Lesson 3-2

Example 1

Solve each equation. Check the solution.

a. $y - 4 = 3$ **b.** $n + 1.4 = 4.8$ **c.** $9 - x = 11$

Solution

Since the sum of a number and its opposite is zero, use the Addition Property of Equality. To check each solution, substitute the solution into the original equation.

a.
$$\begin{aligned} y - 4 &= 3 \\ y - 4 + 4 &= 3 + 4 \\ y + 0 &= 7 \\ y &= 7 \end{aligned}$$
To isolate y, add 4 to each side.

Check $y - 4 = 3$
$7 - 4 \stackrel{?}{=} 3$
$3 = 3$ ✓

b.
$$\begin{aligned} n + 1.4 &= 4.8 \\ n + 1.4 + (-1.4) &= 4.8 + (-1.4) \\ n + 0 &= 3.4 \\ n &= 3.4 \end{aligned}$$
Add the opposite of 1.4 to each side.

Check $n + 1.4 = 4.8$
$3.4 + 1.4 \stackrel{?}{=} 4.8$
$4.8 = 4.8$ ✓

c.
$$\begin{aligned} 9 - x &= 11 \\ 9 + (-9) - x &= 11 + (-9) \\ 0 + (-x) &= 2 \\ -x &= 2 \\ x &= -2 \end{aligned}$$
The opposite of what number is 2?
The opposite of 2 is -2.

Check $9 - x = 11$
$9 - (-2) \stackrel{?}{=} 11$
$11 = 11$ ✓

Example 2

Solve each equation. Check the solution.

a. $\frac{n}{3} = 2.1$

b. $-6m = |-42|$

Solution

a.
$$\frac{n}{3} = 2.1$$
$$3 \cdot \frac{n}{3} = 3(2.1)$$
$$1n = 6.3$$
$$n = 6..3$$

Check
$$\frac{n}{3} = 2.1$$
$$\frac{6.3}{3} \stackrel{?}{=} 2.1$$
$$2.1 = 2.1 \quad \checkmark$$

b.
$$-6m = |-42|$$
$$\frac{-6m}{-6} = \frac{42}{-6}$$
$$1m = -7$$
$$m = -7$$

Check
$$-6m = |-42|$$
$$-6(-7) \stackrel{?}{=} 42$$
$$42 = 42 \quad \checkmark$$

Example 3

Solve each formula for the indicated variable.

a. $d = rt$, solve for t

b. $P = a + b + c$, solve for b

Solution

a.
$$d = rt$$
$$\frac{d}{r} = \frac{rt}{r}$$ Divide each side by r.
$$\frac{d}{r} = t$$

b.
$$P = a + b + c$$
$$P - a = a - a + b + c$$ Subtract a from each side.
$$P - a = b + c$$ Simplify.
$$P - a - c = b + c - c$$ Subtract c from each side.
$$P - a - c = b$$ Simplify.