CHAPTER 4 Equations
4.1 Solve Simple Equations
Solving One-Step Equations and Checking

Example:

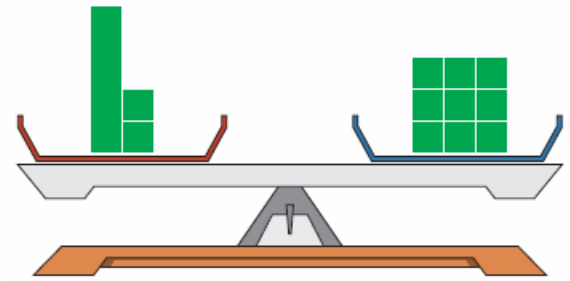
a) Solve the equation $x + 2 = 9$ using the balance method.

b) Solve the equation $x - 3 = 5$ using the opposite operation method. Check your solution.

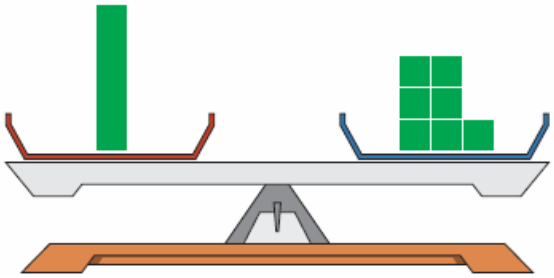
c) Solve the equation $7y = 21$ using the opposite operation method.

Solution:

a) Use algebra tiles to represent the quantity on each side. The left pan holds one x-tile and 2 unit tiles. The right pan holds 9 unit tiles.



To find what x equals, remove two unit tiles from each pan.



The solution is $x = 7$.

b) $x - 3 = 5$ Add 3 to both sides.
$x - 3 + 3 = 5 + 3$ Then, simplify.
$x = 8$

The solution is $x = 8$.

Check: Substitute $x = 8$.

L.S. $= x - 3$ R.S. $= 5$
$= 8 - 3$
$= 5$

L.S. = R.S.

Therefore, $x = 8$ is correct.

c) $7y = 21$ Divide both sides by 7.

$$\frac{7y}{7} = \frac{21}{7}$$

$$\frac{\overset{1}{\cancel{7}}\, y}{\underset{1}{\cancel{7}}} = \frac{21}{\underset{1}{\cancel{7}}}$$

$$y = 3$$

The solution is $y = 3$.

Practice:

1. Solve: $x - 4 = 6$.

2. Solve and check: $y + 3 = -5$.

Answers:

1. $x = 10$ **2.** $y = -8$