

**Algebra 2**  
**Lesson 1-3: Solving Equations**  
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Back to the basic basics! An **equation** is a mathematical statement with an equal (=) sign and two equivalent expressions. A **solution** to an equation is the set of values or a value that makes the equation true. An **equation in one variable** simply means that the equation contains one (1) variable *with* an exponent value of one (1). See examples:

$$2y=6$$

$$3x+5=-2$$

$$7n+3=2n-1$$

Why do I say “exponent value of one?”

Some facts and terminology about “=”. We will start out using the variables a, b, and c to be real numbers.

<b>Reflexive Property:</b>	$a=a$
<b>Symmetric Property</b>	if $a=b$ , then $b=a$
<b>Transitive Property</b>	if $a=b$ and $b=c$ , then $a=c$
<b>Addition Property</b>	if $a=b$ , then $a+c=b+c$
<b>Subtraction Property</b>	if $a=b$ , then $a-c=b-c$
<b>Multiplication Property</b>	if $a=b$ , then $ac=bc$
<b>Division Property</b>	if $a=b$ and $c \neq 0$ , then $\frac{a}{c} = \frac{b}{c}$
<b>Substitution Property</b>	if $a=b$ , then b may be substituted for a in any expression to obtain an equivalent expression

**Steps to solve a one variable equation:**

1. Isolate variable onto one side of the equation (preferably left) by using the inverse properties.
2. Combine like terms.
3. Apply multiplication inverse property if needed to get a single variable with no coefficients.
4. Check your answer!

*Remember!* even when there are multiple variables in an equation, you can solve for one variable in terms of the other variables.

**Example—**

Solve:  $3(n + 2) = 6$

$$5(3x - 1) + 2 = 3(2 - 4x)$$

**Example:** The area of a triangle is given by the following equation:  $A = \frac{1}{2}bh$ , solve this equation for h

$$A = \frac{1}{2}bh$$

**Example:** The sum of 3 consecutive integers is 90. Find the three numbers. (let x=first integer).