

Tuesday, October 28th, 2014

Complete the warm up problem
to the right



Solving Equations with Variables on Both Sides

Some equations, like $8 + 4d = 5d$, have variables on each side of the equals sign.

To solve,

Step 1: Get the variables on one side of the equals sign.

Step 2: Get the numbers on the other side of the equals sign. Basically, you want the variables on one side and the constants on the other.

Step 3: Solve by undoing what's being done to the variable.

- a. To undo addition, subtract.
- b. To undo subtraction, add.
- c. To undo multiplication, divide.
- d. To undo division, multiply.

Example 1:

$$8 + \cancel{4d} = 5d$$
$$\quad \quad \quad -4d \quad -4d$$

Step 1:

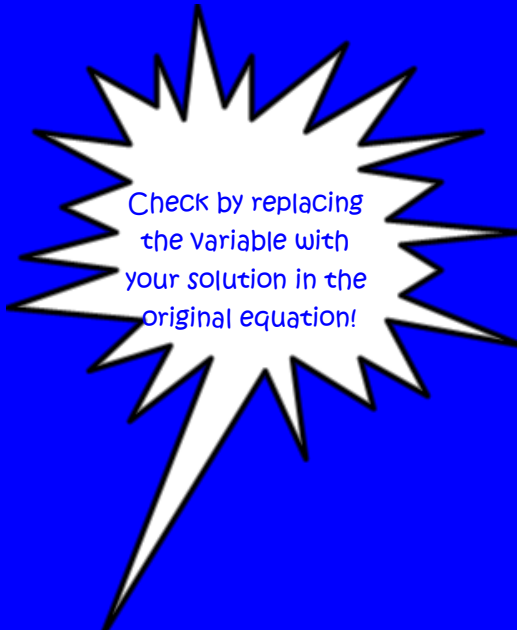
$$8 = d$$

I DO

$$8 + 4(8) = 5(8)$$
$$8 + 32 = 40$$
$$40 = 40 \checkmark$$

Step 2:

Step 3:



Check by replacing
the variable with
your solution in the
original equation!

WE DO

Example 2: $6n - 1 = 4n - 5$

$$\begin{array}{r} \cancel{6n} - 1 = \cancel{4n} - 5 \\ 2n - 1 = -5 \\ +1 \quad +1 \end{array}$$

$$\begin{array}{r} 2n = -4 \\ \hline 2 \quad 2 \end{array}$$

$$n = -2$$

YOU DO

$$\begin{aligned} \text{a. } 8a &= 5a + 21 \\ -5a & \quad -5a \\ \hline 3a &= 21 \\ \frac{3a}{3} &= \frac{21}{3} \\ a &= 7 \end{aligned}$$

$$\begin{aligned} \text{b. } 3x - 7 &= 8x + 23 \\ -3x & \quad -3x \\ -7 &= 5x + 23 \\ -23 & \quad -23 \\ \hline -30 &= 5x \\ \frac{-30}{5} &= \frac{5x}{5} \\ -6 &= x \end{aligned}$$

Rational Coefficients

Solve $\frac{3}{5}x - 15 = \frac{6}{5}x + 12$

$$-15 = \frac{3}{5}x + 12$$

$$-27 = \frac{3}{5}x$$

$$-9 = x$$

3, 6, 9, 12, 15
16

$x = -45$

$x = \frac{60}{5} + 12 = 12$

Solve $\frac{2}{3}x - 1 = 9 - \frac{1}{6}x$

$$\frac{4}{6}x - 1 = 9 - \frac{1}{6}x$$

$$+\frac{1}{6}x$$

$$\frac{5}{6}x - 1 = 9$$

$$\frac{5}{6}x = 10$$

$$x = \frac{10 \cdot 6}{5} = 12$$

Solve $\frac{1}{2}p + 7 = \frac{3}{4}p + 9$

$$\frac{2}{4}p + 7 = \frac{3}{4}p + 9$$

$$-\frac{2}{4}p$$

$$7 = \frac{1}{4}p + 9$$

$$-9$$

$$-2 = \frac{1}{4}p$$

$$\frac{4}{1} \cdot \frac{-2}{1} = \frac{1}{4}p \cdot \frac{4}{1}$$

$$-8 = p$$

$p = -8$

Green's Gym charges a one time fee of \$50 plus \$30 per session for a personal trainer. A new fitness center charges a yearly fee of \$250 plus \$10 for each session with a trainer. For how many sessions is the cost of the two plans the same?

Homework:

WS p. 149 1-7, 8 is extra credit