

12-12-17

Aim: SWBAT solve and check "CLT" equations and "Variables On Both Sides" equations.

Do Now: Take out your notes from yesterday

HW: Pg. 295 # 3 - 9 (solve and check)

Pg. 300 # 8 - 12 (solve and check)

Test Tuesday ???

## How to Play the Equations Game

### #1 Eliminating numbers on the same side as the variable

- Constants eliminate with opposite sign
- Coefficients eliminate with division of the coefficient
- Denominators eliminate with multiplication of the denominator
- Fractional Coefficients eliminate with multiplication of the reciprocal

} need to  
make 1  
sign stays  
the same

### #2 Variable terms eliminate with opposite sign

### #3 Two-Step Equations

- i. Eliminate the constant
- ii. Eliminate the coefficient or denominator

### #4 Entire side as a fraction

- i. Eliminate the denominator

### #5 Distributive Property and Combining Like Terms Equations

- i. Simplify before you solve
  - Eliminate parentheses
  - Combine Like Terms

### #6 Variables on Both Sides Equations

- i. Eliminate a variable term

### Checking an Equation

- i. Rewrite the original equation
- ii. Substitute the answer for the variable
- iii. Evaluate until sides match using the Order of Operations

○  
Step iii repeats as long as it takes.

Solve and check.

Combining Like Terms

$$\boxed{3x + 8x} = 55$$

$$\cancel{11x} = \cancel{55}$$

$$11 \quad 11$$

$$x = 5$$

check

$$3x + 8x = 55$$

$$3 \cdot 5 + 8 \cdot 5 \stackrel{?}{=} 55$$

$$\downarrow \quad \downarrow \quad ?$$

$$15 + 40 \stackrel{?}{=} 55$$

$$\downarrow \quad \downarrow \quad ?$$

$$55 = 55$$

Variables on Both Sides

$$55 + \boxed{3x} = 8x$$

$$\begin{array}{r} -3x \quad -3x \\ \hline 55 = 5x \\ \hline 5 \quad 5 \\ 11 = x \end{array}$$

check

$$55 + 3x = 8x$$

$$55 + 3 \cdot 11 \stackrel{?}{=} 8 \cdot 11$$

$$\downarrow \quad \downarrow \quad ? \quad \downarrow$$

$$55 + 33 \stackrel{?}{=} 88$$

$$\downarrow \quad \downarrow \quad ?$$

$$88 = 88$$

CLT

$$\begin{array}{r}
 \boxed{4x} - \boxed{x} + \boxed{2x} - 6 = -11 \\
 5x - 6 = -11 \\
 \quad \swarrow +6 \quad \searrow +6 \\
 \hline
 5x = -5 \\
 \quad \swarrow \cancel{5} \quad \searrow \cancel{5} \\
 x = -1
 \end{array}$$

$$\begin{array}{l}
 4x - x + 2x - 6 = -11 \\
 4(-1) - (-1) + 2(-1) - 6 \stackrel{?}{=} -11 \\
 -4 + 1 + (-2) - 6 \stackrel{?}{=} -11 \\
 -11 = -11
 \end{array}$$

Variables on Both Sides

$$\begin{array}{r}
 4x - 6 = -11 - x \\
 \quad \swarrow +x \quad \searrow +x \\
 \hline
 5x - 6 = -11 \\
 \quad \swarrow +6 \quad \searrow +6 \\
 \hline
 5x = -5 \\
 \quad \swarrow \cancel{5} \quad \searrow \cancel{5} \\
 x = -1
 \end{array}$$

$$\begin{array}{l}
 4x - 6 = -11 - x \\
 4(-1) - 6 \stackrel{?}{=} -11 - (-1) \\
 -4 - 6 \stackrel{?}{=} -11 + 1 \\
 -10 = -10
 \end{array}$$

CLT

$$\boxed{2x - 5x} - 5 = 3$$

$$-3x - 5 = 3$$

$$+5 \quad +5$$

$$\begin{array}{r} -3x - 5 = 3 \\ \hline -3x = 8 \\ \hline x = -\frac{8}{3} \end{array}$$

$$2x - 5x - 5 = 3$$

$$\frac{2 \cdot 8}{-3} - \frac{5 \cdot 8}{-3} - 5 = 3$$

$$\frac{-16}{3} + \frac{40}{3} - 5 = 3$$

$$\frac{24}{3} - 5 = 3$$

$$8 - 5 = 3$$

$$3 = 3$$

Variables on Both Sides

$$2x - 5 = 5x - 3$$

$$\begin{array}{r} 2x - 5 = 5x - 3 \\ \hline -2x \quad -2x \end{array}$$

$$\begin{array}{r} -5 = 3x - 3 \\ \hline +3 \quad +3 \end{array}$$

$$\begin{array}{r} -2 = 3x \\ \hline -2 \quad -2 \\ \hline -\frac{2}{3} = x \end{array}$$

$$-\frac{2}{3} = x$$

$$2x - 5 = 5x - 3$$

$$2\left(-\frac{2}{3}\right) - 5 = 5\left(-\frac{2}{3}\right) - 3$$

$$\frac{-4}{3} - 5 = \frac{-10}{3} - 3$$

$$\frac{-4}{3} - \frac{15}{3} = \frac{-10}{3} - \frac{9}{3}$$

$$\frac{-19}{3} = \frac{-19}{3}$$