

Last name KEY Linear Inequality Review Problems  
 First \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

SHOW YOUR WORK

NO WORK = NO CREDIT!

I can determine the slope and y-intercept from a situation, graph, or inequality/equation.

<p>1. <math>y = -\frac{3}{2}x + 4</math></p> <p>Slope <u><math>-\frac{3}{2}</math></u></p> <p>y- intercept (write as a coordinate pair) <u><math>(0, 4)</math></u></p>	<p>2. <math>y \leq \frac{4}{3}x - 2</math></p> <p>Slope <u><math>\frac{4}{3}</math></u></p> <p>y- intercept (write as a coordinate pair) <u><math>(0, -2)</math></u></p>
--	--

<p>3. Write the inequality in slope-intercept form</p> $2x + 5y \geq 15$ $\begin{array}{r} -2x \quad -2x \\ \hline 5y \geq -2x + 15 \\ \frac{5y}{5} \geq \frac{-2x}{5} + \frac{15}{5} \\ y \geq -\frac{2}{5}x + 3 \end{array}$ <p>Slope <u><math>-\frac{2}{5}</math></u></p> <p>y- intercept (write as a coordinate pair) <u><math>(0, 3)</math></u></p>	<p>4. Write the inequality in slope-intercept form.</p> $3x - y < 9$ $\begin{array}{r} -3x \quad -3x \\ \hline -y < -3x + 9 \\ \frac{-y}{-1} < \frac{-3x}{-1} + \frac{9}{-1} \end{array}$ <p style="text-align: right; color: orange;">divide by (-1) and reverse sign</p> $y > 3x - 9$ <p>Slope <u>3</u></p> <p>y- intercept (write as a coordinate pair) <u><math>(0, -9)</math></u></p>
--	--

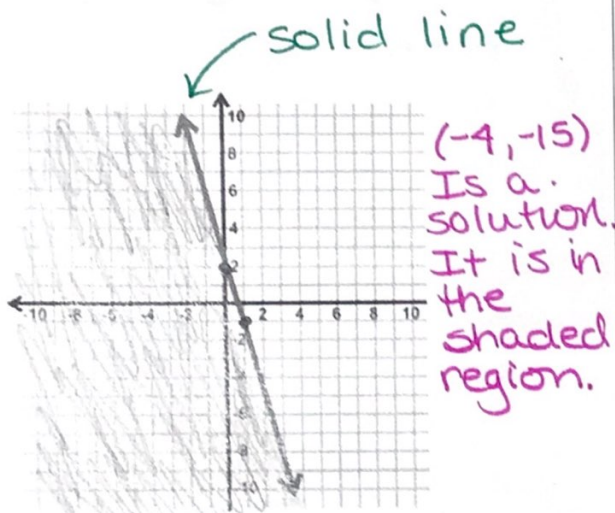
I can determine if a point is a solution to a linear inequality and explain my reasoning.

<p>5. Is the point a solution of the inequality?  <b>Show</b> your calculations and <b>explain</b> your reasoning.</p> <p><math>(1, 2)</math>  <math>3x - 7y &gt; -11</math></p> $3(1) - 7(2) > -11$ $3 - 14 > -11$ $-11 > -11$	<p>6. Is the point a solution of the inequality?  <b>Show</b> your calculations and <b>explain</b> your reasoning.</p> <p><math>(2, -1)</math>  <math>3x - 7y &gt; -11</math></p> $3(2) - 7(-1) > -11$ $6 + 7 >$ $13 > -11$
---	---

No  
 The point is not a solution

Yes  
 It is a solution.

7. Given the following graph, determine if the point  $(-4, -15)$  is a solution. Explain your reasoning.



Slope -3

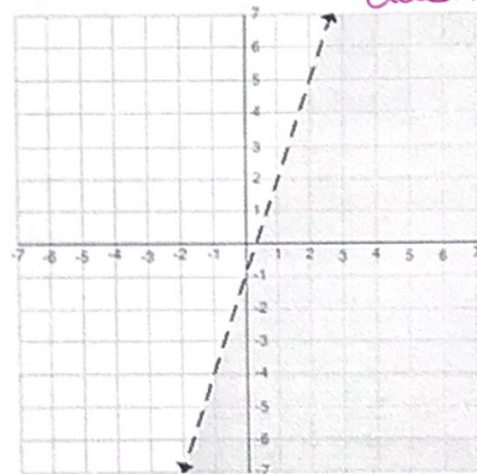
y- intercept (write as a coordinate pair)  $(0, 2)$

Write the inequality represented in the graph.

$$y \leq -3x + 2$$

Test a point to verify your sign

8. Given the following graph, determine if the point  $(1, 2)$  is a solution. Explain your reasoning.



Slope 3

y- intercept (write as a coordinate pair)  $(0, -1)$

Write the inequality represented in the graph.

$$y < 3x - 1$$

- o I can determine if a boundary line is dashed or solid and explain its meaning.

9. For the inequality  $y \geq -4x + 17$ , would the boundary line be solid or dashed?

solid

Explain how you determined.

The inequality sign includes an  $=$

Would a point on the boundary line be a solution?

Explain your reasoning.

Yes, since the inequality has an  $=$  (solid line) the point is a solution.

10. For the inequality  $y > \frac{2}{3}x - 1$ , would the boundary line be solid or dashed?

dashed

Explain how you determined.

The inequality sign does not have an  $=$ .

Would a point on the boundary line be a solution?

Explain your reasoning.

No, the point is on the line and there is not an  $=$  (solid line)



- o I can create linear inequalities with two variables and use them to solve real world problems.
- o I can graph a linear inequality given in standard form.

11. Graph the solutions of the linear inequality.

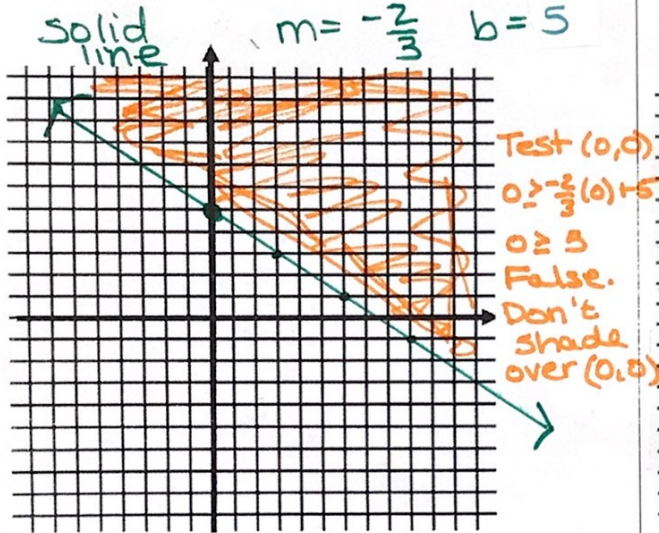
$$2x + 3y \geq 15$$

$$-2x \quad -2x$$

$$3y \geq -2x + 15$$

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

$$m = -\frac{2}{3} \quad b = 5$$



12. Graph the solutions of the linear inequality

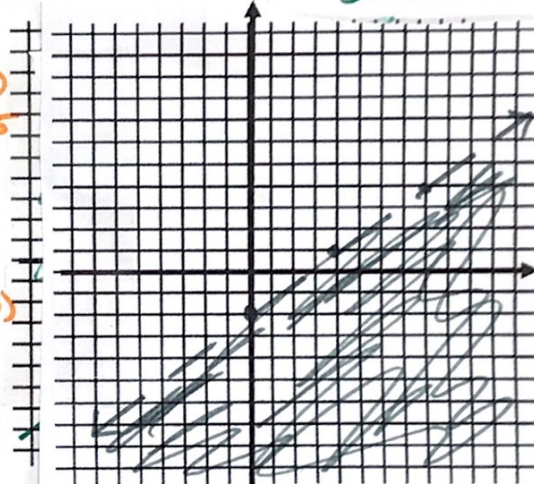
$$3x - 4y > 8$$

$$-4y > -3x + 8$$

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

$$m = \frac{3}{4} \quad b = -2$$

dashed



13. Write an inequality for the following situation.

A radio station is giving away tickets to a concert. They plan to give away tickets for seats in the balcony that cost \$50 and seats on the main floor that cost \$100. The total cost of all the tickets they give away can be no more than \$800.

First determine what x and y will represent.

x: # of tickets in balcony  
 y: # of tickets on main floor

Write the inequality.

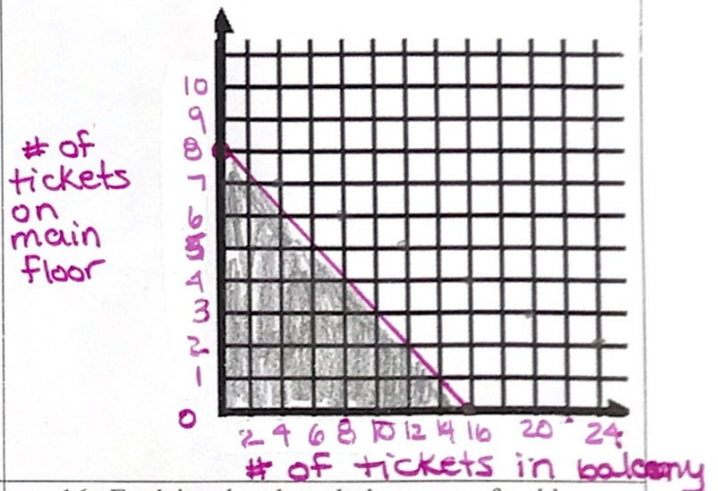
$$50x + 100y \leq 800$$

$$100y \leq -50x + 800$$

$$y \leq -\frac{1}{2}x + 8$$

$$m = -\frac{1}{2} \quad b = 8$$

14. Graph the inequality solutions of the inequality written in #13. Label the x and y axis. You may need to use a different scale for the x or y axis.



15. Why would the solutions only in the first quadrant?

$x \geq 0$  and  $y \geq 0$   
 You can not sell negative tickets.

16. Explain what the solutions mean for this situation.

The points in the shaded region are solutions. (Although your solutions need to be whole numbers since you can not sell a fraction of a tickets)