

Alright guys! Here is the information for week TWO of our review to prepare you for 8<sup>th</sup> grade math!

This PowerPoint is going to go over inequalities! It will have video information on what to DO with inequalities, how to solve them, how to graph them, practice, and a review from LAST week on equations at the very end. This is just to make sure that you are still seeing the older material that you need for 8<sup>th</sup> grade also.

**Remember: Now, none of this is a requirement.** You do NOT have to do all the practice, watch all the videos, or anything like that. This is simply a tool for you to utilize to prepare you for next year if you choose to do it! **Also, you do NOT need to print anything out to work it! Just use a sheet of paper!**

You guys are absolutely amazing! I hope everyone is safe and healthy!

DO YOU REMEMBER WHEN YOUR TEACHER WOULD GIVE YOU A  
RIDICULOUS PROBLEM ABOUT A GUY BUYING SO MUCH OF AN ITEM?



JOHNNY BUYS 144 ROLLS OF TOILET PAPER DOESN'T  
SEEM THAT OUT OF THE ORDINARY NOW.

Week 2: March 30<sup>th</sup> - April 3<sup>rd</sup>  
Inequalities Review

DCMS 7<sup>th</sup> Grade Math

March/April 2020

Standard Breakdown: Students need to be able to apply all order of operations to inequalities.

For example:

$$\begin{array}{r} 3x + 5 > 11 \\ \downarrow -5 \quad \downarrow -5 \quad \star \\ \hline \end{array}$$

Step 1: Subtract 5 from both sides

$$\begin{array}{r} 3x > 6 \\ \downarrow \div 3 \quad \downarrow \div 3 \quad \star \\ \hline \end{array}$$

Step 2: Divide both sides by 3

$$x > 2$$



Final solution:  $x$  is greater than 2, meaning  $x$  is ALL the numbers that are larger than 2 NOT including 2.

Standard Breakdown: Students need to be able to graph inequalities on a number line and explain what that means in terms of the information given in the problem itself.

$$3x + 5 > 11$$

$$\begin{array}{r} \downarrow -5 \quad \downarrow -5 \\ \hline \end{array}$$



Step 1: Subtract 5 from both sides

$$\begin{array}{r} \cancel{3x} \quad > \quad 6 \\ \cancel{3} \downarrow \quad \downarrow \quad \cancel{3} \\ \hline \end{array}$$



Step 2: Divide both sides by 3

$$x > 2$$



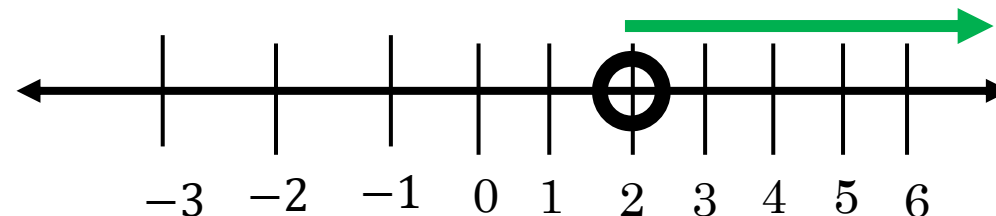
Final solution is:  $x$  is greater than 2, meaning  $x$  is ALL the numbers that are larger than 2 NOT including 2.

Remember there few rules:

$>, <$  : will be *OPEN* circles

$\geq, \leq$  : will be *CLOSED* circles

**\*\*If your variable is on the LEFT, the inequality sign will point in the direction you should shade.**



Open circle because it is  $>$  and shaded to the left right because that is the direction of all the numbers greater than 2.

Standard Breakdown: Students need to be able to dissect a word problem and construct an inequality sentence from the given information.

Jake is at Target. He can spend at most \$45. He decided to buy a \$32 jacket and wants to spend the rest on \$2 paints. How many paints can he buy?

This is how you would create and label your inequality:

$$2x + 32 \leq 45$$

Price PER paint      Number OF paints (which is unknown)      Price of the jacket      Total amount of money he has to spend



It is less than or equal to ( $\leq$ ) because of the key words AT MOST, meaning he can spend \$45 OR less than that.

# Where does this come in for 8<sup>th</sup> grade math?

8.EE.7a & 7b & 8a & 8b & 8c: Analyze and solve linear equations and pair of simultaneous linear equations

In these standards you will be solving for an unknown (both with and without variables on BOTH sides of the equal sign) to state how many solutions represent either one, none, or an infinite number of solutions. Then graphing that information on an x, y coordinate grid (a graph).

You will also be solving TWO different equations and will be asked to compare their answers to one another and graph them on a x,y coordinate grid to see if they have overlapping data sets. As well as substituting in equations into one another to solve for a common (x,y) coordinate.

Since equations and inequalities are solved similarly, they build on each other!

- 8.EE.3: Understanding inequalities will help tie directly into how to write and format scientific notation and how to compare numbers to each other.

But, don't worry, that isn't until next year!



# Introduction to Solving Inequalities

**Example #2**

$$\frac{b}{3} + 4 < 13$$
$$\frac{b}{3} < 9 - 4$$
$$\frac{b}{3} < 5$$
$$b > -27$$

Number line graph showing the solution set  $b > -27$ .

Link: [Introduction to Solving Inequalities](#)

The video to the left AND the link are the SAME video, I have provided both in case one is not working. In the video, she goes over two examples of two-step inequalities and a single word problem. She instructs you on how to set them up, solve, and graph.

[Inequality Guided Notes PDF](#)

[Inequality Guided Notes PDF Solutions](#)

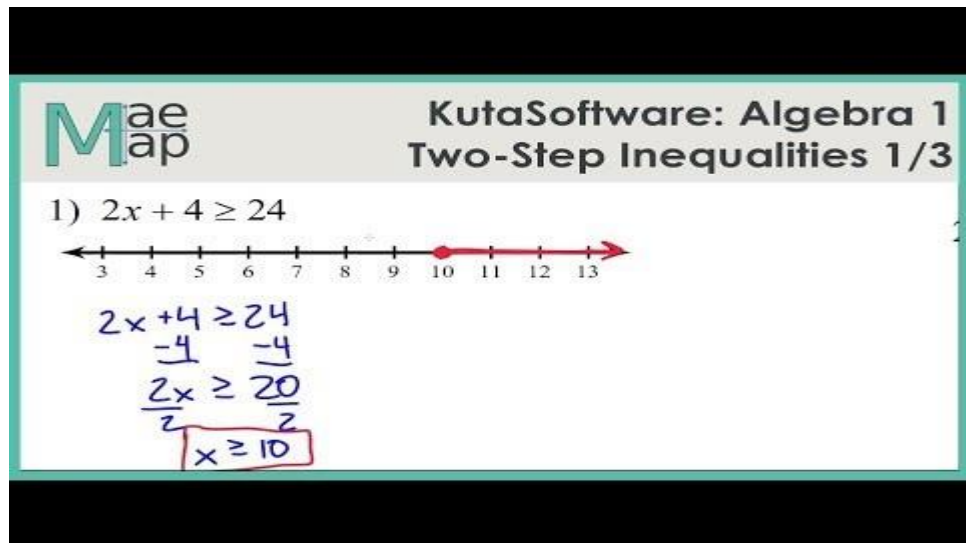
The PDF provided (along with the answer key) are good 'glue in' style notes for students to use to help them continue their understanding of inequalities. It states what each inequality sign means, what the circles on the graphs mean, how to graph simple inequalities, and how to solve and graph two-step inequalities.



# Video Review of Two-Step Inequalities

In this slide and the one after are THREE videos that walk you through how to work the problems on the worksheet provided to the right if you would like to print it out OR just write down the problems and follow along. (the answer key is provided with the worksheet as well) She explains exactly how to work the problems and how to graph them.

Link: [Kuta Software Worksheet for Videos](#)



Mae ap KutaSoftware: Algebra 1  
Two-Step Inequalities 1/3

1)  $2x + 4 \geq 24$

$$\begin{array}{r} 2x + 4 \geq 24 \\ -4 \quad -4 \\ \hline 2x \geq 20 \\ \frac{2}{2} \quad \frac{2}{2} \\ \hline x \geq 10 \end{array}$$

A number line is shown with integers from 3 to 13. A red dot is placed at 10, and a red arrow points to the right from 10, representing the solution set  $x \geq 10$ .

Link: [Part One of Two-Step Inequality Review](#)

The video to the left and the link above are the SAME video. I have provided both in case the video will not load, take the link above to access the SAME video.

# Video Review of Two-Step Inequalities Continued

Mae ap KutaSoftware: Algebra 1  
Two-Step Inequalities 2/3

9)  $-7x + 7 \leq -56$

$$\begin{array}{r} -7x + 7 \leq -56 \\ -7 \quad -7 \\ \hline -7x \leq -63 \\ \hline x \geq 9 \end{array}$$

11)  $-11x - 4 > -15$

Link: [Part Two of Two-Step Inequality Review](#)

The video to the left and the link above are the SAME video. I have provided both in case the video will not load, take the link above to access the SAME video.

Mae ap KutaSoftware: Algebra 1  
Two-Step Inequalities 3/3

17)  $4 < 1 + \frac{n}{7}$

$$\begin{array}{r} 4 < 1 + \frac{n}{7} \\ -1 \quad -1 \\ \hline 3 < \frac{n}{7} \\ \hline 7 \cdot 3 < \frac{n}{7} \cdot 7 \\ \hline 21 < n \\ \hline n > 21 \end{array}$$

Link: [Part Three of Two-Step Inequality Review](#)

The video to the left and the link above are the SAME video. I have provided both in case the video will not load, take the link above to access the SAME video.

This worksheet lets students practice solving and graphing inequalities. (answer key included)

 [Two-Step Inequalities Solving and Graphing Practice](#)

This worksheet is for students to practice two-step inequalities without graphing. (answer key included)

 [Two-Step Inequality Practice](#)

This worksheet asks students to take a math sentence and turn it into a numerical inequality statement. (answer key included)

 [Rewriting Inequalities Practice](#)



Practice

Practice

Practice

## Review of Equations from last week:

1)  $2x + 11 = 3$

2)  $7x + 3(-4x - 5) = -65$

3)  $\frac{3}{4}x + \frac{9}{4} = 9$

4)  $4x + 7 = 27$

5)  $129 = 2x + 5(2x - 3)$

6)  $-14.3 = -1.4 - 3x$

## Review of Equations from last week solutions:

1)  $x = -4$

2)  $x = 10$

3)  $x = 9$

4)  $x = 5$

5)  $x = 12$

6)  $x = 4.3$