Date: _____

LEARNING OBJECTIVE: We will identify the steps used in solving equations and understand a few steps we CANNOT take when solving equations. (Lesson 86)

ACTIVATING PRIOR KNOWLEDGE:

We understand different properties used in math.

Why do the equations (x-1)(x+3) = 17 + x and (x+3)(x-1) = 17 + x have the same solution set?

Why do the equations (x-1)(x+3) = 17 + x and $x^2 + 2x - 3 = 17 + x$ have the same solution set?

Why do equations (x-1)(x+3) = 17 + x and (x-1)(x+3) + 500 = 517 + x have the same solution set?

have the same solution set? R OF LIVALITY For ADDITION Why do the equations (x-1)(x+3)=17+x and 3(x-1)(x+3)=51+3x have the same solution set? R OF LPTY of EDUALITY FOR MILT.

CONCEPT DEVELOPMENT:

Solving Equations Requires us to make use of the Commutative, Associative and Distributive Properties AS WELL AS use properties of equality to find a solution for a variable.

Example: $(1-x) + 2x - 4 = 8x - 24 - x^2$

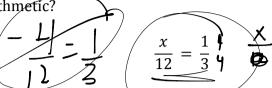
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	$x - x^{2} + 2x - 4 = 8x - 24 - x^{2}$	Distributive property	
	x + 2x - 4 = 8x - 24	Added x2 to both sides of the equation PRO OF Equality 1/40.	
ŀ	3x - 4 = 8x - 24	Collected like terms	
	3x + 20 = 8x	Added 24 to both sides of the equation	
	20 = 5x	Subtracted $3x$ from both sides of the	
		equation trogsities if Equality	
	$x=4$ $\left\{ \mathbf{q}\right\}$	Divided both sides of the equation by 5	
_			

What is the common solution to all **J**equations listed above? How do we know?

X=4, Through each step we are Maintaining equality

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What are some things we need to look out for when applying the rules of equality and rules of arithmetic?



- 1. If we do something the left side of the equation, we have to do the same thing to the right side, correct?? What about eliminating both denominators and just saying that x = 1. Why doesn't that work?
- 2. What about squaring both sides of the equation so that $\frac{x^2}{144} = \frac{1}{9}$.

 Does this change the solution to the equation? X = 4 br X = -4 X = 4 br X = -4

GUIDED PRACTICE:

Steps for Solving Equations AND Identifying the Steps Taken

- 1. Simplify your equation step by step using properties of equality and properties of arithmetic.
- 2. Identify each step along the way.
- 3. Check your solution by substituting your simplified answer into your original equation.

Solve for *x* and describe the operation used in each step along the way.



$$7x - [4x - 3(x - 1)] = x + 12$$

7x-4x+3x-3=x+12-> Distributive property



$$6x-3=X+12-)$$
 (s||ect||ike+erms
 $+3$ $+3$
 $6x=X+5 \rightarrow Prop. of Eq. for +
 $-x$ $-x$
 $5x=15 \rightarrow Prop. of Equality for -$$

$$\frac{5x}{5} = \frac{15}{5} \longrightarrow \text{Prop. of Equality for } -$$

$$x = 3 \longrightarrow \text{Prop. of Equality for } -$$

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Solve for *x* and describe the operation used in each step along the way.

$$2[2(3-5x)+4] = 5[2(3-3x)+2]$$

$$2[6-10x+4] = 5[6-6x+2] - Dist. Pop$$

$$2[10-10x] = 5[8-6x] - Combine like terms$$

$$2[0-10x] = 5[8-6x] - Combine like terms$$

$$2[0-10x] = 40-30x - Distributive peop.$$

$$-20 - 20$$

$$-20 - 20$$

$$-20 - 20$$

$$-20 - 20$$

$$-30x = 20-30x - Pop of Equility - 430x - 10x = 20 - Pop. of Eq. for + x=2 - Pop of Eq. for -$$

Solve for *x* and describe the operation used in each step along the way.

$$6 \left(\frac{1}{3}(18-5x)\right) = \frac{1}{3}(6-4x) \rightarrow \text{Prop. of Equality For mult.}$$

$$3 \left(8-5x\right) = 2 \left(6-4x\right) \qquad 1 - \frac{5}{2} \times = 2 - \frac{4}{3} \times \frac{1}{3} \times \frac{1}{3$$

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INDEPENDENT PRACTICE:



- 1. Consider the equations x + 1 = 4 and $(x + 1)^2 = 16$.
- a. Verify that x = 3 is a solution for both equations.
- b. Find a second solution for the second equation.
- c. What effect does squaring both sides of an equation seem to have on the solution set?



- 2. Consider the equation x 3 = 5. Ex. 7
- a. Multiply both sides of the equation by a constant, and show that the solution set did not change.
- b. Now multiply both sides by x. x(x-3) = 5x

Show that x = 8 is still a solution to the equation.

- c. Show that x = 0 is also a solution to the new equation.
- d. Now multiply both sides by the factor (x 1). (x 1)x(x 3) = 5x(x 1)

Show that 8 is still a solution to the new equation.

e. Show that x = 1 is also a solution.

Name:	Math 7.2, Period
Mr. Rogove	Date:
CLOSURE: Closure is exit ticket to be collectedhomework if necessary?	

Notes:

This lesson maps to Lesson 12 and 13 in Algebra 1, Mod 1 of ENY. Homework (inclass??) should be exit ticket for exit 13