GreatHearts Irving

Remote Learning Packet

NB: Please keep all work produced this week. Details regarding how to turn in this work will be forthcoming.

April 20th - April 24th, 2020

Course: Algebra I

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Weekly Plan:

Monday, April 20

- ☐ Read pg. 490-492, look through pg.492 Oral Ex. #1-17 Odd
- ☐ Pg. 492-493 WE #7-31 Odd

Tuesday, April 21

- ☐ Check over the odd answers from Tuesday's assignment, Warm up – pg. 494 MRE #2-6
- ☐ Pg. 492-493 WE #8-32 Even

Wednesday, April 22

- ☐ Read pg. 495, look through pg. 496 Oral Ex. #1-23 Odd
- ☐ Pg. 497-498 WE #1-23 Odd

Thursday, April 23

- ☐ Check over the odd answers from Wednesday's assignment
- ☐ Pg. 497-498 WE #2-24 Even

Friday, April 24

- ☐ Pg. 501-502 Chapter Review #1-11
- ☐ Pg. 502 Chapter Test #1-13

Statement of Academic Honesty

I affirm that the work completed from the packet is mine and that I completed it independently.

I affirm that, to the best of my knowledge, my child completed this work independently

____
Student Signature

____
Parent Signature

For all assignments

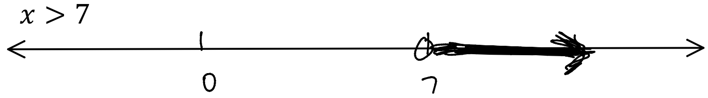
Remember you must always justify your answers through your work to receive full credit. Please use lined, loose-leaf **GRAPH** paper and make sure to include a heading for each assignment. If you don't have graph paper, please use a ruler or print grids off online. As always, feel free to email me during the schooldays with questions.

Monday and Tuesday notes, April 20-21
Section 10-7

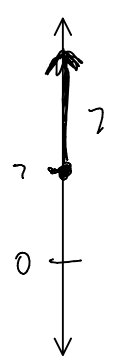
When graphing inequalities:
Just like on a number line, when graphing inequalities we will have a line in the sand so to speak.

For a simple graph involving one variable such as $x > 7$ we would see the boundary set at the number 7 (a point not including 7). All of the real numbers to the right of seven (the point) make the statement true, but all the numbers to the left, and including seven, will not be true.

So:
$x > 7$

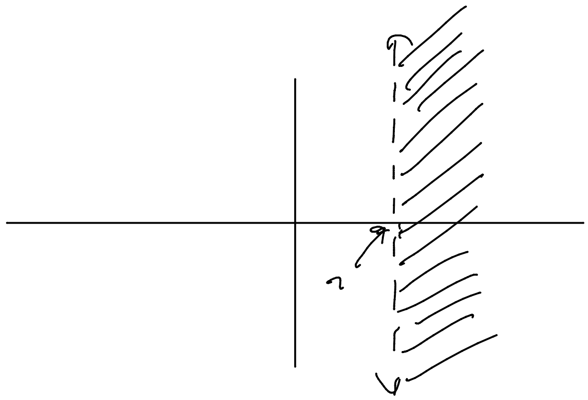


What would a graph of $y \geq 7$ look like?

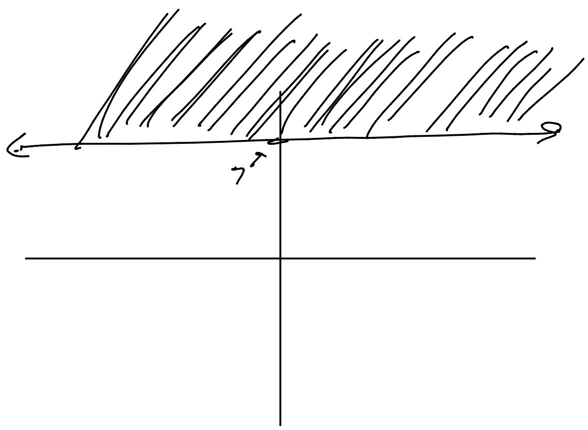


Instead of horizontal change we see vertical change (a number line that is vertical), but when we combine both to make a plane, we have to consider both the horizontal and vertical change.

$x > 7$



$y \geq 7$

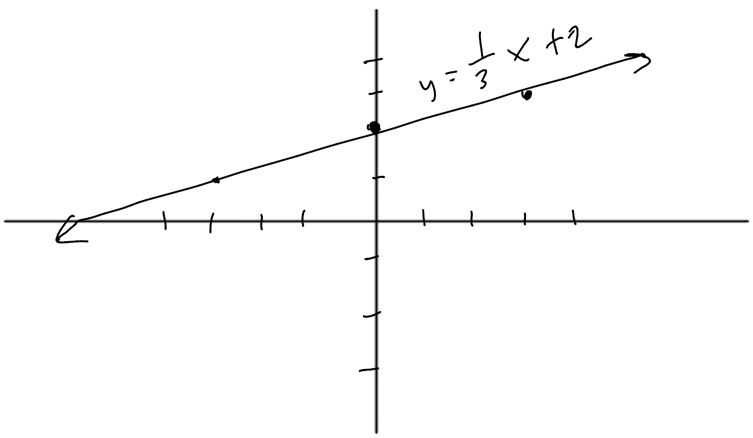


In the examples above the regions above and below the graphed line (boundary), as well left and right of our "lines in the sand" are called **open half planes**. All of the shading represents an infinite amount of points that represent solutions to these two inequalities. If I include one side of an open half plane and its **boundary**, we refer to the graph as a **closed half plane**.

The two examples also show the two types of **boundaries**. Please note that one line is dotted when we are not including x=7 for any value of y, as part of the solution, and one line is solid when we want to include y=7 for any value of x as part of the solution.

These same principles apply as we graph linear inequalities.

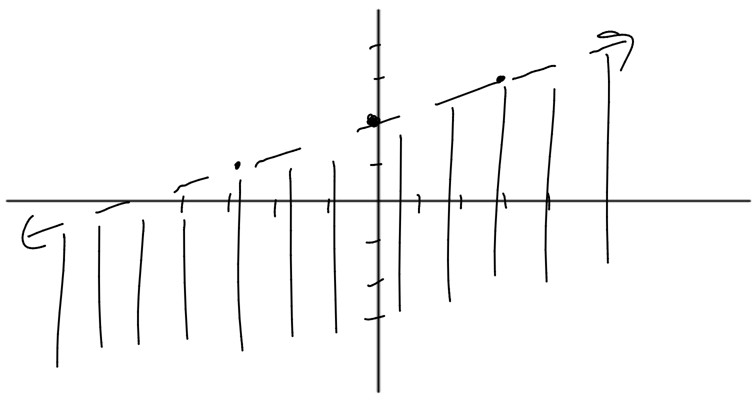
Let's take the equation $y = \frac{1}{3}x + 2$
The equation is already in slope intercept form (isolated for y with a co-efficient of 1) with a slope of 1/3 and a y intercept of 2.



What if we wanted to graph $y < \frac{1}{3}x + 2$?

We would still graph the same line, but we would have to use a dotted line since y is not equal to $\frac{1}{3}x + 2$.
Would we shade above or below the line. Think about the example of $y > 7$.
Did we shade above or below?

Will we shade the open half plane above or below the boundary (dotted line) for
$y < \frac{1}{3}x + 2$?



It would have to be below our boundary, and we could check this by picking any coordinate and substituting the values in for x and y into the original inequality.

Would (0, 0) make the inequality true? It does.
Would (0, 7) make the inequality true. It doesn't, and it shouldn't since it is not shaded.
Remember, every point that is shaded should make the inequality true.

If I did shade above the boundary, what would I need to change to represent the alteration in the original inequality?

We would see $y > \frac{1}{3}x + 2$.

There are 3 steps to graphing any inequality:

1. Isolate the inequality for y.
2. Graph the equation of the boundary as a solid (equal to) or dotted line (not equal to).
3. Shade the appropriate region for the inequality.

Please refer to examples in the book or follow the link to Khan Academy https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:inequalities-systems-graphs/x2f8bb11595b61c86:graphing-two-variable-inequalities/v/graphing-inequalities for more examples.

Wednesday and Thursday notes, April 22-23
Section 10-8

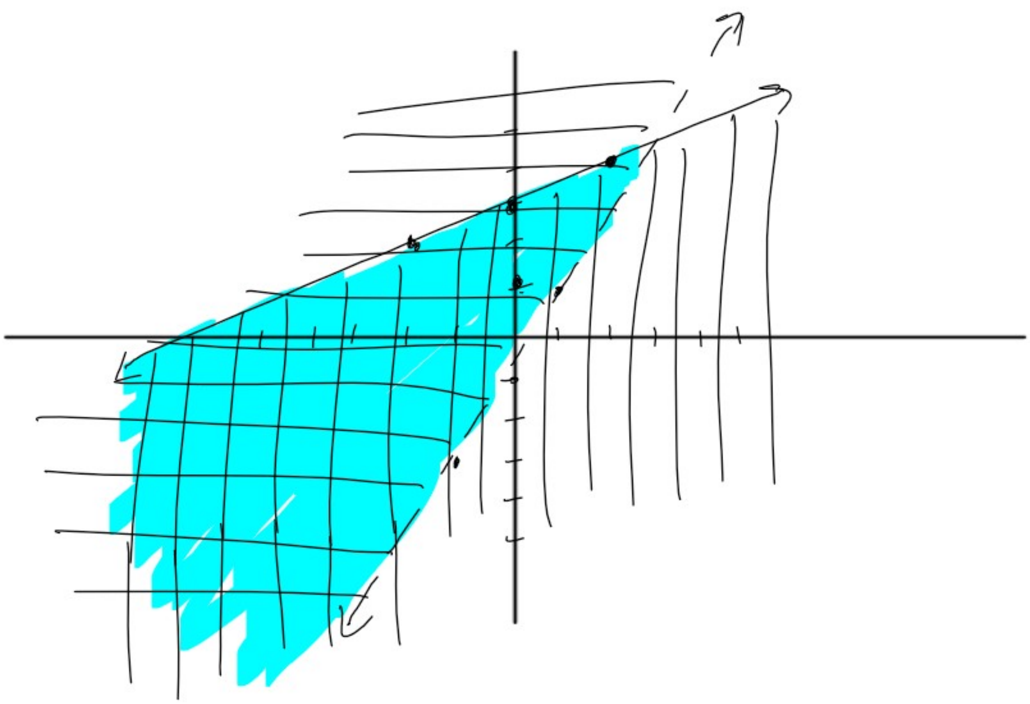
Things to remember:

1. Graphing Systems of Inequalities is very similar to Graphing Systems of Equations.
2. Isolate for y, and find your slope and y intercept.
3. Look at the inequalities to see if your boundaries should be solid or dotted.
4. Think about the solutions to make the closed half plane (the shaded region) for each inequality, but as you shade make the patterns different.
5. Wherever there is an overlap of shading lies the solutions to both inequalities (if only two are present, there can be many more graphed)
6. Check for solutions to see if your shadings are correct.

Examples.

Find the solutions to the following systems…

$y \leq \frac{1}{2}x + 3$ and $y > 2x - 1$



For the graph above the solutions are colored in blue where the patterns overlap.
According to the graph is (0,0) a solution to both inequalities? Yes.
Is (2,0)? No-it only makes the first inequality true Is (0,5)? No-it only makes the second inequality true. Does the graph reflect this? Yes it does…

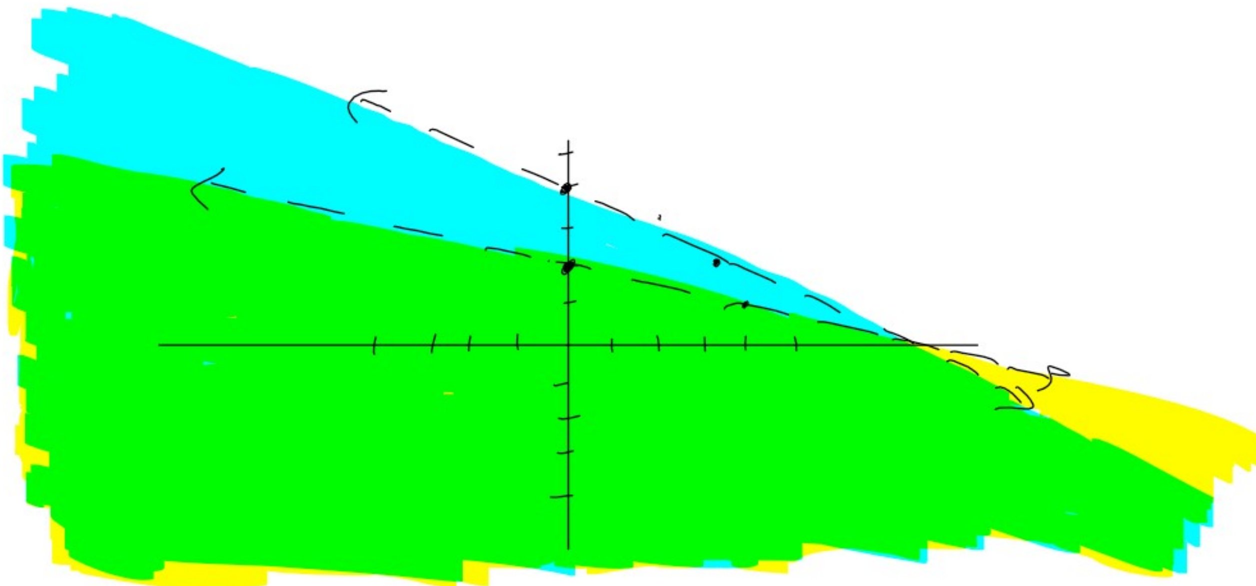
Another example of graphing below. Ask yourself these same types of questions based upon the inequalities and the graphs.

$3y < -2x + 12$ and $-4y > x - 8$

Remember to isolate for y first!

$$\frac{3y}{3} < \frac{-2x}{3} + \frac{12}{3} \qquad \frac{-4y}{-4} > \frac{x}{-4} - \frac{8}{-4}$$

$$y < -\frac{2}{3}x + 4 \qquad y < -\frac{1}{4}x + 2$$



The solutions are marked in green. Also not that the only region of solutions not shared would be blue or yellow.

Please refer to examples in the book or follow the link to Khan Academy https://www.khanacademy.org/math/algebra/x2f8bb11595b61c86:inequalities-systems-graphs/x2f8bb11595b61c86:graphing-two-variable-inequalities/v/graphical-system-of-inequalities for more examples.

Friday notes, April 24
Review of Chapter 10

Please go through examples in your book to help review the concepts covered. As always, email me or go to my office hours on Friday for questions. Take care and stay healthy!