Lesson #2: Solving with Variables on Both Side

Date: _Oct 4_

Learning Goal: We are learning to solve equations with variable on both sides.

In many equations that you will see for the rest of your Mathematical career (may it be long and fruitful), the variable will be scattered throughout the equation, even on both sides! The goal is to collect the variables on the same side and move all the constants to the other side.

a) $5x = 4x + 7$

$x = 7$

b) $5y = 9y - 8$

$\dfrac{-4y}{-4} = \dfrac{-8}{-4}$

$y = 2$

c) $-30 + 5x = 2x$

$\dfrac{-30}{-3} = \dfrac{-3x}{-3}$

$10 = x$

d) $2w = 0.35 - 5w$

$\dfrac{7w}{7} = \dfrac{0.35}{7}$

$w = 0.05$

e) $2m + 3m = 8m - 3$

$\dfrac{-3m}{-3} = \dfrac{-3}{-3}$

$m = 1$

f) $5p - 3p = 6 - p$

g) $8y = 5y + y + 14$

h) $3n = 10.1 + 9.9 - 2n$

$\dfrac{5n}{5} = \dfrac{20}{5}$

$n = 4.$

i) $8k - 3 = 4k + 17$

$\quad -4k \qquad +3$

$4k = 20$

$k = 5$

j) $-10x + 14 = 18 - 2x$

$\quad -18 \qquad +10x$

$\dfrac{-4}{8} = \dfrac{8x}{8}$

$-\dfrac{1}{2} = x$

k) $2u + 10 = 9 - 3u + 11$

$\quad +3u \qquad -10$

$\dfrac{5u}{5} = \dfrac{10}{5}$

$u = 2$

l) $16 + 3x - 9 = -3 + 8x + 10$

m) $-29k - 18 + 11 = -36k - 10k - 177$

$\quad +177 \qquad +29k$

$\dfrac{170}{-17} = \dfrac{-17k}{-17}$

$-10 = k$

$3x + 8 - x = 2x + 8$

$\quad -2x$

$0 = 0$

This is true

$\therefore$ infinite solutions or any #.

n) $6x - 4 - 2x = 4x + 8$

$\quad -4x \qquad +4$

$0 = 12$ This is false. $\therefore$ No solution.

Success Criteria:
- I can solve equations by grouping variables on one side of the equation, and constants on the other side of the equation