

Your Name

Mrs. Theo

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Notes

UNIT 3

SOLVING EQUATIONS

Board Work!

Solve each equation, when your group is all done raise your boards.

1. $x + 17 = 42$



2. $-11 + x = 60$



3. $5x + 12 = 62$



4. $15 - x = 10$

$$\begin{array}{r} -15 \quad -15 \\ \hline -x = -5 \\ \hline x = 5 \end{array}$$

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



6. $-4x - 2 = -8x$

$$\begin{array}{r} +4x \quad +4x \\ \hline -2 = -4x \\ \hline x = 0.5 \end{array}$$

7. $5(x - 3) = 7$



8. $6 - 7(x - 2) = 4x + 8$

Handwritten notes: 1) Distribute, 2) Combine like terms, 3) Move x term

$$\begin{array}{r} 6 - 7x + 14 = 4x + 8 \\ 20 - 7x = 4x + 8 \\ +7x \quad +7x \\ \hline 20 = 11x + 8 \\ -8 \quad -8 \\ \hline 12 = 11x \\ \hline 12 = 11x \\ \hline x = 2.72 \end{array}$$

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



10. $5 - 4(3x - 8) + 2x = 7 + x$

$$\begin{array}{r} 5 - 12x + 32 + 2x = 7 + x \\ \hline -10x + 37 = 7 + x \\ +10x \quad +10x \\ \hline 37 = 7 + 11x \\ -7 \quad -7 \\ \hline 30 = 11x \\ \hline x = 2.72 \end{array}$$

Solving and Writing Linear Equations

Solving
With
Variables
on both
sides

The goal is to get the desired variable alone on one side and all the numbers on the other.

How? You want $0x$ on one side, determine if you need to Add or Subtract that variable term

***When you check sub in on both sides and simplify both sides separately

ex. $5x - 3 = 13 - 3x$

$$\begin{array}{r} * \quad +3x \\ \hline 5x + 3x - 3 = 13 - 3x + 3x \\ 8x - 3 = 13 + 0 \\ * \quad 8x - 3 = 13 \\ \hline +3 \quad +3 \\ \hline 8x = 16 \\ \hline 8 \quad 8 \\ \hline x = 2 \end{array}$$

$$\begin{array}{l} 5(2) - 3 = 13 - 3(2) \\ \checkmark \quad \checkmark \quad \checkmark \quad \checkmark \\ 10 - 3 = 13 - 6 \\ 7 = 7 \\ \checkmark \end{array}$$

Combining
Like Terms
First

When there are like terms on the SAME side, combine them before getting the variables on one side.

1. Combine any like terms that are on the SAME side
2. Move one of the variable terms to the other side by undoing the addition/subtraction

Your Turn!!!!

Complete, take a picture and upload to your Breakout Group

ex. $\frac{7}{2}v - v = 3 + \frac{3}{2}v$

$$\begin{array}{r} \frac{7}{2}v - \frac{2}{2}v = 3 + \frac{3}{2}v \\ \hline \frac{5}{2}v = 3 + \frac{3}{2}v \\ -\frac{3}{2}v \quad -\frac{3}{2}v \\ \hline \frac{2}{2}v = 3 \\ \hline v = 3 \end{array}$$

ex1. $1 - s = 6 - 6s$

Solving and Writing Linear Equations

Grouping Symbols

()

When there are Parentheses on one or both sides,

1. take a step to distribute
2. combine any like terms that are on the SAME side,
3. Move one of the variable terms to the other side by undoing the addition/subtraction

4. Solve for X

Your Turn!!!!

Complete, take a picture and upload to your Breakout Group

ex. 10 $-(3x-7) - x = x + 2$

$$10 \quad -3x + 7 - x = x + 2$$

$$17 - 4x = x + 2$$

$$17 - 4x + 4x = x + 2 + 4x$$

$$17 = 5x + 2$$

$$17 - 2 = 5x + 2 - 2$$

$$15 = 5x$$

$$\frac{15}{5} = \frac{5x}{5}$$

$$3 = x$$

$$x = 3$$

ex2. $x + 2 = 8x - (5x - 4) - 2$

No Solution

When the variable gets canceled and two numbers are not equal, there is no solution for the variable that will make this equation true.

ex. $3(-2 - 3x) = -9x - 4$

1st Distribute

$$-6 - 9x = -9x - 4$$

2nd Combine like terms

$$-6 = -4$$

Not true

No Solution

Variables canceled

All Real Numbers

When the variable gets canceled and two numbers are equal, then All Real Numbers are solutions for the variable, because any number will make this equation true.

ex. $2(a-8) + 7 = 5(a+2) - 3a - 19$

1st Distribute

$$2a - 16 + 7 = 5a + 10 - 3a - 19$$

2nd Combine like terms on same side

$$2a - 9 = 2a - 9$$

$$-2a = -2a$$

$$-9 = -9$$

Always True

All Real Numbers

or

Infinitely Many

answers any # will work for x