Name: _____ Date: _____

UNIT 2 LESSON 2: SOLVING EQUATIONS

In today's lesson, we will be solving equations with one variable. We will solve these equations by seeing the structure of the expression involving x and using this structure to "undo" what has been done to it.

***Do Now*:** Consider the equation $5x+3=23$.

(a) List the operations that have been done to (are changing) the variable x on the left hand side of the equation in the order in which they occurred.

(b) Solve the equation by reversing what has been done to x. Verify that your value of x is a solution by seeing if it makes the equation true.

① Multiplied by 5 → ② Divide by 5

② Adding 3 → ① Subtracted 3

$5x+3=23$

$-3 \quad -3$

$\frac{5x}{5} = \frac{20}{5}$

$x=4$

This is the most basic of all equation solving techniques. It is the most important solving technique in all of mathematics. Be clear on this:

SOLVING EQUATIONS BY INVERSE OPERATIONS

If the **variable** you are solving for shows up only once, identify the operations that have been done on it and reverse them in the opposite order in which they occur.

***Exercise* #2:** Find the value of x that solves each equation. In each case, first identify the operations that have occurred to x and reverse them. Show each step.

HW:

(a) $\frac{x-3}{2}+7=23$

What happened to x?

① Subtract 3 ② Divide 2 ③ Add 7

③ Add 7 ② Multiply by 2 ✓ ① Subtract 7 ✓

Now reverse.

$\frac{x-3}{2}+7=23$

$-7 \quad -7$

$\frac{x-3}{2}=16$

$\cdot 2 \quad \cdot 2$

$x-3=32$

$+3 \quad +3$

$x=35$

(b) $4(x+1)-2=-6$

What happened to x?

Now reverse.