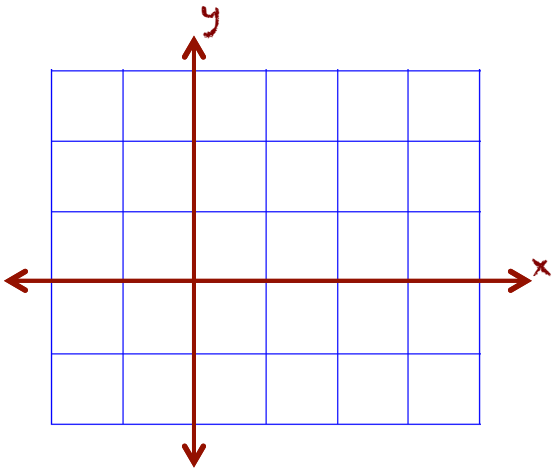
Write your questions and thoughts here!

4.3 – Solving Systems of Inequalities

To the video!

Recall—Graphing Linear Inequalities...

Ex. 1 Graph the following linear inequality: $2y + 3x < 4$

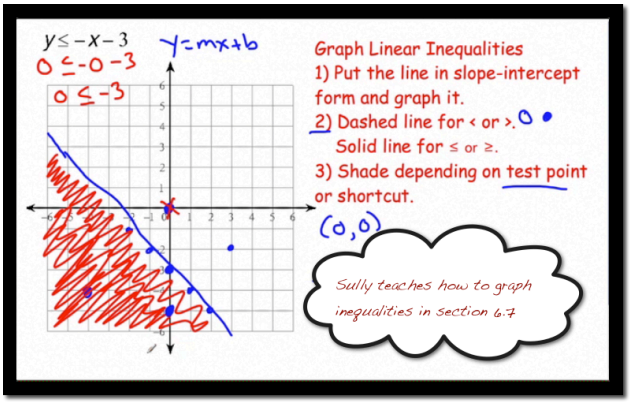


Summary: Graphing Inequalities

Inequality to graph	Translation into Words	What to do
$y > [inequality]$; $y \geq [inequality]$	"y is bigger or larger than...."	Shade on top of the graphed line.
$y < [inequality]$; $y \leq [inequality]$	"y is smaller than..."	Shade below the graphed line.
$y \leq [inequality]$; $y \geq [inequality]$	"y is also equal to...include the line"	Use a solid line.
$y > [inequality]$; $y < [inequality]$	"y is not equal to... line is not included"	Use a dotted line.

Need more help?

Algebra I
Section 7.5
Section 8.5

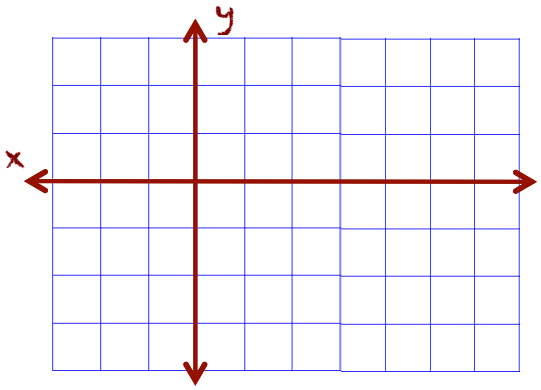


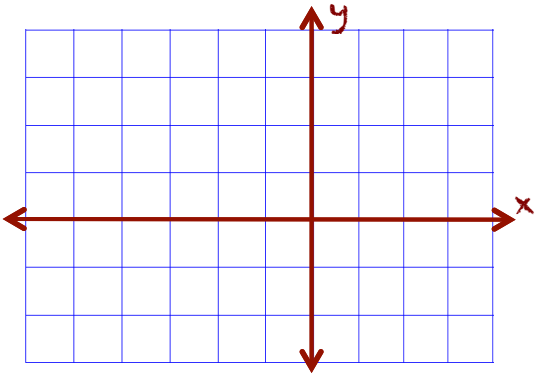
4.3 – Solving Systems of Inequalities

Solve the following systems of inequalities by graphing:

Ex 2 $y \geq -1$
$-x - 2y < -4$

Ex. 3 $4y + 2x \geq -8$
$4y + 2x \leq 12$

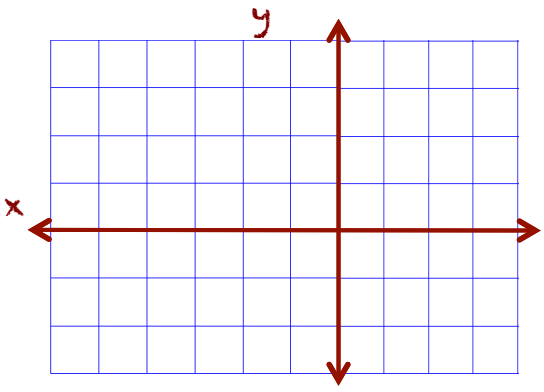


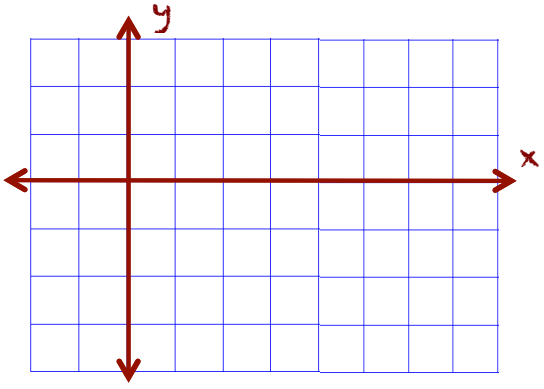


Is the point (6, -1) a solution to the system in #2?_____

Ex 4 $y + x > 3$
$y + 2 < -x$

Ex. 5 $x \geq 0$
$5x - 2y < 4$





Is the point (2, 3) a solution of # 5?

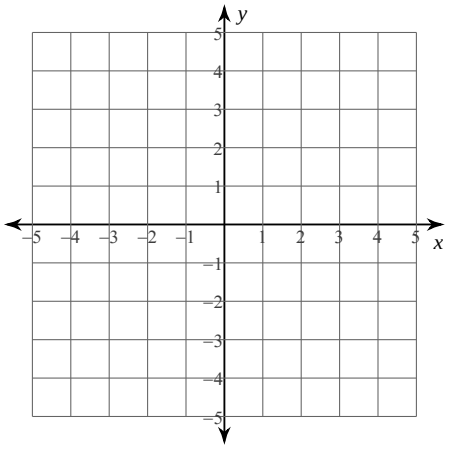
Now summarize what you have learned!

Practice 4.3

Sketch the solution to each system of inequalities.

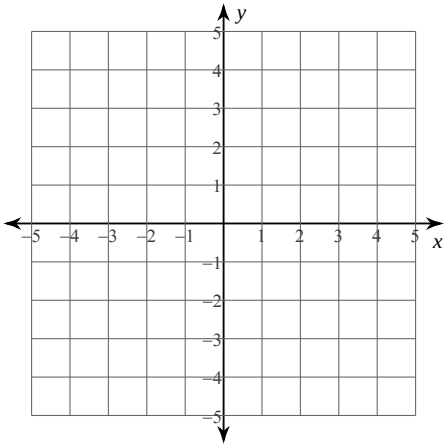
1) $y < \frac{1}{2}x + 1$

$y \geq \frac{5}{2}x - 3$



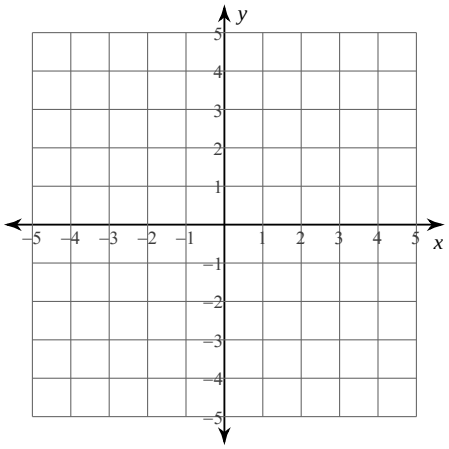
2) $y \geq \frac{5}{3}x - 2$

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



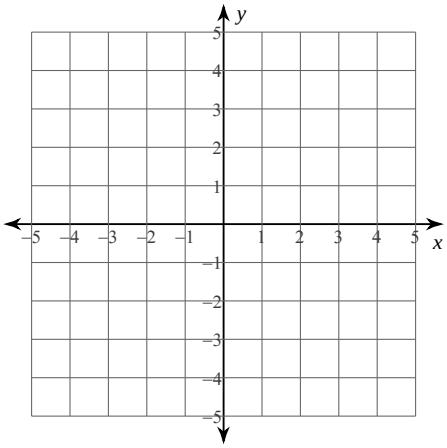
3) $y > \frac{2}{3}x - 1$

$y \leq \frac{2}{3}x + 3$



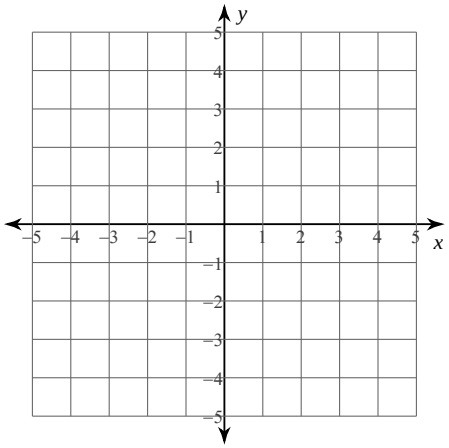
4) $x < 3$

$y > \frac{4}{3}x - 1$



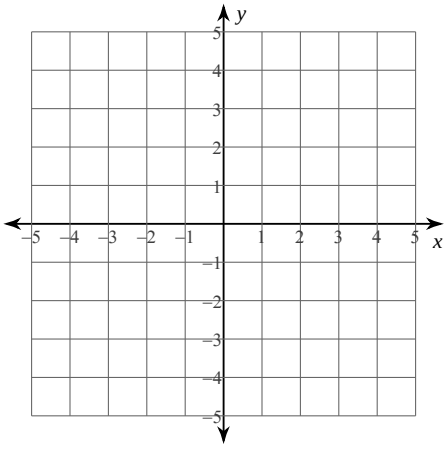
5) $y > 3x - 3$

$y \geq \frac{1}{2}x + 2$



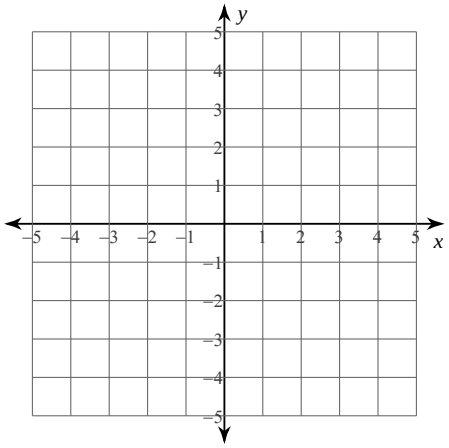
6) $y \leq \frac{4}{3}x + 1$

$y \geq \frac{4}{3}x + 3$



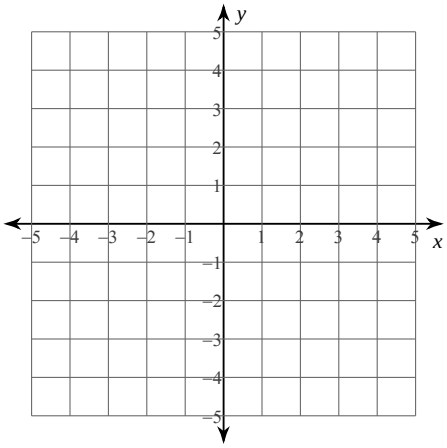
7) $x + y \leq 2$

$4x + y < -1$



8) $x - y > 1$

$x + 3y \leq 9$



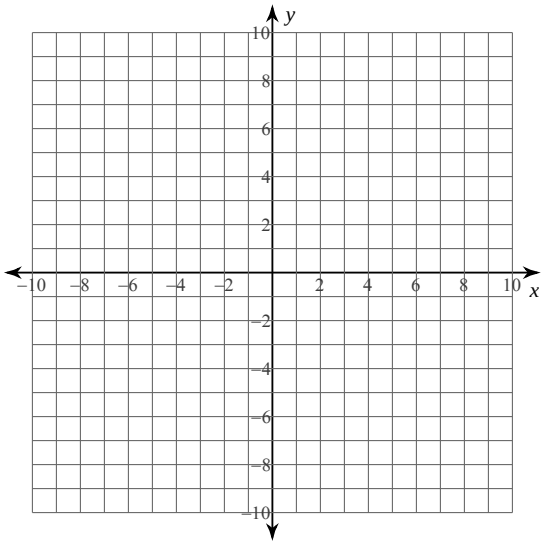
9) Is the point (0, -1) a solution to the system of inequalities in problem #7?

10) Is the point (3, 2) a solution to the system of inequalities in problem #8?

Sketch the solution to each system of inequalities.

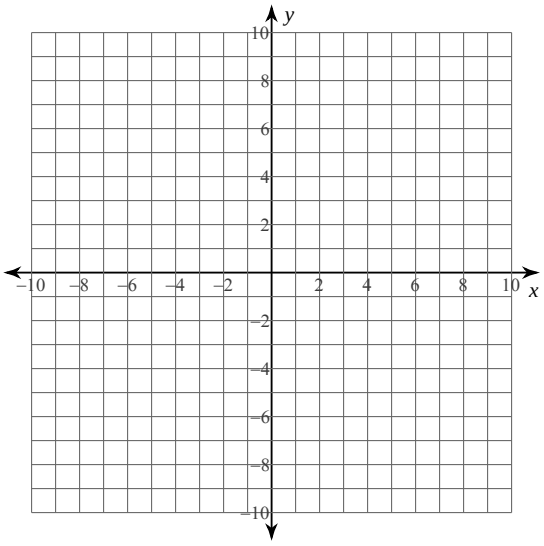
11) $11x - 6y > 36$

$x + 2y \leq 16$



12) $x - 3y < -9$

$2x + 3y \leq 18$

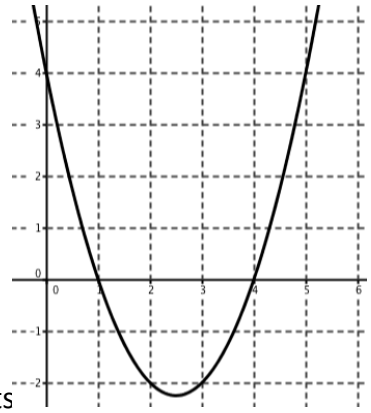


4.3 – Solving Systems of Inequalities

ALGEBRA SKILLZ!

GRAPH

a. $f(2) =$ b. *y*-intercept =



c. $f(x) = 4$ when *x* =

d. *x*-intcepts

SIMPLIFY

Simplify the radical

a. $5\sqrt{200}$

b. $\sqrt{120}$

SOLVE:

Solve for *x*. Hint: Use the LCM!!

a. $\frac{3x}{5} + \frac{x}{3} = 52$

FACTOR:

b. $x^2 - x - 56$

SAT Review

MULITPLE CHOICE

If $x > 3$ and $-2 < 12 - 3x$ which of the following describes all possible values of *x*?

(A) $x < \frac{13}{6}$

(B) $3 < x < \frac{14}{3}$

(C) $x < 5$

(D) $x > 2$

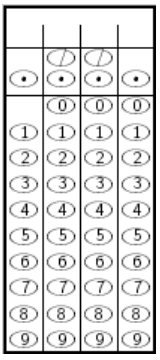
(E) $3 < x < 5$

GRID IN

Find an integer solution for the following system of linear inequalities:

5x – 6 > 26

12x + 2 ≤ 89

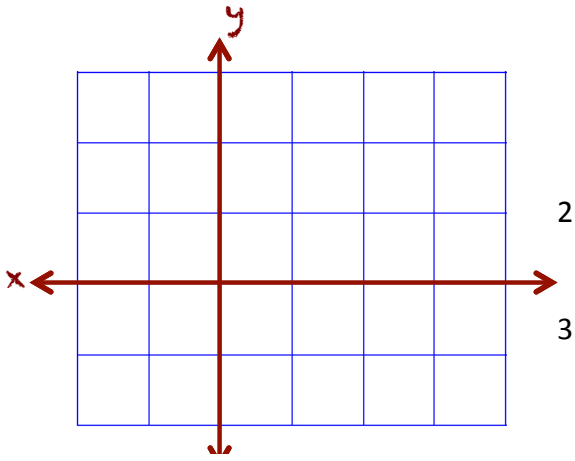


Application 4.3

1. Solve the following systems of Inequalities:

$x \geq -1$

$y + x < 1$



2. Is the point (-1, 2) a solution to #1?

3. Is the point (0, 1) a solution to #1?

4.3 – Solving Systems of Inequalities 4

4. Bean receives a gift card worth $25 to an online store "The Nerd Herd" that sells bowties and pocket protectors. Each bowtie costs $2, and each pocket-protector costs $1. He wants to buy at least 15 items with this card, with at least 2 bowties and 5 pocket protectors.

Let's define some variables and set up a system of inequalities that represents this scenario.

a. Let _____ = the # of bowties that Bean buys

(You can choose the variables)

Let _____ = the # of pocket-protectors that Bean buys

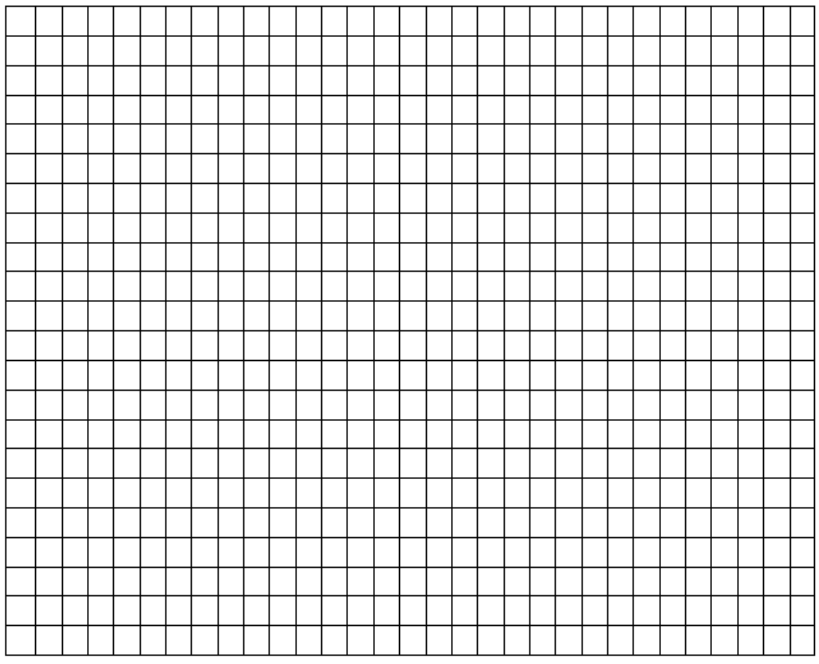
b. Bean is super nerdy so he wants to buy ***at least*** 15 items. Let's write an inequality to represent this using your defined variables:

c. We also know Bean has a ton of kids so he probably doesn't have a lot of extra cash. Let's assume he will only be using the gift card and no money. Write an inequality to represent the cost of the items being less than $25 using your defined variables:

d. Lastly, we know Bean wants to buy at least 2 bowties and 5 pocket protectors. Write 2 more inequalities:

e. Write your system of inequalities from the boxes above, and graph. Be sure to label the axes.

System of Inequalities:



f. Give three possible solutions to this system of inequalities: _____, _____, _____ .