Algebra 1 (CCSP)

Section 1.5: Solving Equations with Variables on Both Sides

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**: Students will be able to solve equations in one variable that contain variable terms on both sides.

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| **Main Idea** | **Notes** |
| **Exploration:** | 1.5 Exploration: Solving Equations with Variables on Both Sides of the Equation |
| **How to Solve with Variables on Both Sides:** | When solving an equation with variables on both sides, isolate the variable by doing the following:   1. Make sure \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ terms are all on one side, and   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ terms are on the other.   1. Simplify by using the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.   1. Divide by the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the variable. |
| **Example 1: Solving with Variables on Both Sides** | Solve for the variable. Show all of your work!  5x − 2 = x + 4 |
| **Example 2 (On your Own): Solving with Variables on Both Sides** | Solve for the variable. Show all of your work!  a) 7k = 4k + 15 b) 7n – 2 = 5n + 6 |
| **Example 3: Simplifying Each Side First** | Solve for the variable. Show all of your work!   1. 2(y+6) = 3y 2. 2k – 5 = 3(1 – 2k) 3. 4 – 6a + 4a = -1 – 5(7 – 2a) 4. (b + 6) = b – 1 |
| **Vocabulary: Identities and Equations with No Solution** | An \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is an equation that is always \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ no matter what is substituted for the variable.  The solution of an identity is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.    Some equations are always \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.    These equations have \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| **Example 4: Infinitely Many Solutions/No Solutions** | Solve for the variable. Show all of your work!   1. 10 – 5x + 1= 7x + 11 – 12x 2. 12x – 3 + x = 5x – 4 + 8x |
| **Example 5: Real World Application** | Verizon charges 36 cents plus 3 cents per minute. T-Mobile charges 6 cents per minute.   1. How long would a call have to be to cost the same amount no matter which company you choose? 2. What is the cost of that call? |
| **Exit Ticket:** | On a separate piece of paper, answer the following question.  (We will share these with the class and I will collect this for a classwork grade)  Which of the following is an identity?   1. 4(a + 3) – 6 = 3(a + 3) – 6 2. 8.3x – 9 + 0.7x = 2 + 9x – 11   ***Explain*** your answer. |
| **Homework:** | 1.5 Additional Practice Worksheet |
| **Classwork:** | Technology Lab: Solve Equations by Graphing |