

**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.

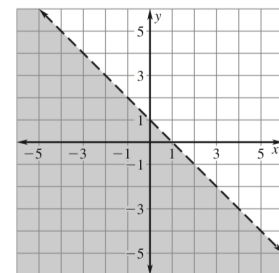
**Preview:**

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.  $(-3,4)$

# Algebra 1

## 4-4 Linear Inequalities in 2 Variables

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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)

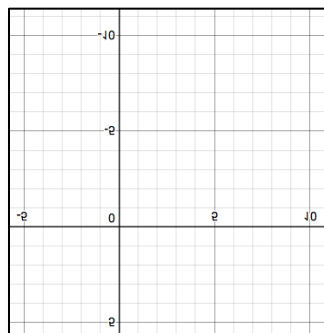
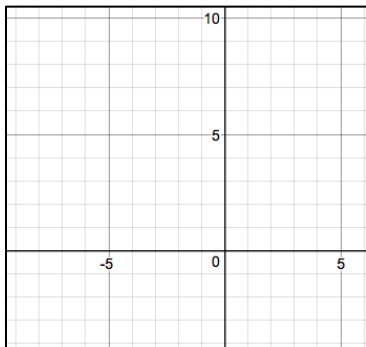
### IV. Graphing Inequalities

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

**Ex 2:** Graph the solutions of each inequality.

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

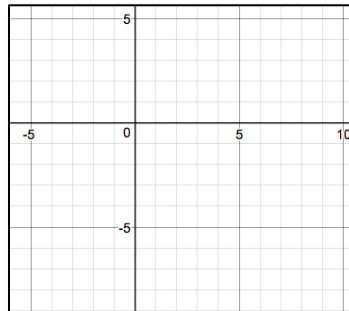
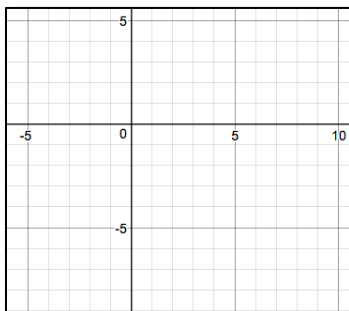
b.  $2x - 3y > 12$



**Try It!** Graph the solutions of each inequality.

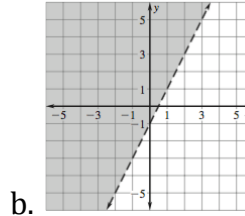
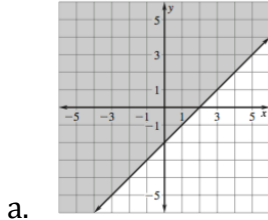
a.  $y > \frac{2}{3}x - 2$

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

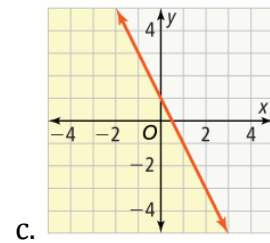
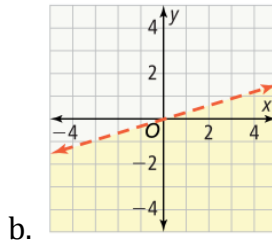
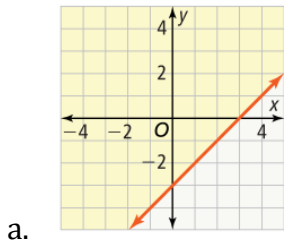


V. Writing Inequalities from Graphs

Ex 3: Write an inequality from the graph.

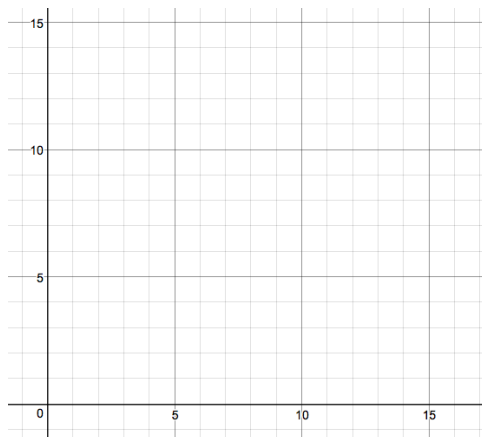


Try It!



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  $0 \leq y \leq 15$ .



# Algebra 1

## 4-4 Linear Inequalities in 2 Variables

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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.

