

Algebra Review: Solving Equations

Warm-up (In your Notes)

- Simplify the following expressions using order of operations:

1. $3^2 + 4(12 \div 4 - 2)$

2.
$$\frac{(18 \div 2 - 5)}{(8 \div 4 + 3)}$$

3. $-3(2x - 7 - 3x + 5)$

Homework Questions?

Solving Equations

- **Objective**: Students will be able to solve multi-step linear equations through direct examples.

***Question**: Does order of operations help?

Example

- Solve the following equation for the value

of x : $4x = 2x + 12$

First $-2x - 2x$

$$2x = 12$$

Next $\div 2 \quad \div 2$

And Finally, $x = 6$

Now you try

- ◉ Solve the equation for the value of x .

$$\begin{array}{l} \text{First} \\ 3x + 15 = 6x + 9 \\ -9 \qquad -9 \end{array}$$

$$\begin{array}{l} \text{Then} \\ 3x + 6 = 6x \\ -3x \qquad -3x \end{array}$$

$$\begin{array}{l} \text{Lastly} \\ 6 = 3x \\ \div 3 \div 3 \end{array}$$

$$x = 2$$

Example

- Use Order of operations to solve the equation for the value of x .

$$5(x - 2) = 4x + 3$$

Distribute 5: $5x - 10 = 4x + 3$

Combine like terms: $5x - 10 = 4x + 3$

(Handwritten annotations: a green checkmark over the 10, and yellow and green markings below the equation: $-4x$ and $+10$ under the left side, and $-4x + 10$ under the right side, with a vertical line through the right side of the equation.)

Solve for x : $x = 13$

Now you try

- Use Order of operations to solve the equation for the value of x .

$$4\left(x - \frac{1}{2}\right) + 1 = 3^2$$

$$4x - 2 + 1 = 9$$

$$4x - 1 = 9$$

$$4x = 10$$

$$x = \frac{10}{4} = \frac{5}{2}$$

Critical Question

Explain two ways you could solve

$$20 = 5(-3 + x)$$

Exit Ticket

Solve the equations for the value of x .

1. $-12 = 3 - 2x - 3x$

2. $10(x + 3) - (-9x - 4) = x - 5 + 3$

Day 2: Warmup Final Check

Let's Cover these Together

1. $-12 = 2 + 5x + 2x$

2. $-3(1 + 6x) = 14 - x$

3. $10x + 9 - 11 - x = -2(2x + 4) - 3(2x - 2)$

4. $2x + 7 = 2x - 5$

Solving Equations Worksheet

- ① Work with your group to complete this assignment.
- ① Anything you do not finish will be homework, due by Friday (8/21).

Extra Practice Problems.

⦿ $-16 + 5x = -7(-6 + 8x) + 3$

⦿ $2x + 15 + 3x = 90$