

Algebra 1
4-4 Linear Inequalities in 2 Variables

Name _____
 Date _____ **A#1**

Goal: Graph solutions to _____ in two variables.

I. Warm Up: Solve and graph each of the following

a. $3x > -15$

b. $-3x > 15$

$8x - 11 \leq 13$

d. $\frac{x-4}{-2} \geq 11$

II. Review: Graphing inequalities.

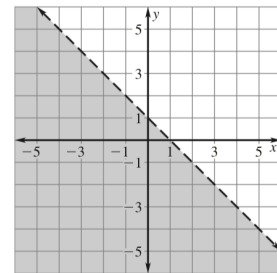
Preview:

Graphing on Number Line	Shade left ←	Shade right →
Open point		
Closed point		

Graphing on Coordinate Plane	Shade below	Shade above
Dashed line		
Solid line		
Exception: Vertical Line		

III. Understanding Inequalities in Two Variables.

Ex 1: The inequality $y < -x + 1$ is graphed to the right. There are _____ solutions, which are represented in the _____ region. The dashed line means _____. Check the following points:



a. $(0,0)$

b. $(1,1)$

c. $(-3,4)$

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Try It! Determine if the given point is a solution to the inequality.

a. $2x - 3y \geq -2$
(0,0)

b. $x + y > -3$
(-6,3)

c. $y - 2x < 5$
(8,1)

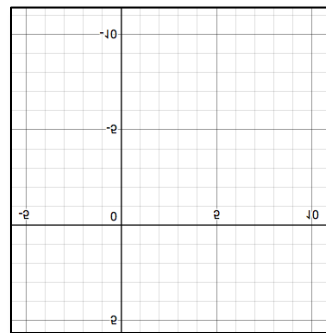
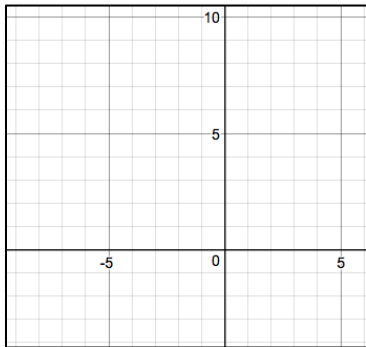
IV. Graphing Inequalities

- a. Graph line: dashed or solid?
- b. Test point
- c. Shade

Ex 2: Graph the solutions of each inequality.

a. $y \leq \frac{1}{2}x + 4$

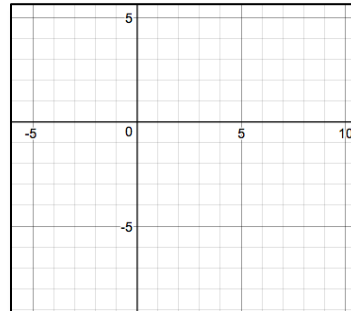
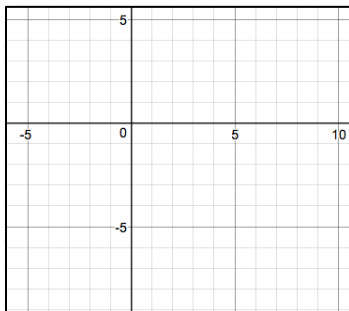
b. $2x - 3y > 12$



Try It! Graph the solutions of each inequality.

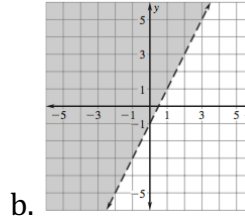
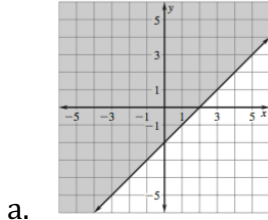
a. $y > \frac{2}{3}x - 2$

b. $-x + 4y \geq -8$

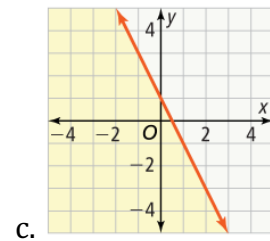
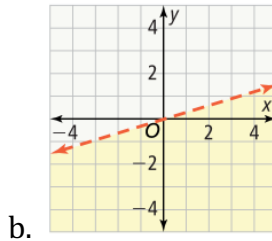
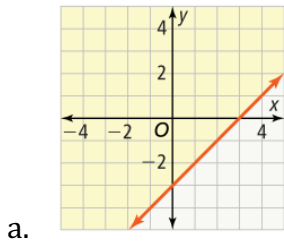


V. Writing Inequalities from Graphs

Ex 3: Write an inequality from the graph.

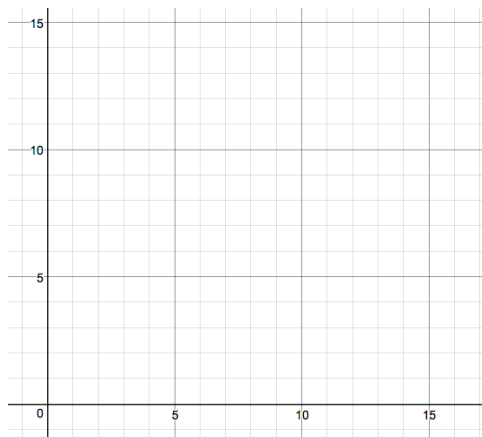


Try It!



VI. Application

Ex 4: You're listening to the basketball game on your car radio. At half-time Collman has already scored 24 points, but you have to turn the car off and go to work. Let x represent the number of 2-point baskets scored. Let y represent the number of 3-point baskets scored. What is the inequality that describes the possible numbers of 2-point and 3-point shots Collman could have scored by the end of the game? Determine three ordered pairs (x, y) that are solutions of the inequality where $0 \leq x \leq 15$ and $0 \leq y \leq 15$.



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Try It! You have \$125 to spend on school clothes. It costs \$20 for a pair of pants and \$15 for a shirt. Let p represent the number of pairs of pants you can buy. Let s represent the number of shirts you can buy. What is the inequality that describes the possible numbers of pairs of pants and shirts you can buy? Determine three ordered pairs (p, s) that are solutions of the inequality where $0 \leq p \leq 10$ and $0 \leq s \leq 10$. Interpret each solution in terms of the situation.

