

7.3 Solving Equations Using Multiplication or Division

ESSENTIAL QUESTION: How do you solve an equation using multiplication or division?

3 TYPES OF EQUATIONS

1. $\frac{3x}{3} = \frac{27}{3}$

$x = 9$

To solve a multiplication equation, you need to do the inverse of multiplication. (divide on both sides)

2. $7 \cdot \frac{w}{7} = 9 \cdot 7$

$w = 63$

To solve a division equation, you need to do the inverse of division. (multiply on both sides)

3. $\frac{3}{2} \cdot \frac{2}{3} x = \frac{12 \cdot 3}{1 \cdot 2}$

$x = 18$

To solve a multiplication equation when there is a fraction you need to multiply both sides by the reciprocal.

ON YOUR OWN

1. $4 \cdot \frac{w}{4} = 12 \cdot 4$

$w = 48$

2. $\frac{7}{2} \cdot \frac{2}{7} x = \frac{12 \cdot 7}{1 \cdot 2}$

$x = 42$

3. $8 \cdot \frac{a}{8} = 12 \cdot 8$

$a = 96$

4. $14 = \frac{2}{5} y$

$\frac{5}{2} \cdot \frac{2}{5} y = \frac{14 \cdot 5}{1 \cdot 2}$

$y = 35$

5. $3z + 2 = 9$

$\frac{2}{3} \cdot \frac{3}{2} z = \frac{9 \cdot 2}{1 \cdot 2}$

$z = 6$

6. $\frac{5b}{5} = \frac{65}{5}$

$b = 13$

7. $p \cdot 3 = 18$

$\frac{3p}{3} = \frac{18}{3}$

$p = 6$

8. $\frac{12q}{12} = \frac{60}{12}$

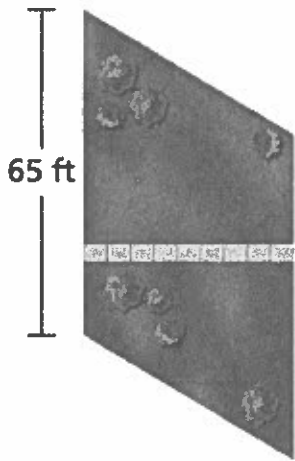
$q = 5$

9. $\frac{81}{9} = \frac{9r}{9}$

$9 = r$

The area of the parallelogram-shaped courtyard is 2730 square feet. What is the length of the sidewalk?

Area of Parallelogram = $B \cdot H$ or $L \cdot W$



$$\frac{65L = 2730}{65} \quad \frac{2730}{65}$$

$$L = 42$$

The length of the sidewalk is 42 feet.

$$\begin{array}{r} 42 \\ 65 \overline{)2730} \\ \underline{-260} \\ 130 \\ \underline{-130} \\ 0 \end{array}$$

You and four friends buy tickets to a baseball game. The total cost is \$70. Write and solve an equation to find the cost of each ticket.

$$\frac{5T = 70}{5} \quad \frac{70}{5}$$

$$T = 14$$

The cost of each ticket is 14 dollars.