Math 9 *Name:* _____

6.1 – Solving Equations using Inverse Operations

Date: _____

What is an EQUATION?

An **EQUATION** is a mathematical model that represents a problem from Science, Engineering, Business, Medical, etc.

It usually includes an **UNKNOWN** quantity that we are trying to **FIND** or **SOLVE** for.

We use **VARIABLES** to represent the **UNKNOWN** quantities in equations.

Ex. 1: *"I'm thinking of a number. After I have added 5 to my number, its value increases to 27. Determine the value of the number that I am thinking of."*

The **unknown** quantity is:

The problem stated in the **LANGUAGE of Mathematics** is:

The **task** is:

Finding the **SOLUTION** using **INVERSE** operations:

Finding the solution, algebraically:

Ex. 2: *"I'm thinking of a number. After I have multiplied my number by -3, its new value is -6.3. Determine the value of the number that I was thinking of."*

Inverse Operations Model

Algebraically

Ex. 3: "*I'm thinking of a number. After I have divided my numebr by -4, its value changes to 8. Determine the value of the number that I was thinking of.*"

Inverse Operations Model **Algebraically**

Ex. 4: "*I'm thinking of a number. I first multiply my number by 3 and then subtract 5. Its new value is 7. Determine the value of the number that I was thinking of.*"

Inverse Operations Model **Algebraically**

Ex. 5: Solve the following equations, algebraically.

a. $5x+7=42$ b. $3x-8=-14$ c. $5-2x=-1$

d. $7-8y=-1$ e. $10-6b=22$ f. $5+9f=-4$

g. $\frac{x}{5}+3=9$

h. $\frac{h}{3}-7=11$

i. $4-\frac{w}{2}=7$

j. $2(m+4)=10$

k. $3(5+x)=36$

l. $-2(x-5)=4$

m. $-2(2-y)=2.5$

n. $-5(4-x)=4.7$

o. $-(v-7)=-7.7$