

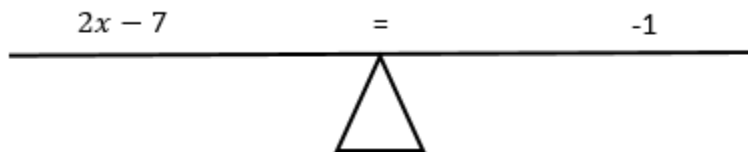
## Solving Equations

“Solving an equation” or “finding the solution” to an equation means finding a value (or values) for the variable that make the equation a true statement.

- For example,  $x = 3$  is a solution for the equation  $2x - 7 = -1$ , because  $2(3) - 7 = -1$ .
- At the same time,  $x = 4$  is NOT a solution for that equation, because  $2(4) - 7 \neq -1$ .

### The Addition (and Subtraction) Property of Equality

An equation is like a level seesaw with the balancing point at the equal sign.



If we add or subtract the same quantity from both sides of the equation, the seesaw remains balanced.

$$2x - 7 + 7 = -1 + 7$$

Simplify each side of the equation.

$$2x = 6$$

### The Multiplication (and Division) Property of Equality

We can also multiply or divide both sides of an equation by the same number (except 0), and the seesaw/equation remains balanced.

$$\frac{2x}{2} = \frac{6}{2}$$

Again, simplify each side of the equation, and we find our solution.

$$x = 3$$

To practice using these properties to solve equations, go to [Solve Equations](#).

Then solve each of the following equations.

$$17 + y = 41$$

$$8t = 128$$

$$3x - 22 = 14$$

$$2(w + 6) = w + 27$$

The link included here will take the reader to Section 2.1 of OpenStax Elementary Algebra, which is published under a Creative Commons Attribution License 4.0. Download for free at <http://cnx.org/contents/0889907c-f0ef-496a-bcb8-2a5bb121717f@8.17>

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