplication equations and the Multiplication Property of Equality to solve division equations.

The **Division Property of Equality** states that if you divide each side of an equation by the same nonzero number, the two sides remain equal.

The **Multiplication Property of Equality** states that if you multiply each side of an equation by the same number, the two sides remain equal.

Example 1

Solve $30 = 6x$.

$$30 = 6x$$

Write the equation.

$$\frac{30}{6} = \frac{6x}{6}$$

Divide each side of the equation by 6.

$$5 = x$$

$$30 \div 6 = 5.$$

The solution is 5.

Example 2

Solve $\frac{x}{-5} = -2$.

$$\frac{x}{-5} = -2$$

Write the equation.

$$\frac{x}{-5}(-5) = -2(-5)$$

Multiply each side of the equation by -5 .

$$x = 10$$

$$-2(-5) = 10.$$

The solution is 10.

$3x \rightarrow 3 \text{ TIMES } x$

$\frac{x}{5} \rightarrow x \text{ DIVIDED BY } 5$

$\downarrow x \div 5 \quad 5 \overline{)x}$

Exercises

$$12(5) = 10(5) + 2(5) = 50 + 10 = 60$$

Solve each equation. Check your solution.

1. $\frac{3x}{3} = \frac{12}{3}$

$$x = 4$$

$$3(4) = 12$$

$$12 = 12 \checkmark$$

2. $\frac{9k}{9} = \frac{-360}{9}$

$$k = -40$$

$$9(-40) = -360 \checkmark$$

5. $\frac{x}{5} = 12$

$$\left(\frac{5}{5}\right) \frac{x}{5} = 12(5)$$

$$x = 60$$

$$\frac{60}{5} = 12$$

$$\begin{array}{r} 12 \\ 5 \overline{)60} \\ \underline{50} \\ 10 \\ \underline{10} \\ 0 \end{array}$$

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

$$= a$$

$$3(16) = \left(\frac{a}{3}\right) 3$$

$$48 = a$$

$$16 = \frac{48}{3}$$

$$16 = 16$$

9. $\frac{m}{6} = -4$

10. $-2 = \frac{b}{-9}$

Lesson 2 Skills Practice

Multiplication and Division Equations

Solve each equation. Check your solution.

1. $7a = 56$

2. $-5b = -20$

5. $\frac{k}{12} = 2$

6. $\frac{m}{6} = -10$

9. $-15 = \frac{z}{-8}$

10. $-3z = 93$

13. $-8 = \frac{t}{9}$

14. $3c = 15$

17. $18 = -9b$

18. $-13c = -52$

$$-8(-15) = \left(\frac{z}{-8}\right)^{-8}$$

$$120 = z$$

$$15(12) = 120 + 60$$