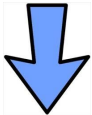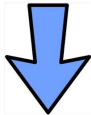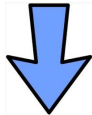Name_____   Date_____

Unit 1- Guided Notes

MGSE8.EE.7	Solve linear equations in one variable.
MGSE8.EE.7b	Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

Linear Equation	An equation that can be written in the form $ax + b = c$ where a, b, and c are constants.
Distributive Property	distributive property lets you multiply a sum by multiplying each addend separately and then adding the products.
Rational Number	A rational number is a number that can be expressed as a fraction a/b where a and b are integers and $b \neq 0$.

Solving a Linear Equation with a variable on both sides.	**Solving a Linear Equation with rational coefficients.**	**Solving a Linear Equation using the distributive property and collecting like terms.**

Step 1: Combine any like terms in the equation (do not cross the =.

Step 2: Try to get all the variable terms on one side of the equation.

a. It doesn't matter which side you choose.

b. Make sure you follow the rules for equations.

Step 3: Now get all the constants (regular numbers) on the OTHER side of the equation.

a. You must have your variable term on one side, and your constant term on the other.

b. Make sure you follow the rules for equations.

Step 4: Divide to get the variable all by itself.

Example 1:

**This would involve things like removing ( ), removing fractions, adding like terms, etc.

**To remove ( ): Just use the distributive property.

Decimals: Adding/Subtracting while using decimals:

1.)Line up the place values of the numbers by lining up the decimals.

2.)Add in filler zeros if needed.

3.)Add or Subtract the numbers in the same place value positions.

Multiplying/Dividing with Decimals:
Look at Type 1 and Type 2

Step 1: Multiply the numbers and ignore the decimal points.

Step 2: Count up how many number of digits that come after the decimal points in both factors.

Step 3: Place the decimal in the product so that the same number of digits comes after the decimal point in the answer.

Step 1: Perform any distributive property shown in the equation.

Step 2: Combine any like terms in the equation **do not cross the = sign**

Step 3: Now you should see a two-step equation remaining, please follow the steps for solving two step equations.

Example 1:
$4(2x - 11) - 6x = -3$

Example 2:
$-2(4x - 3) = 10$

-13 = 5 + 4x − 6x

Example 2
7 = 2 + 5y − 8

Type 1: Decimal in the dividend

Step 1: Pull up the decimal. Be sure to keep it in the same position as it started.

Step 2: Start dividing as usual. In this problem, we would start by determining how many times 13 goes into 31 tens. We should get 2 tens. So we will put a 2 in the tens place.

Step 3: Continue the process.

Type 2: There is a decimal in the divisor.
$$1909.38 \div 24.2$$
It becomes a challenge to try and carry out the long division process when there is a decimal in the divisor. So we will first move it out. To move it out, we multiply by powers of ten.

24.2 x 10 = 242 Now we don't have a decimal in the divisor. However, we cannot just change the value of one of the numbers. This would also change the quotient. So we will do the same change to the dividend.

1909.38 x 10 = 19093.8

Now we are ready to divide: 19093.8 ÷ 242

Start again by pulling up the decimal.

Then, divide.

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Don't forget to follow the steps on how to solve a linear equation.
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Step 1: Simplify the expressions on each side of the equation by combining like terms;

Step 2: Use inverse operations to collect the variable terms on one side of the equation;

Step 3: Solve for the variable continue using inverse operations to isolate the variable.

Step 4: Check the solution in the original equation

Example 1:
$\frac{1}{2}$ (4x – 10) = -7

	Example 2: 1.3 + 4x – 2.8 = 0.3	