

Bellwork**09/04/19**

*Please complete the Tuesday column on your bell work sheet

1.3 - Solving Equations with Variables on Both Sides**Objectives:**

- Solve equations with variable on both sides.

 **Key Idea****Solving Equations with Variables on Both Sides**

To solve equations with variables on both sides, collect the variable terms on one side and the constant terms on the other side.

Solve $15 - 2x = -7x$.

Steps to solving multi-step equations!!!!

1. "Condense" either side
2. "Ditch" the smallest variable guy
3. Move any adding or subtracting
4. Move any multiplication or division

$2h - 7 = 3h$

Solve $2x + 9 = 6x - 3$

$$8(x - 6) = 3x - 23$$

$$4(3x - 8) = 2(6x + 4)$$

Solve $3 - 4x = -7 - 4x$.

EXAMPLE 3 Solving Equations with No Solution

Solve $3 - 4x = -7 - 4x$.

$$3 - 4x = -7 - 4x$$

Write the equation.

Undo the subtraction.

$$\xrightarrow{+4x} \quad +4x \quad +4x$$

Addition Property of Equality

$$3 = -7 \quad \times$$

Simplify.

∴ The equation $3 = -7$ is never true. So, the equation has no solution.

When solving an equation that has infinitely many solutions, you will obtain an equivalent equation that is true for all values of the variable, such as $-5 = -5$.

EXAMPLE 4 Solving Equations with Infinitely Many Solutions

Solve $6x + 4 = 4\left(\frac{3}{2}x + 1\right)$.

$$6x + 4 = 4\left(\frac{3}{2}x + 1\right)$$

Write the equation.

$$6x + 4 = 6x + 4$$

Distributive Property

Undo the addition.

$$\xrightarrow{-6x} \quad -6x \quad -6x$$

Subtraction Property of Equality

$$4 = 4$$

Simplify.

∴ The equation $4 = 4$ is always true. So, the equation has infinitely many solutions.

$$4(3x - 8) = 2(6x + 4)$$

Solve $3 - 4x = -7 - 4x$.

Solve the equation.

4. $2x + 1 = 2x - 1$

5. $\frac{1}{2}(6x - 4) = 3x - 2$

Write an equation, then solve for the variable.

You and your friend work for two separate teachers. Mr. Hagen pays your friend \$20.00 to start and \$0.50 for each paper they grade. Mr. Hildebrandt pays you \$10.00 to start and \$0.75 for each paper you grade. How many papers, p , must you grade to make the same amount of money as your friend?

Rent at Mrs. Conklin's apartment building costs a \$300 deposit and \$700 a month. Rent at Mrs. Link's apartment building costs a \$450 deposit and \$650 a month. After how many months, m , is the rent in each apartment equal?

Page 23

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