Solving Equations

Consider the following examples:

$12 + 3 \times 9 - 4 \div 2(3 - 2) = x$ $\qquad\qquad$ $5x + 12 = 37$

The process of solving equations is based on the order of operations:

When the "unknown," or variable, is alone one side of the equal sign, we follow order of operations to find it.

Step / Operation	"Undo" With The Opposite
P	
E	
M	
D	
A	
S	

When the variable is part of an equation, we do the opposite of order of operations to find the value of the variable.

Examples – these are the building blocks of solving equations

Equation with addition	**Equation with subtraction**	**Equation with multiplication**
Equation with division	**Equation with an exponent**	**Equation with a root**

Now, let's add a second step:

Multiplication and addition:	**Multiplication and subtraction:**	**Division and addition:**
Division and subtraction:	**Addition and an exponent:**	**Multiplication and an exponent:**
Division and an exponent:	**Division and parentheses:**	**Multiplication and a root:**