Students will be able to solve all types of linear equations in one variable

Warm-up

In your own words, **EXPLAIN** the difference between an EQUATION and an EXPRESSION

Sep 1-4:13 PM

Unit 1: Basics of Algebra

Lesson: 1 & 2 step Equations

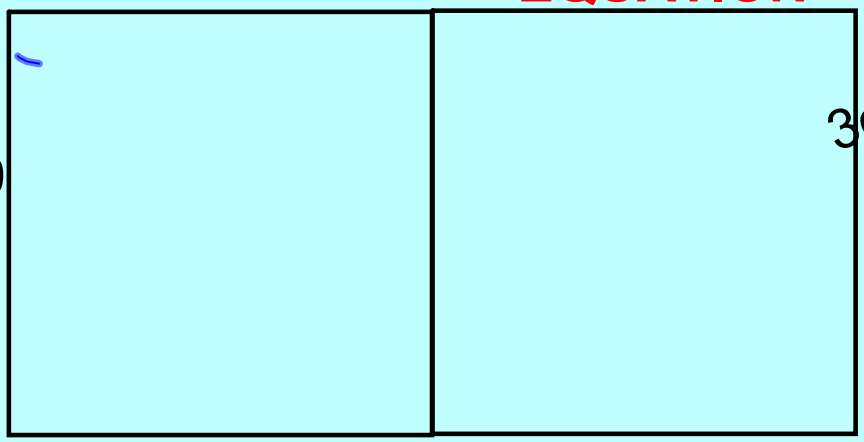
Jul 9-11:21 AM

Students will be able to solve all types of linear equations in one variable

Identify which of the following is an Expression or an Equation

4x - 6

4 + 6x = 8 EXPRESSION EQUATION



3c - 2d

x + 5y = 9

3x + 2

5a + 2b abc

V=LWH

3x + 1 = 3 A = BH

Sep 1-4:07 PM

Vocabulary Terms

- **Inverse operations**- operations that undo each other, such as addition and subtraction, are inverse operations
- **Subtraction Property of Equality:** the Subtraction Property of Equality states that if you subtract the same value from each side of an equation, the two sides remain equal
- **Addition Property of Equality:** The Addition Property of Equality states if you ass the same value to each side of an equation the two sides remain equal.

Aug 27-7:18 PM

Solving equations is something you have done before. You must keep both sides equal without throwing one side off balance.

We all know how to solve this equation. What is the first step?

Do you understand WHY you must subtract 3 from BOTH sides to keep the balance?

Check:

5 + 3 = 8

8 = 8

Both sides are still balance

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Students will be able to solve all types of linear equations in one variable

Solve for the *variable* and check

1) x - 8 = -12

2) x + 3 = -2

If you want to get x by itself then how can you move "-8" to the other side and still keep the equation EQUAL????

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Students will be able to solve all types of linear equations in one variable

Solve for the *variable* and check

3) 5x = 70

4) -30 = 2x

What is the inverse operations of multiplication

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Students will be able to solve all types of linear equations in one variable

Solve and check:

5) -7 = -11 + x

Can you re-write this equation using the Commutative Property?

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Solve and check each of the following. Click each box to see the solution

1) $2x = -16$ — $x = -8$

2) $3 = m - 11$ — $m = 14$

3) $35 = -7z$ — $z = -5$

4) $48 + k = -5$ — $k = -53$

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Let's try a 2 step equation. Solve and Check

$3x + 8 = -7$

Now there are two things connected to our variable. Which term should we "move" to the other side first? How will we "move" it?

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Let's try a 2 step equation. Solve and Check

$$-4x - 10 = 2$$

Now there are two things connected to our variable. Which term should we "move" to the other side first? How will we "move" it?

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Here's one that has a bit of a twist...

Solve and check:

$$6 - x = 7$$

$-6 \quad -6$

$-x = 1$

$-1 \quad -1$

$x = -1$

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Solve each of the following equations:

1) $16 + 3x = -14$

2) $12 = 5x - 23$

3) $-11 = 13 - 3x$

Sep 1-4:22 PM

Exit Ticket

1) $4x - 5 = 19$

2) $-5x + 3 = 33$

Sep 17-9:16 AM

Homework:

Solve each equation.

1) $26 = 8 + v$

2) $3 + p = 8$

3) $15 + b = 23$

4) $-15 + n = -9$

5) $m + 4 = -12$

6) $x - 7 = 13$

Aug 27-8:23 PM

Sep 17-10:50 AM

Homework:

13) $-15 = -4m + 5$

14) $10 - 6v = -104$

15) $8n + 7 = 31$

16) $-9x - 13 = -103$

17) $\frac{n+5}{-16} = -1$

18) $-10 = -10 + 7m$

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Students will be able to solve all types of linear equations in one variable

Warm Up:

Solve the 2-step equation below and check

1) 6x - 7 = 29

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

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Unit 1: Basics of Algebra

Lesson:Solving Equations with variables on both sides

Jul 9-11:21 AM

Students will be able to solve all types of linear equations in one variable

Yesterday, we learned *how to solve 1 and 2 step equations*. Today we are going to learn how to solve equations with variables on both sides.Lets look at the problem below. Is there a process for solving these types of equations? What step would you do first? Is there only one way to solve this?

$$3x + 9 = 5x + 17$$

Sep 1-4:34 PM

Students will be able to solve all types of linear equations in one variable

It's your choice, but I tend to move my
"letters to the left, numbers to the right."

$9 - 3x = 5x + 6$

$-5x \quad -5x$

$9 - 8x = 6$

$-9 \quad -9$

$\frac{-8x}{-8} = \frac{-3}{-8}$

$x = \frac{3}{8}$

1) Given

2) Subtraction Property of Equality

3) Subtraction Property of Equality

4) Inverse Property

5) Simplified

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Students will be able to solve all types of linear equations in one variable

Solve and Check:

"Letters to the left, numbers to the right."

1) $3x - 7 = 5x + 9$

2) $-x + 8 = -6x + 18$

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Students will be able to solve all types of linear equations in one variable

This one is weird. Let's see what happens when there is

NO SOLUTION

Solve and Check:

"Letters to the left, numbers to the right."

$$4x + 8 = -2 + 4x$$

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Students will be able to solve all types of linear equations in one variable

Solve and Check:

$$9 - 3x = 5x + 6$$

"Letters to the left, numbers to the right."

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Students will be able to solve all types of linear equations in one variable

Solve and Check:

$$0.8 - 3x = 1.9 - 2x$$

"Letters to the left, numbers to the right."

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Students will be able to solve all types of linear equations in one variable

Solve each problem below and tap the box to reveal the solution.

1) 4x + 1 = -3x + 8

2) 1.6 + 4x = 6x - 0.32

3) -8 - x = 3x - 20

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Homework:

Solve each equation.

1) $-20 = -4x - 6x$

2) $6 = 1 - 2n + 5$

3) $8x - 2 = -9 + 7x$

4) $a + 5 = -5a + 5$

5) $4m - 4 = 4m$

6) $p - 1 = 5p + 3p - 8$

7) $5p - 14 = 8p + 4$

8) $p - 4 = -9 + p$

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Students will be able to solve all types of linear equations in one variable

Warm-Up

Solve and Check:

3x + 3 = 15 + 9x

Sep 6-2:25 PM

Unit 1: Basics of Algebra

Lesson: Distribution and Combination of Equations

Aug 27-7:56 PM

Students will be able to solve all types of linear equations in one variable

When solving the equation 4(3x + 2) - 9 = 8x + 7, Emily wrote 4(3x + 2) = 8x + 16 as her first step.

a) What property did she use in her first step?

b) What property would you of used first?

Sep 6-2:20 PM

Students will be able to solve all types of linear equations in one variable

Sometimes equations are *"messy"* and we must clean them up. In order to do this, we must *simplify them first*.

3 Questions you should ask yourself when solving equations

1) What is the first step?

2) Do you have parenthesis?

3) Can I combine like terms"

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Students will be able to solve all types of linear equations in one variable

Solve for x: 5(2x - 4) = 10

1) What is the first step?
2) Do you have parenthesis?
3) Can I combine like terms"

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Students will be able to solve all types of linear equations in one variable

Solve for x:

1) What is the first step?
2) Do you have parenthesis?
3) Can I combine like terms"

1) $3(x - 8) = x + 4$

2) $3(2x - 1) = x + 2$

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Students will be able to solve all types of linear equations in one variable

Solve for x:

1) What is the first step?
2) Do you have parenthesis?
3) Can I combine like terms"

3) $8x - 5(x - 1) = 20$

4) $0.05(x + 4) + 0.10x = 1.25$

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Students will be able to solve all types of linear equations in one variable

Solve for x: 4(x - 2) - 3 = 9

1) What is the first step?
2) Do you have parenthesis?
3) Can I combine like terms"

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Students will be able to solve all types of linear equations in one variable

Solve for x:

4(2x + 1) = 27 + 3(2x - 5)

1) What is the first step?
2) Do you have parenthesis?
3) Can I combine like terms"

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Students will be able to solve all types of linear equations in one variable

Challenge Problem

Solve for x:

$$5x - 3 + 6x + 1 = 5 - 2(x + 4)$$

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Homework:

Solve and Check:

1) $-20 = -4x - 6x$

2) $6 = 1 - 2n + 5$

3) $8x - 2 = -9 + 7x$

4) $a + 5 = -5a + 5$

Aug 27-9:25 PM

Homework!!!

Solve and Check

5) $-18 - 6k = 6(1 + 3k)$

6) $5n + 34 = -2(1 - 7n)$

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

8) $3n - 5 = -8(6 + 5n)$

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Students will be able to solve all types of linear equations in one variable

Warm-Up

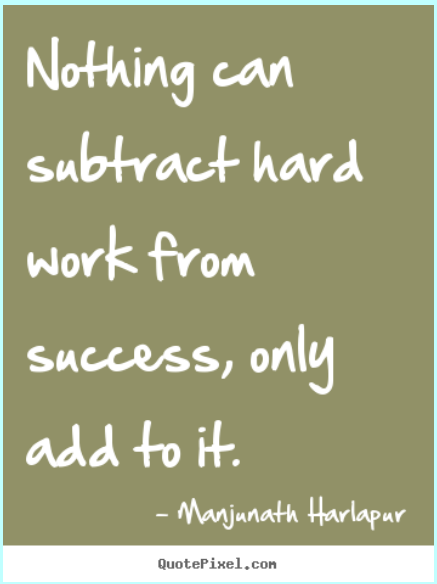
If $x = -1$, solve for a

$2x + ax - 7 = -12$

Sep 6-2:30 PM

Unit 1: Basics of Algebra

Lesson: Distribution and Combination of Equations (Day 2)



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Solving Equations Worksheet

Please work in groups no larger than 3. Complete the worksheet and hand in at the end of the period.

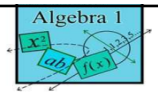
Remember Quiz tomorrow!!!!

Sep 6-2:39 PM

Solving Linear Equations

Name_____

Directions: Be sure to show your work!



1. Solve for x: $3x - 12 = 0$

2. Solve for m: $2(m + 6) = 48$

3. Solve for x: $3(2x - 1) - 10 = 8 + 5x$

4. Solve for x: $8x + 9 - 3x = 8 + 5x + 1$

5. Solve for a: $8a - (4a + 32) = 16$

6. Solve for x: $5(2x - 1) = 4(3x - 2)$

7. Solve for m: $0.02m + 0.08(8 - m) = 1.78$

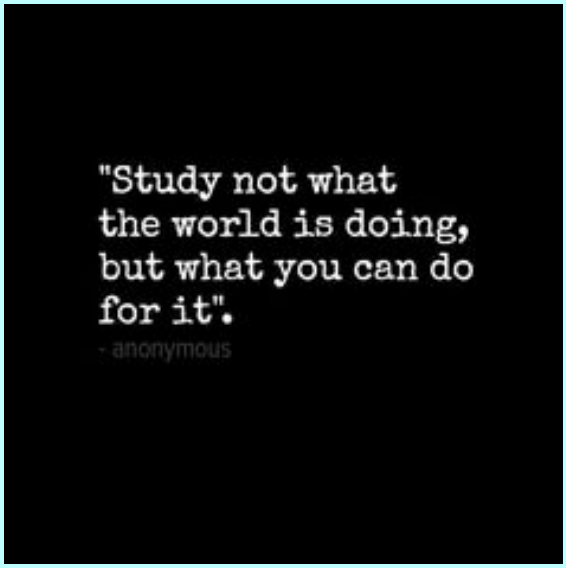
8. Solve for x: $4(x + 5) = 3(x - 2) - 2(x + 2)$

9. Solve for x: $6x - [2x + 3(x + 1)] = x + 20$

10. Solve for x: $\frac{1}{3}(21 - 3x) = \frac{1}{2}(8 - 4x)$

Unit #1: Basics of Algebra

Quiz on Equations



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