Algebra 1 CP Class Log 4.4-5

Linear Inequalities			
#	**Date**	**Title**	**Self Check & Teacher Check**
1.		**Notes:** 4-4 Linear Inequalities in Two Variables	1.
2.		**Book:** 4-4 Read pp164-167, Do p168 (10, 11, 15, 16-28)	2.
3.		**Notes:** 4-5 Systems of Linear Inequalities	3.
4.		**Book:** 4-5 Read pp171-174, Do p179 (24-34)	4.

Quiz 4-4

5.		**Book:** Topic Review p177 (6-22 even, 23)	5.

Test 4.4-5

Key: Stamp/ ✓ = Full credit   L(ate)/i(ncomplete) = ½ credit   ?/x/blank = 0 credit

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. $\dfrac{x-4}{-2} \geq 11$
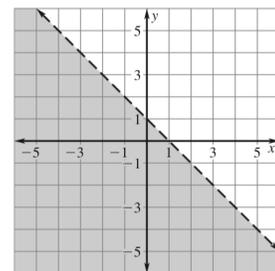
II. Review: Graphing inequalities. 　　　　**Preview:**

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. $(-3,4)$

1

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

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

b. $x + y > -3$
$(-6,3)$
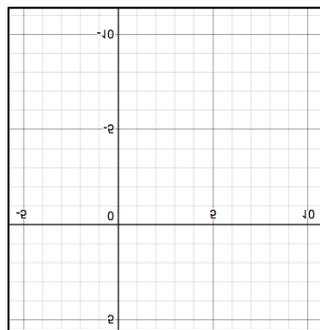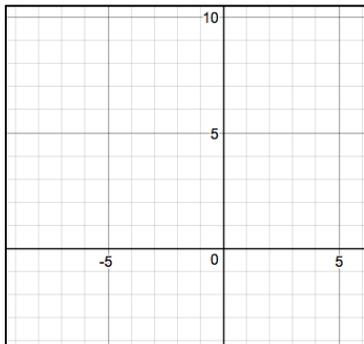
c. $y - 2x < 5$
$(8,1)$

IV. Graphing Inequalities
      a. Graph line: dashed or solid?
      b. Test point
      c. Shade

Ex 2: Graph the solutions of each inequality.
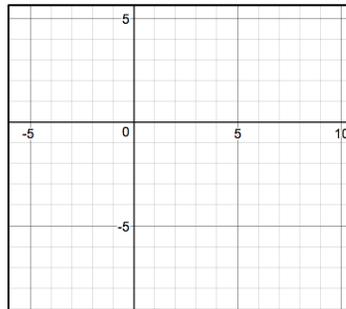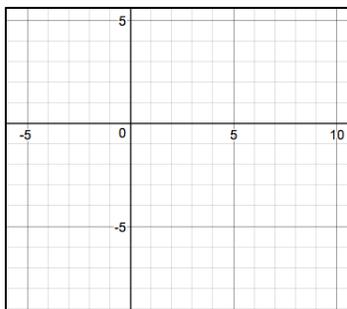
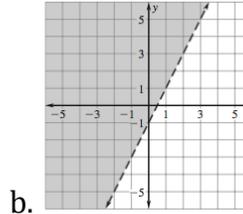a. $y \leq \dfrac{1}{2}x + 4$

b. $2x - 3y > 12$

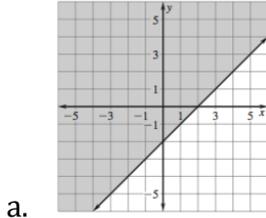**Try It!** Graph the solutions of each inequality.

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

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

2

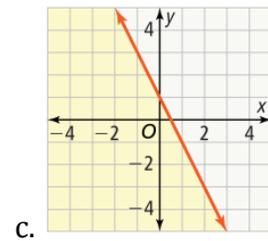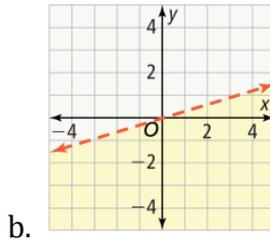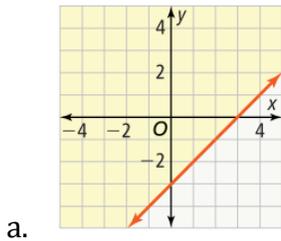## V. Writing Inequalities from Graphs

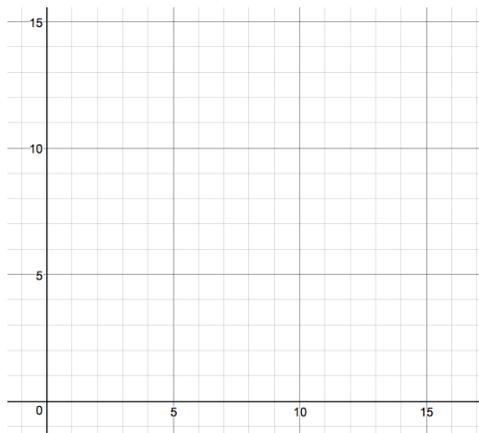**Ex 3:** Write an inequality from the graph.

a.

b.

Try It!

a.

b.

c.

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 $0 \leq y \leq 15$.

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 $0 \le p \le 10$ and $0 \le s \le 10$. Interpret each solution in terms of the situation.
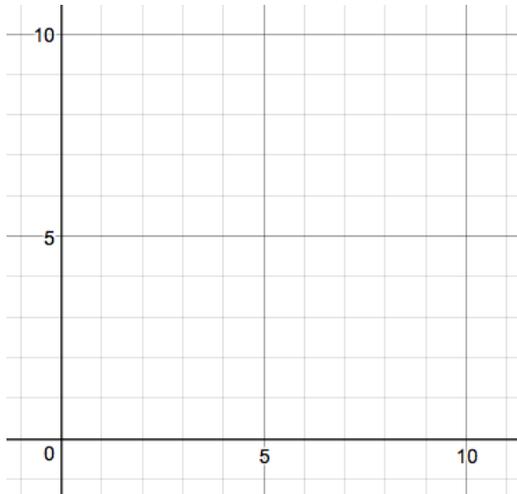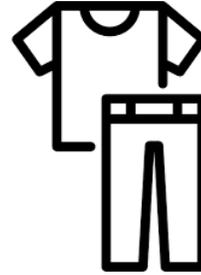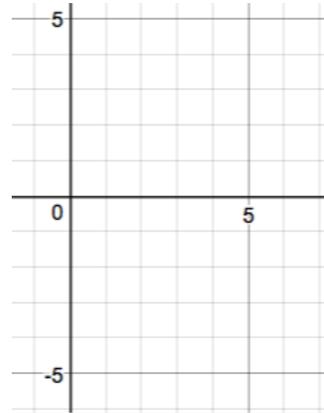
Goal: To graph and solve a system of linear inequalities.

I. Warm Up: Graph the system below.

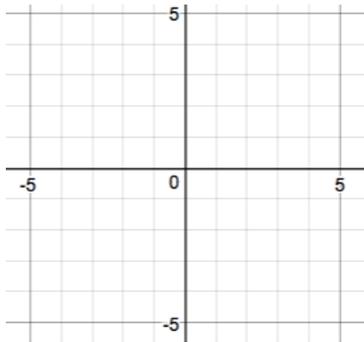$$y = x - 1$$
$$y = -2x + 4$$

a. Choose one point above $y = x - 1$ and one below. Which point satisfies $y < x - 1$ and which satisfies $y > x - 1$?

b. Choose one point above $y = -2x + 4$ and one below. Which point satisfies $y < -2x + 4$ and which satisfies $y > -2x + 4$?
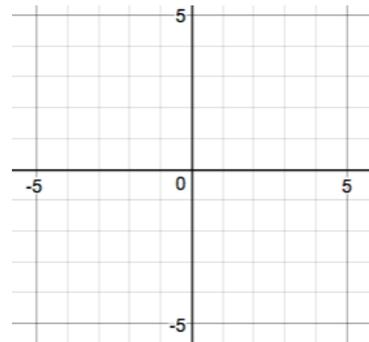
II. Graph a System of Linear Inequalities

Ex 1: What are the solutions to the system: $\begin{array}{l} y > x - 2 \\ y \leq -x + 1 \end{array}$?

Steps:
1. Graph each corresponding equation
2. Shade the overlap region
3. Check a point

Try It! Find the solutions to $\begin{array}{l} y \geq -2x + 1 \\ y > x + 2 \end{array}$ and check one point.

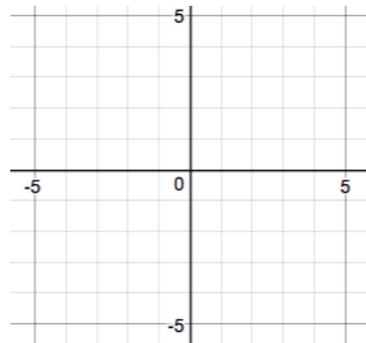**Ex 2:** Is it possible to have no solutions?

Graph the solutions to $\begin{matrix} y \geq -x+2 \\ y < -x-2 \end{matrix}$.
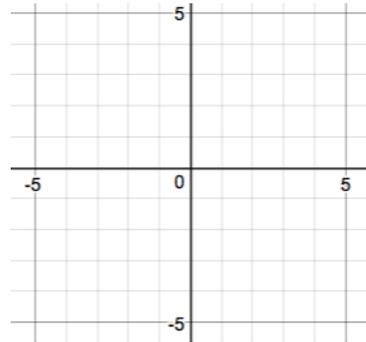
Try It! Graph the solutions to the system: $\begin{matrix} y < -3 \\ y \geq 2 \end{matrix}$

Ex 3: Write the system of inequalities from the graph.
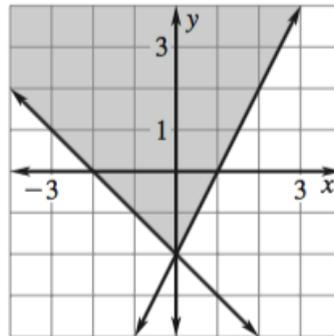
Try It! Write the system of inequalities from each graph.

4.

5.

6.
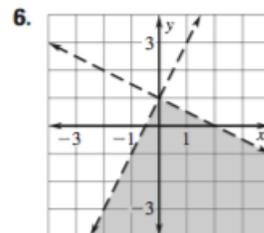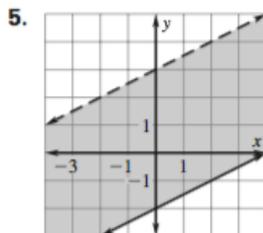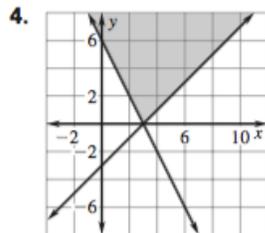
III. Application: Malia has $500 to purchase water bottles and pairs of socks for a fundraiser for her school's cross-country team. She needs to buy a total of at least 200 items without buying too many of just one item.
What graph shows the possible numbers of water bottles and pairs of socks that Malia should buy?
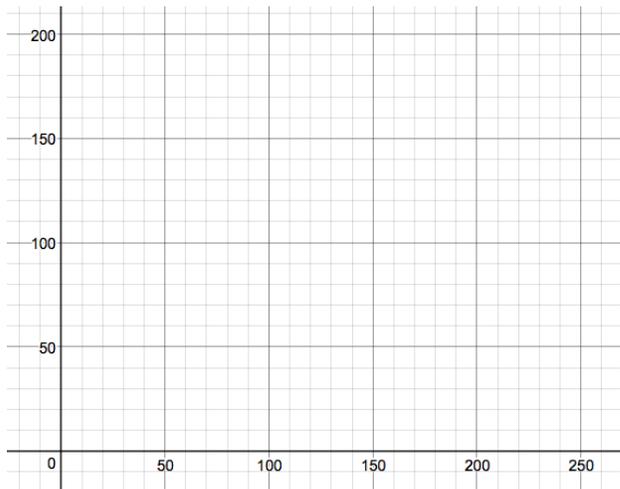
Interpretation:

Try It! You work at a frozen yogurt shop during the summer. You need to order 5-ounce and 8-ounce cups. The storage room will only hold 10 more boxes. A box of 5-ounce cups costs $100 and a box of 8-ounce cups costs $150. A maximum of $1200 is budgeted for yogurt cups. Write a system of linear inequalities that shows the number of boxes of 5-ounce and 8-ounce cups that could be bought. Graph your result. Give 3 options you have.