***Solving Equations with variables on sides***

***Notes***

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| **Essential Questions?** |  **Problem of the day**  |
| 1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Solve: -7*h* - 17 + 3h - 6 = -15 *Check* |

**Steps for solving equations**

1. **Combine Like terms**
2. **Put Variables on one side**
3. **Add or subtract**
4. **Multiply or divide**

\*\*\*\*\*\*In order to combine like terms the “like terms” need to be on the same side of the equation

Example 2: **3 + x = 2*x* - 2 - 8 *Step 1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
      Step 2 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Step 3 \_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Step 4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Example 3:  **3+ 2x = 4*x* - 5 *Step 1 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_*
      Step 2 \_\_\_\_\_\_\_\_\_\_\_ \_\_\_**

 **Step 3 \_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Step 4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Example 4**

**10 + 3*x* = *x* + 20 Steps for solving equations**

 **Step 1 \_\_\_\_\_\_\_\_\_\_\_**

 **Step 2 \_\_\_\_\_\_\_\_\_\_\_ \_\_\_**

 **Step 3 \_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Step 4 \_\_\_\_\_\_\_\_\_\_\_\_\_\_**

 **Example 5**

 **6*x* = 4*x* + 2 - 10**

 **Guided Practices**

**1** solve 3*x -* 5 = 4*x* – 10 2. **10 + 8 - 5*y* + 3*y* = 8*y* - 20 + 8**

3. -2*x* – 3 + 8*x* = 5*x + 3 4* 4b – 4 – 19b = -11b + 12

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| Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Solving with Variables on Both Sides |
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***Directions: SOLVE the following equations***

1. 7m - 8 = 10 - 2 m 2. 3x - 7 = 20 - 6x

3. 8y + 8 = -14 + 2y 4. 4x - 4 = -8 + 2x

4) 3n + 1 = 7n – 5 6) 9x + 7 = 3x - 5

7) 3x + 2 = 4x – 1 8) 8y - 9 = - 3y + 2

9) 3 - 4x = 18 + x  **10 )** 4x + 5 = x – 4

11) 12) 6x + 7 = 8x – 13

 More Challenging Problems

1. -a = -5a -52 7 . 6h – 9 = 8h + 37
2. 2 + f + 1= 6f – 3 – f 8. -8 + y = 5y - 3y
3. - 4s - 6s = -1 - 20s 9. 3t + 5t + 7 = 32 + 3t
4. 12t + 10 – t = 10t – 7 10. 6a – 2 – 4a = a
5. 8g + 4 - 10g = -5t – 5 11. 4*g* + 7 - 2*g* = 5*g* – 2
6. 4*v* – 8 = 8 + 4*v* – *v 12.* 4*x* + 2 – *x* = 2*x* + 1

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Directions: Solve the following equations

 5*z* – 3 = -3 + 4*z* 2. 5*t* + 4 = 6 – 2*t* + 8*t*

1. 3*t* + *t* + 7 = 32 – *t* 3. 3*n* + 3*n* = 63 + *n*
2. 4*b* – 8*b* = 15 + *b* 6. 10*k* – 9*k* = 24 + 5*k*
3. -2*x* – 3 + 8*x* = 5*x 8. c* = 3*c* + 7 – 3*c* + 8