Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Table #: \_\_\_\_\_\_\_\_Period: \_\_\_\_\_\_Date: \_\_\_\_\_\_

**1.3 Solving Multi-Step Equations (One, None, Many Solutions)\_Classwork**

*OBJECTIVE: Solve equations with variables on both sides of the equation. Determining number of solutions of an equation without solving. CCSS: 8.EE.7*

*HW: 1.3 Homework (handout)*

Warm Up: SOLVE THE EQUATIONS

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| --- | --- |
| 1. 9x = 2x – 84 | 1. -x – 5x – 14 = 3x – 59 |

Does every equation have one solution?

When x is on both sides, the equation may have no solution, or an infinite amount of solutions. Trying to solve an equation with no solution produces an equation that isn’t true.

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| --- | --- |
| **EXAMPLE 1:**  4x + 18 = 4x + 5 | **EXAMPLE 2:**  -5x – x + 7 = -6x + 2 |
| WITHOUT SOLVING, how can you tell if an equation has NO SOLUTION?  Give 2 examples of equations with no solution.   1. 2) | |

Trying to solve an equation with infinite solutions produces an equation that is true for all values of x. This is called an identity.

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| --- | --- |
| **EXAMPLE 3:**  5x + 8 = 5x + 8 | **EXAMPLE 4:**  3x – 14 – 2 = 8x – 5x – 16 |
| WITHOUT SOLVING, how can you tell if an equation has INFINITELY MANY SOLUTIONS?  Give 2 examples of equations with infinitely many solutions.   1. 2) | |
| WITHOUT SOLVING, how can you tell if an equation has ONE SOLUTION?  Give 2 examples of equations with one solution.   1. 2) | |

Video: <https://www.youtube.com/watch?v=63IkBH4kXzE>

PRACTICE: Solve the equations. State if the equation has one, no, or infinitely many solutions.

HINTS: A solution of x = 0, is still one solution. AND, if an equation has parentheses we usually do distributive property 1st

|  |  |
| --- | --- |
| 1. -5x – 13 = x + 29 | 1. -2x + 15 + x = -x + 7 + 9 |
| 1. 2(x – 6) + x = 3x - 12 | 1. -9x + 30 = 2(x – 1) + 32 |
| 1. 7x + 9 – 2x = 5x – 6 + 15 | 1. 2(-5x + 7) = -10x + 12 |