

Lesson 1-5

Example 1 Solve an Equation

Find the solution of $w - 6 = 3$. Is it 7, 9, or 12?

Replace w with each value.

Value for w	$w - 6 = 3$	True or False?
7	$7 - 6 \stackrel{?}{=} 3$	false
9	$9 - 6 \stackrel{?}{=} 3$	true
12	$12 - 6 \stackrel{?}{=} 3$	false

Therefore, the solution of $w - 6 = 3$ is 9.

Example 2 Solve an Equation

Multiple Choice Test Item

Which value is the solution of $2 + 3x = 11$?

- A. 6 B. 4 C. 3 D. 1

Read the Test Item

The *solution* is the value that makes the equation true.

Solve the Test Item Test each value.

$$\begin{array}{l} 2 + 3x = 11 \\ 2 + 3(\overset{?}{6}) = 11 \\ 19 \neq 11 \end{array} \quad \text{Replace } x \text{ with 6.} \quad \begin{array}{l} 2 + 3x = 11 \\ 2 + 3(\overset{?}{4}) = 11 \\ 14 \neq 11 \end{array} \quad \text{Replace } x \text{ with 4.}$$

$$\begin{array}{l} 2 + 3x = 11 \\ 2 + 3(\overset{?}{3}) = 11 \\ 11 = 11 \end{array} \quad \text{Replace } x \text{ with 3.} \quad \begin{array}{l} 2 + 3x = 11 \\ 2 + 3(\overset{?}{1}) = 11 \\ 5 \neq 11 \end{array} \quad \text{Replace } x \text{ with 1.}$$

Since 3 makes the equation true, the answer is C.

Example 3 Solve Simple Equations

Solve each equation mentally.

a. $\frac{p}{3} = 6$
 $\frac{18}{3} = 6$ Think: What number divided by 3 is 6?
 $p = 18$ The solution is 18.

b. $7h = 28$
 $7 \cdot 4 = 28$ Think: What number times 7 is 28?
 $h = 4$ The solution is 4.

Example 4 Identify Properties of Equality

Name the property of equality shown by each statement.

a. If $y - 3 = 7$, then $7 = y - 3$.

If $y - 3 = 7$, then $7 = y - 3$.

If $a = b$, then $b = a$.

This is the Symmetric Property of Equality

b. If $m + 2 = 9$ and $9 = 7 + 2$, then $m + 2 = 7 + 2$.

If $m + 2 = 9$ and $9 = 7 + 2$, then $m + 2 = 7 + 2$.

If $a = b$ and $b = c$, then $a = c$.

This is the Transitive Property of Equality.

Example 5 Translate Sentences Into Equations

The sum of twelve and a number is nineteen. Find the number.

Words The sum of twelve and a number is nineteen.

Variables Let n = the number. Define the variable.

The sum of twelve and a number is nineteen.

Equation $12 + n = 19$

$12 + n = 19$ Write the equation.

$12 + 7 = 19$ Think: Twelve plus what number is 19?

$n = 7$ The solution is 7.