

Name: _____ Date: _____ Period: _____

Sec 1 H Unit 1 Day 3 - Why You Do What You Do Classwork

Solving equations has been part of your math experience for a long time. You may have even learned some shortcuts. Today you are going to look at the reasons behind the steps when solving equations.

Given the following problems, give a reason IN YOUR OWN WORDS for each step.

1) $2x - 3 = 7$

- a. $2x - 3 + 3 = 7 + 3$ _____
- b. $2x + 0 = 7 + 3$ _____
- c. $2x = 7 + 3$ _____
- d. $2x = 10$ _____
- e. $\frac{1}{2} \cdot 2x = \frac{1}{2} \cdot 10$ _____
- f. $1 \cdot x = \frac{1}{2} \cdot 10$ _____
- g. $x = \frac{1}{2} \cdot 10$ _____
- h. $x = 5$ _____

2) Summarize the rules to follow that allow us to solve equations: _____

How do you know what to do first? _____

Tyler solved these equations, but they may not all be correct. Find any mistakes in his work, THEN SOLVE THE PROBLEMS CORRECTLY.

3) $-6 = \frac{x}{2}$
 $-6 \div 2 = -3$
 $x = -3$

4) $16 = -4(k - 3)$
 $16 = -4k - 12$
 $+12 = +12$
 $28 = -4k$
 $28 \div -4 = -7$ so $k = -7$

5) $25 - w = 40$
 $-25 \quad -25$
 $-w = 15$
 $-1 \quad -1$
 $w = -15$

The distributive property is a way to use multiplication to simplify expressions. $8(x - 9) = 8x - 72$
When distributing a negative number, don't forget to multiply both terms by the negative!

6) Solve for k: $9(k + 2) = 45$

7) Solve for y: $-36 = -6(2y - 4)$

8. When equations have fractional coefficients, you can make them easier to solve by making all the coefficients whole numbers. What can you multiply $\frac{2}{5}$ and $\frac{1}{3}$ by to make them whole numbers? Solve $\frac{2}{5}x - \frac{1}{3} = \frac{3}{5}$

9. Solve this equation without changing any fractions into decimals: $\frac{2}{3}x + \frac{6}{7} = \frac{13}{7}x - 2$

Solve the following problems.

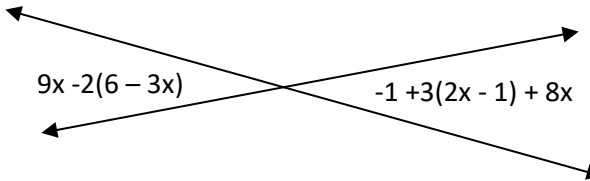
10. $2(x - 4) + 6 = 2x - 2$

11. $3x - 5 + 6 = 9x - 6x + 2$

12. $-4x + 5 - 2x = 10 - 3x - 5$

13. $\frac{2x-4}{5} = \frac{4-2x}{3}$

14. How do you know if a problem has no solution, infinite solutions, or the variable has a value of 0?

15.  Last year you learned about vertical angles, which are formed when two lines intersect. Vertical angles are congruent, which means their measures are equal. How could we find the measures of the angles labeled in the diagram?

Write an equation then solve it and find the measure of each angle:

16. (Angles that are supplementary have a sum of 180 degrees. Angles that are complementary add up to 90 degrees.) Angles A and B are supplementary angles. The measure of angle A is equivalent to $3x - 4$, and the measure of angle B is equivalent to $5x - 8$. What is the value of x ? What is the measure of angle A and the measure of angle B?