

Day 10/11 Guided Notes

Name: _____

Date: _____

Day 10:

We will be able to compare and contrast equations that have _____ solution, _____ solutions, or _____ many solutions.

Equation with ONE Solution

- You can tell an equation has ONE solution if you solve it and get a _____ equal to a _____ that makes the equation true.
- Ex: $6x - 3 = 21$

Equation with NO Solution

- There does not exist a _____ for the _____ that makes the equation _____.
- An equation does not have a solution if you substitute your _____ and get a _____ statement
- Ex: $5x + 7 = 3x + 4 + 2x$

Equation with INFINITE Solutions

- An equation has infinitely many solutions if for _____ value for the _____, then that value makes the _____ true
 - → Equations are _____ true for the variable.
- This implies that for any solution to the _____ the equation will be true and when substituting the value, the value will always be equal to _____.
- Ex: $4 + 5 + 7x = 2x + 5x + 9$

Exercise: Thinking About Solutions

Let's solve and sort the equations into whether they have ONE solution, NO solutions, or Infinite Solutions:

1. $n = n$	<input type="checkbox"/> Variable = Number? → <i>One Solution</i> <input type="checkbox"/> Is the equation a false statement? → <i>No Solution</i> <input type="checkbox"/> Is the variable/number equal to itself? → <i>Infinite Solution</i>
2. $5 + 3x = -10 + 2x$	<input type="checkbox"/> Variable = Number? → <i>One Solution</i> <input type="checkbox"/> Is the equation a false statement? → <i>No Solution</i> <input type="checkbox"/> Is the variable/number equal to itself? → <i>Infinite Solution</i>
3. $2v + 2 = 2v - 2$	<input type="checkbox"/> Variable = Number? → <i>One Solution</i> <input type="checkbox"/> Is the equation a false statement? → <i>No Solution</i> <input type="checkbox"/> Is the variable/number equal to itself? → <i>Infinite Solution</i>

PRACTICE PROBLEMS:

- Consider the unfinished equation: $12(x - 3) + 18 = \underline{\hspace{2cm}}$.

Match the following expressions with the number of solutions the equation would have with that expression on the right-hand side.

- | | |
|----------------|-----------------------|
| a. $6(2x - 3)$ | 1. one solution |
| b. $4(3x - 3)$ | 2. no solution |
| c. $4(2x - 3)$ | 3. Infinite solutions |

HINT: Try solving each of the following expressions and substitute your solution into the original equation!

Day 11: Structures of Equations to Determine Solutions

Teacher Modeling:

Sample Card:

Determine whether the following equation has

- a. one solution - if there exists one solution, solve for it
- b. no solution
- c. infinite solutions

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

Written Explanation:

Scratch Paper for Card Exercises:

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1. For each set of equations, determine whether it has no solutions, exactly one solution, or has infinitely many solutions + **describe how and why you determined it**. If an equation has one solution, solve to find the value of that makes the statement true:

a. $6x + 8 = 7x + 13$

b. $6x + 8 = 2(3x + 4)$

c. $6x + 8 = 6x + 13$

Lin was looking at the equation $2x - 32 + 4(3x - 2462) = 14x$. She said, "I can tell right away there are no solutions, because on the left side, you will have $2x + 12x$ and a bunch of constants, but you have just $14x$ on the right side." Do you agree with Lin?

Explain your reasoning.

2.