4-7: Learning Goals

- Let's think about how many solutions an equation can have.

4-7-1: Equations

1. $5 + 7 = 7 + 5$

2. $5 \cdot 7 = 7 \cdot 5$
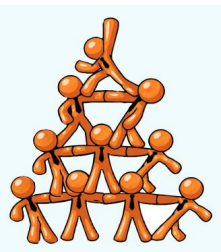
3. $2 = 7 - 5$

4. $5 - 7 = 7 - 5$

4-7-2: Thinking About Solutions

$$2t + 5 = 2t + 5$$

$$n + 5 = n + 7$$

4-7-2: Thinking About Solutions

$$n = n$$

$$2t + 6 = 2(t + 3)$$

$$3(n + 1) = 3n + 1$$

$$\frac{1}{4}(20d + 4) = 5d$$

$$5 - 9 + 3x = \text{-}10 + 6 + 3x$$

$$\frac{1}{2} + x = \frac{1}{3} + x$$

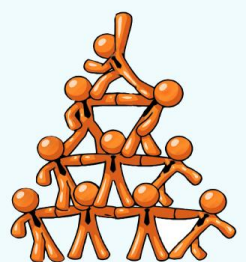$$y \cdot \text{-}6 \cdot \text{-}3 = 2 \cdot y \cdot 9$$

$$v + 2 = v - 2$$

1. Sort these equations into the two types: true for all values and true for no values.

2. Write the other side of this equation so that this equation is true for all values of u.

$$6(u - 2) + 2 =$$

3. Write the other side of this equation so that this equation is true for no values of u.

$$6(u - 2) + 2 =$$

4-7-3: What's the Equation?

1. Complete each equation so that it is true for all values of x.

   a. $3x + 6 = 3(x + \underline{\quad})$

   b. $x - 2 = \text{-}(\underline{\quad} - x)$

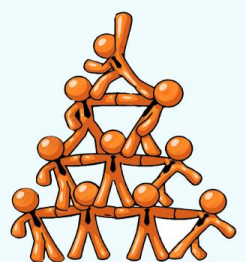   c. $\dfrac{15x - 10}{5} = \underline{\quad} - 2$

2. Complete each equation so that it is true for no values of x.

   a. $3x + 6 = 3(x + \underline{\quad})$

   b. $x - 2 = \text{-}(\underline{\quad} - x)$

   c. $\dfrac{15x - 10}{5} = \underline{\quad} - 2$

3. Describe how you know whether an equation will be true for all values of x or true for no values of x.

4-7: **Lesson Synthesis**

- How did you determine how many solutions there were to the equations you solved today?

- Write a short letter to someone taking the class next year about what they should look for when trying to decide how many solutions an equation has.
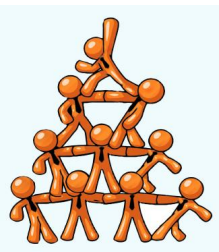
4-7: Learning Targets

- I can determine whether an equation has no solutions, one solution, or infinitely many solutions.

4-7-4: Choose Your Own Solution

$$3x + 8 = 3x+$$

What value could you write in after $3x$ that would make the equation true for:

1. no values of x?

2. all values of x?

3. just one value of x?