

Math 7H - Unit 2b

Day 11 - Solving Multi-Step Equations

Lesson Objectives:

- I can solve multi-step equations by simplifying each side of the equation.
- I know how to show work when solving equations.

Steps for Solving Equations

Step #0 Simplify each side of the equation

- 0a Distributive Property
- 0b Combine Like Terms
- 0c *Coming Next Year*

Step #1 Get rid of the constant

Step #2 Get rid of the coefficient

$$\begin{aligned}
 32 - 18 &= 2(2x + 9) \\
 32 - 18 &= 4x + 18 \quad \text{Distributive Prop (=)} \\
 14 &= 4x + 18 \quad \text{Substitution Prop (=)} \\
 -18 &\quad -18 \quad \text{Subtraction Prop (=)} \\
 \hline
 -4 &= 4x \\
 \frac{-4}{4} &= \frac{4x}{4} \quad \text{Division Prop (=)} \\
 -1 &= x \\
 9 &= 6 - (x + 2) \\
 9 &= 6 - 1x - 2 \quad \text{Distributive Prop (=)} \\
 9 &= -1x + 4 \quad \text{Substitution Prop (=)} \\
 -4 &\quad -4 \quad \text{Subtraction Prop (=)} \\
 \hline
 5 &= -1x \\
 \frac{5}{-1} &= \frac{-1x}{-1} \quad \text{Division Prop (=)} \\
 -5 &= x
 \end{aligned}$$

$$\begin{aligned}
 10y - (4y + 8) &= -20 \\
 10y - 4y - 8 &= -20 \quad \text{Distributive Prop (=)} \\
 6y - 8 &= -20 \quad \text{Substitution Prop (=)} \\
 +8 &\quad +8 \quad \text{Addition Prop (=)} \\
 \hline
 6y &= -12 \\
 \frac{6y}{6} &= \frac{-12}{6} \quad \text{Division Prop (=)} \\
 y &= -2 \\
 5(1 - 2w) + 8w &= 15 \\
 5 - 10w + 8w &= 15 \quad \text{Distributive Prop (=)} \\
 5 - 2w &= 15 \quad \text{Substitution Prop (=)} \\
 -5 &\quad -5 \quad \text{Subtraction Prop (=)} \\
 \hline
 -2w &= 10 \\
 \frac{-2w}{-2} &= \frac{10}{-2} \quad \text{Division Prop (=)} \\
 w &= -5
 \end{aligned}$$

$$\begin{aligned}
 3(a - 3) - 2(a + 3) &= 2 \\
 3a - 9 - 2a - 6 &= 2 \quad \text{Distributive Prop (=)} \\
 a - 15 &= 2 \quad \text{Substitution Prop (=)} \\
 +15 &\quad +15 \quad \text{Addition Prop (=)} \\
 \hline
 a &= 17
 \end{aligned}$$

$$\begin{aligned}
 12 - 9 &= 2(n + 2) - 3n - 5n \\
 12 - 9 &= 2n + 4 - 3n - 5n \quad \text{Distributive Prop (=)} \\
 3 &= -6n + 4 \quad \text{Substitution Prop (=)} \\
 -4 &\quad -4 \quad \text{Subtraction Prop (=)} \\
 \hline
 -1 &= -6n \\
 \frac{-1}{-6} &= \frac{-6n}{-6} \quad \text{Division Prop (=)} \\
 \frac{1}{6} &= n
 \end{aligned}$$

Homework

Multi-Step Equations WKS

* Individual Think Time *



What to do if you get stuck...

- Reread the problem. Did you write it down correctly?
- Reread your notes. Is there a problem similar that we did together in class?
- Find a problem similar in your book. Try this one to see if it helps.
- Skip the problem until the end of Individual Think Time. Then ask an "educated" question of a neighbor or Mrs. Call.

Today we're working by...

